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BLM Handbook 1112-1 Safety and Health Management (Internal) 2019 (PDF pg 4)
BLM Manual Handbook 1112-2 Safety and Health for Field Operations (Internal) 2006 (PDF pg 358)
BLM Manual Handbook H-1283-1 Data Administration and Management Handbook (Internal) 2013 (PDF pg 574)
BLM Handbook H-1283-2 Data Administration and Management Handbook (Internal) 2014 (second handbook in the series) (PDF pg 612)
BLM Handbook H-1292-1 Communication Tower Climbing and Safety (Internal) 2016 (PDF pg 690)
BLM Handbook H-1292-2 Radio Frequency Exposure Awareness Program Handbook (Internal) 2013 (PDF pg 718)
BLM Handbook H-1292-3 Radio Site Facilities Handbook (Internal) 2013 (PDF pg 742)
BLM Manual H-1382-1 Change of Station Handbook 1988 (PDF pg 784)

Requested date: 05-June-2019

Release date: 22-May-2024

Posted date: 10-June-2024

Source of document: FOIA Officer
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United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Washington, D.C. 20240
<http://www.blm.gov>

May 22, 2024

In Reply Refer To:
1278-FOIA (640)
FOIA# 2019-000927

Via email

This letter is a final response to your Freedom of Information Act (FOIA) request, dated June 5, 2019. The tracking number is 2019-000927. In your letter, you asked for the following:

“Requesting H-1112-1 Safety and Health Mgmt Handbook, H-1112-2 Safety and Health for Field Operations, H-1283-1 Data Admin and Mgmt Handbook, H-1283-2 Data Admin and Mgmt Handbook H-1292-1 Communication Tower Climbing and Safety, H-1292-2 Radio Frequency Exposure Awareness, H-1292-3 Radio Site Facilities Handbook, H-1382-1 Change of Station Handbook.”

We have enclosed **830** pages, which are being released to you in their entirety.

Ryan Witt, Bureau of Land Management (BLM) FOIA Officer, is responsible for this release.

We do not bill requesters for FOIA processing fees when their fees are less than \$50.00, because the cost of collection would be greater than the fee collected. *See 43 C.F.R. § 2.37(g)*. Therefore, there is no billable fee for the processing of this request.

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If you have any questions regarding this request, please contact Kenneth Perry, BLM Government Information Specialist, at (720) 281-1649 or via email at BLM_WO_FOIA@blm.gov.

Sincerely,
Ryan Witt
FOIA Officer
Bureau of Land Management



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANUAL TRANSMITTAL SHEET

Release
1-1800

Date
08/07/2019

Subject

H-1112-1 Safety and Health Management (Internal)

1. **Explanation of Materials Transmitted:** This release transmits new and revised chapters for H-1112-1, Safety and Health Management. This update includes new chapters for occupational health/industrial hygiene, heat stress prevention, confined space entry, radiation safety, machines and tools, and field work. This update includes revisions of chapters for training, accident investigation, inspections, fire safety, motor vehicles, off-highway vehicles, specialized equipment, personal protective equipment and clothing, respiratory protection, bloodborne pathogens, firearms, and search and rescue. This update includes new illustrations for compressed gas cylinders and confined space entry inventories. This update includes new appendices for facility and trailer safety inspection checklists, personal safety tips, and confined space entry program documentation.
2. Reports Required: None
3. **Materials Superseded:** This release supersedes all previous versions of this handbook (Release 1-1761, August 4, 2014 and chapter 17 of Release 1-1768, May 26, 2015).

Filing Instructions: File as directed below.

REMOVE

All of Handbook 1112-1, (Release 1-1761 and
Release 1-1768)
(all pages)

INSERT

All of revised
(354 pages)

A handwritten signature in black ink that reads "Arzanette C. Randall".

Arzanette C. Randall
Acting Assistant Director
Human Capital Management

Safety and Health Management



BLM Handbook 1112-1

BLM Handbook
Supersedes Rel. 1-1761

Rel. No. 1-1800
Date: 08/07/2019

Table of Contents

CHAPTER 1 – PROGRAM MANAGEMENT.....1-1

A. INTRODUCTION. 1-1

B. PURPOSE. 1-1

C. PROGRAM ELEMENTS..... 1-1

D. EXPLANATION OF PROGRAM ELEMENTS..... 1-1

E. REFERENCES..... 1-4

CHAPTER 2 – OPERATIONAL RISK MANAGEMENT 2-1

A. INTRODUCTION. 2-1

B. PURPOSE. 2-1

C. PROGRAM ELEMENTS..... 2-1

D. EXPLANATION OF PROGRAM ELEMENTS..... 2-1

E. REFERENCES..... 2-7

CHAPTER 3 – BUDGET PLANNING..... 3-1

A. INTRODUCTION. 3-1

B. PURPOSE. 3-1

C. PROGRAM ELEMENT..... 3-1

D. EXPLANATION OF THE PROGRAM ELEMENT..... 3-1

E. REFERENCES..... 3-1

CHAPTER 4 – ANNUAL ACTION PLAN AND ANNUAL REPORTS..... 4-1

A. INTRODUCTION/PURPOSE..... 4-1

B. PROGRAM ELEMENTS..... 4-1

C. EXPLANATION OF PROGRAM ELEMENTS..... 4-1

D. REFERENCES..... 4-3

CHAPTER 5 –TRAINING AND CORE COMPETENCIES 5-1

A. INTRODUCTION. 5-1

B. PURPOSE. 5-1

C. PROGRAM ELEMENTS..... 5-1

D. EXPLANATION OF PROGRAM ELEMENTS..... 5-1

E. REFERENCES..... 5-11

CHAPTER 6 –SAFETY AND HEALTH PROMOTION 6-1

A. INTRODUCTION. 6-1

B. PURPOSE. 6-1

C. PROGRAM ELEMENTS..... 6-1

D. EXPLANATION OF PROGRAM ELEMENTS..... 6-1

E. REFERENCES..... 6-8

CHAPTER 7 –SAFETY COMMITTEES 7-1

A. INTRODUCTION. 7-1

B. PURPOSE. 7-1

C. PROGRAM ELEMENTS..... 7-1

D. EXPLANATION OF PROGRAM ELEMENTS..... 7-1

E. REFERENCES..... 7-3

CHAPTER 8 – EMPLOYEE REPORTS OF UNSAFE/UNHEALTHFUL WORKING CONDITIONS 8-1

A. INTRODUCTION. 8-1

H-1112-1 SAFETY AND HEALTH MANAGEMENT (INTERNAL)

vi

B. PURPOSE 8-1

C. PROGRAM ELEMENTS 8-2

D. EXPLANATION OF PROGRAM ELEMENTS 8-2

E. REFERENCES 8-4

CHAPTER 9 – ACCIDENT INVESTIGATION AND REPORTING 9-1

A. INTRODUCTION 9-1

B. PURPOSE 9-1

C. PROGRAM ELEMENTS 9-1

D. EXPLANATION OF PROGRAM ELEMENTS 9-1

CHAPTER 10 – INSPECTIONS AND ABATEMENTS 10-1

A. INTRODUCTION 10-1

B. PURPOSE 10-1

C. PROGRAM ELEMENTS 10-1

D. EXPLANATION OF PROGRAM ELEMENTS 10-1

E. REFERENCES 10-8

CHAPTER 11 –PROGRAM EVALUATION..... 11-1

A. INTRODUCTION 11-1

B. PURPOSE 11-1

C. PROGRAM ELEMENTS 11-1

D. EXPLANATION OF PROGRAM ELEMENTS 11-1

E. REFERENCES 11-2

CHAPTER 12 – FIRE SAFETY..... 12-1

A. INTRODUCTION/PURPOSE 12-1

B. PROGRAM ELEMENTS 12-1

C. EXPLANATION OF PROGRAM ELEMENTS 12-1

D. REFERENCES 12-5

CHAPTER 13 – ELECTRICAL SAFETY EQUIPMENT 13-1

A. INTRODUCTION/PURPOSE 13-1

B. PROGRAM ELEMENTS 13-1

C. EXPLANATION OF PROGRAM ELEMENTS 13-1

D. REFERENCES 13-3

CHAPTER 14 – AVIATION SAFETY 14-1

A. INTRODUCTION 14-1

B. PURPOSE 14-1

C. PROGRAM ELEMENTS 14-1

D. EXPLANATION OF PROGRAM ELEMENTS 14-1

E. REFERENCES 14-7

CHAPTER 15 – MOTOR VEHICLE SAFETY 15-1

A. INTRODUCTION 15-1

B. PURPOSE 15-1

C. PROGRAM ELEMENTS 15-1

D. EXPLANATION OF PROGRAM ELEMENTS 15-2

E. REFERENCES 15-12

CHAPTER 16 – WATERCRAFT SAFETY 16-1

H-1112-1 SAFETY AND HEALTH MANAGEMENT (INTERNAL)

vii

A. INTRODUCTION. 16-1
B. PURPOSE. 16-1
C. PROGRAM ELEMENTS. 16-1
D. EXPLANATION OF PROGRAM ELEMENTS. 16-1
E. REFERENCES. 16-6

CHAPTER 17 – OFF-HIGHWAY VEHICLE SAFETY 17-1

A. INTRODUCTION. 17-1
B. PURPOSE. 17-1
C. PROGRAM ELEMENTS. 17-1
D. EXPLANATION OF PROGRAM ELEMENTS. 17-1
E. REFERENCES. 17-22

CHAPTER 18 – SPECIALIZED EQUIPMENT AND TOWING 18-1

A. INTRODUCTION. 18-1
B. PURPOSE. 18-1
C. PROGRAM ELEMENTS. 18-1
D. EXPLANATION OF PROGRAM ELEMENTS. 18-1
E. REFERENCES. 18-10

CHAPTER 19 – PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT 19-1

A. INTRODUCTION. 19-1
B. PURPOSE. 19-1
C. PROGRAM ELEMENTS. 19-1
D. EXPLANATION OF PROGRAM ELEMENTS. 19-1
E. REFERENCES. 19-6

CHAPTER 20 – OCCUPATIONAL HEALTH/INDUSTRIAL HYGIENE 20-1

A. INTRODUCTION 20-1
B. PURPOSE. 20-1
C. PROGRAM ELEMENTS. 20-1
D. EXPLANATION OF PROGRAM ELEMENTS. 20-1
E. REFERENCES. 20-10

CHAPTER 21 – HAZARD COMMUNICATION PROGRAM 21-1

A. INTRODUCTION. 21-1
B. PURPOSE. 21-1
C. PROGRAM ELEMENTS. 21-1
D. EXPLANATION OF PROGRAM ELEMENTS. 21-1
E. REFERENCES. 21-7

CHAPTER 22 – RESPIRATORY PROTECTION 22-1

A. INTRODUCTION. 22-1
B. PURPOSE. 22-1
C. PROGRAM ELEMENTS. 22-1
D. EXPLANATION OF PROGRAM ELEMENTS. 22-2
E. REFERENCES. 22-10

CHAPTER 23 – AUTOMATED EXTERNAL DEFIBRILLATORS 23-1

A. INTRODUCTION. 23-1
B. PURPOSE. 23-1
C. PROGRAM ELEMENTS. 23-1

H-1112-1 SAFETY AND HEALTH MANAGEMENT (INTERNAL)

viii

D. EXPLANATION OF PROGRAM ELEMENTS 23-2
E. REFERENCES..... 23-5

CHAPTER 24 – BLOODBORNE PATHOGENS 24-1

A. INTRODUCTION. 24-1
B. PURPOSE. 24-1
C. PROGRAM ELEMENTS..... 24-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 24-1
E. REFERENCES..... 24-8

CHAPTER 25 – HEAT STRESS PREVENTION 25-1

A. INTRODUCTION. 25-1
B. PURPOSE. 25-1
C. PROGRAM ELEMENTS..... 25-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 25-1

CHAPTER 26 – COLD STRESS PREVENTION 26-3

A. INTRODUCTION. 26-3
B. PURPOSE. 26-3
C. PROGRAM ELEMENTS..... 26-3
D. EXPLANATION OF PROGRAM ELEMENTS..... 26-3
E. REFERENCES..... 26-15

CHAPTER 27 – HEARING LOSS PREVENTION 27-1

A. INTRODUCTION. 27-1
B. PURPOSE. 27-1
C. PROGRAM ELEMENTS..... 27-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 27-1
E. REFERENCES..... 27-5

CHAPTER 28 – CONFINED SPACES, CAVES, AND MINES 28-1

A. INTRODUCTION. 28-1
B. PURPOSE. 28-1
C. PROGRAM ELEMENTS..... 28-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 28-2
E. REFERENCES..... 28-22

CHAPTER 29 – ASBESTOS EXPOSURE CONTROL (RESERVED) 29-1

CHAPTER 30 – LEAD EXPOSURE CONTROL (RESERVED)..... 30-1

CHAPTER 31 – CHEMICAL HYGIENE..... 31-1

A. INTRODUCTION. 31-1
B. PURPOSE. 31-1
C. PROGRAM ELEMENTS..... 31-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 31-1
E. REFERENCES..... 31-7

CHAPTER 32 – INDOOR AIR QUALITY (RESERVED) 32-1

CHAPTER 33 – OCCUPATIONAL MEDICAL SURVEILLANCE 33-1

A. INTRODUCTION. 33-1
B. PURPOSE. 33-1
C. PROGRAM ELEMENTS..... 33-1

H-1112-1 SAFETY AND HEALTH MANAGEMENT (INTERNAL)

D. EXPLANATION OF PROGRAM ELEMENTS 33-1
E. REFERENCES..... 33-4

CHAPTER 34 – VISITING PUBLIC SAFETY AND HEALTH..... 34-1

A. INTRODUCTION. 34-1
B. PURPOSE. 34-1
C. PROGRAM ELEMENTS..... 34-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 34-1
E. REFERENCES..... 34-3

CHAPTER 35 – CONTRACTOR SAFETY AND HEALTH..... 35-1

A. INTRODUCTION. 35-1
B. PURPOSE. 35-1
C. PROGRAM ELEMENTS..... 35-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 35-1
E. REFERENCES..... 35-5

CHAPTER 36 – CONCESSIONER SAFETY AND HEALTH..... 36-1

A. INTRODUCTION. 36-1
B. PURPOSE. 36-1
C. PROGRAM ELEMENTS..... 36-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 36-1
E. REFERENCES..... 36-2

CHAPTER 37 – FIREARMS 37-1

A. INTRODUCTION. 37-1
B. PURPOSE. 37-1
C. PROGRAM ELEMENTS..... 37-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 37-1
E. REFERENCES..... 37-12

CHAPTER 38 – EXPLOSIVES 38-1

A. INTRODUCTION. 38-1
B. PURPOSE. 38-1
C. PROGRAM ELEMENTS..... 38-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 38-2
E. REFERENCES..... 38-9

CHAPTER 39 – RADIATION SAFETY..... 39-1

A. INTRODUCTION. 39-1
B. PURPOSE. 39-1
C. PROGRAM ELEMENTS..... 39-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 39-1
E. REFERENCES..... 39-4

CHAPTER 40 – SEARCH AND RESCUE 40-1

A. INTRODUCTION/PURPOSE..... 40-1
B. PROGRAM ELEMENTS..... 40-1
C. EXPLANATION OF PROGRAM ELEMENTS..... 40-1
D. REFERENCES..... 40-4

CHAPTER 41 – FIELD WORK 41-1

H-1112-1 SAFETY AND HEALTH MANAGEMENT (INTERNAL)

x

A. INTRODUCTION..... 41-1
B. PURPOSE..... 41-1
C. PROGRAM ELEMENTS..... 41-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 41-1
E. REFERENCES..... 41-10

CHAPTER 42 – MACHINES AND TOOLS..... 42-1

A. INTRODUCTION..... 42-1
B. PURPOSE..... 42-1
C. PROGRAM ELEMENTS..... 42-1
D. EXPLANATION OF PROGRAM ELEMENTS..... 42-1
E. REFERENCES..... 42-6

ILLUSTRATION 1 – SAMPLE CHEMICAL INVENTORY SHEET IL1-1

ILLUSTRATION 2 – SAMPLE HAZARD COMMUNICATION TRAINING CHECKLIST AND ATTENDANCE SHEET IL2-1

ILLUSTRATION 3 – SAMPLE RESPIRATOR INSPECTION CHECKLIST IL3-1

ILLUSTRATION 4 – EXPOSURE LEVELS AND DURATIONS IL4-1

ILLUSTRATION 5 – METHODS FOR ESTIMATING HEARING PROTECTION DEVICE ATTENUATION IL5-1

ILLUSTRATION 6 – COMPRESSED GAS CYLINDERS IL6-1

ILLUSTRATION 7 – CONFINED SPACES INVENTORY LIST IL7-1

APPENDIX 1 – BUREAU OF LAND MANAGEMENT, STATE OFFICE FISCAL YEAR SAFETY AND OCCUPATIONAL HEALTH ACTION PLAN..... AP1-1

APPENDIX 2 – ADMINISTRATIVE-USE UTV OPERATORS BRIEFING AP2-1

APPENDIX 3 – OFF-HIGHWAY VEHICLE OPERATOR TRAINING AND AUTHORIZATION RECORD AP3-1

APPENDIX 4 – FUEL FIRING DEVICE REQUIREMENTS..... AP4-1

APPENDIX 5 – NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION HEAT INDEX CHART..... AP5-1

APPENDIX 6 – OFF-HIGHWAY VEHICLE OPERATOR PRE-RIDE INSPECTION CHECKLIST.... AP6-1

APPENDIX 7 – FACILITY SAFETY INSPECTION CHECKLIST AP7-1

APPENDIX 8 – TRAILER SAFETY CHECKLIST AND EXPLANATIONS AP8-1

APPENDIX 9 – REQUIRED WARNING LABELS IN CAMPER TRAILERS AP9-ERROR! BOOKMARK NOT DEFINED.

APPENDIX 10 – PERSONAL SAFETY TIPS AP10-ERROR! BOOKMARK NOT DEFINED.

APPENDIX 11 – TRAINING AND DUTIES FOR CONFINED SPACE ENTRY AP11-1

APPENDIX 12 – RECLASSIFICATION OF PERMIT REQUIRED SPACE AP12-1

APPENDIX 13 – CONFINED SPACE ENTRY PERMIT..... AP13-1

Chapter 1 – Program Management

A. Introduction.

Line officers are responsible for the safety of their employees. Safety staff are available to assist line officers toward achieving employee safety by providing reasonable, feasible, and effective recommendations to address employee safety issues. This handbook provides a safety and occupational health program structure outlined by the **Bureau of Land Management (BLM)** Division of Safety, Health, and Emergency Management to ensure safety program consistency among state, center, district, and field offices. Adherence to the requirements stated within this handbook is mandatory. Any request for a waiver from this handbook must incorporate the principles of risk management and must be routed through the appropriate state director or associate state director for review and concurrence prior to being sent to the BLM Division of Safety, Health, and Emergency Management in Washington, D.C., for approval.

B. Purpose.

The purpose of this chapter is to introduce the BLM's safety and occupational health program. This handbook is intended to provide managers and safety staff (full time and collateral duty) with direction for implementation of safety and occupational health programs.

C. Program Elements.

1. Rights and Responsibilities
2. Safety and Health Program Management
3. Reporting Relationships
4. Safety and Health Management Team
5. Special Emphasis Programs
6. Forms

D. Explanation of Program Elements.

1. Rights and Responsibilities.
 - a. The BLM is responsible for:
 - 1) Providing work places, facilities, sites, and operations free from recognized physical or environmental conditions that are causing, or that have the potential to cause, harm to people or property.
 - 2) Complying with the **Occupational Safety and Health Administration (OSHA)** standards applicable to the agency.
 - 3) Developing, implementing, and evaluating the safety and

occupational health program in accordance with the requirements of section 19 of the Occupational Safety and Health Act of 1970 (as amended), Executive Order 12196, and the basic program elements prescribed in this handbook chapter (or approved alternate program elements).

- 4) Acquiring, maintaining, and requiring the use of approved personal protective equipment, approved safety equipment, and other devices necessary to protect employees.
 - 5) Providing essential specialized expertise. This may include the use of other agencies, professional groups, consultants, universities, labor organizations, and safety and health committees.
- b. Supervisors are responsible for, to the extent of their authority, furnishing employees with places and conditions of employment free from recognized hazards that are causing or are likely to cause death or serious physical harm. Supervisors must also comply with the safety and occupational health standards applicable to their agency and with all rules, regulations, and orders issued by the head of the agency with respect to the agency safety and occupational health program.
- c. Employees have the following rights and responsibilities:
- 1) Employees must comply with the standards, rules, regulations, and orders issued by their agency in accordance with section 19 of the Occupational Safety and Health Act and Executive Order 12196, where applicable to actions and conduct.
 - 2) Employees must use safety equipment, personal protective equipment, and other devices and procedures provided or directed by the agency and necessary for their protection.
 - 3) Employees have the right to report unsafe and unhealthful working conditions to appropriate officials without fear of reprisal.
 - 4) Employees are authorized official time to participate in the activities provided for in section 19 of the Occupational Safety and Health Act, Executive Order 12196, and the agency safety and occupational health program.

2. Safety and Health Program Management.

- a. BLM Manual 1112, "Safety," identifies six program elements that are the basis for the safety and occupational health program: program management, training, inspections, safety and health promotion, accident investigation and reporting, and program evaluation. These elements must be incorporated during the planning and implementation of new initiatives or special emphasis programs. State and center safety programs are evaluated against these six elements. Implementation of these elements is addressed in later chapters of this handbook.

- 1) Program management refers to the use of resources (staff levels, funding, equipment, and materials) to manage a program. Funding is addressed in Chapter 3.
 - 2) Training refers to the professional development of safety staff as well as training. Training and core competencies specific to safety staff are addressed in Chapter 5. Employee training is addressed through the use of risk assessments and program needs as defined in other chapters of this handbook.
 - 3) Inspections are addressed in Chapter 10.
 - 4) Safety and health promotion involves providing employees useful information and special events regarding safety in both on- and off-duty activities and is addressed in Chapters 6 and 7.
 - 5) Accident investigation and reporting involves reports of unsafe/unhealthful conditions and is addressed in Chapters 4, 8, and 9.
 - 6) Program evaluation is addressed in Chapter 11.
- b. Additionally, the BLM has adopted the “risk management” approach to hazard identification and mitigation. This approach helps managers assess identified hazards and provide for their mitigation. This approach also assists managers in reducing the overall risk to which their employees are exposed and helps ensure employees are exposed to a level in which the benefits outweigh the residual risk. This methodology and its implementation are more fully described in Chapter 2.
3. Reporting Relationships.
- a. State safety managers report directly to a deputy state director or higher official at the state level since BLM state safety programs are an inherent responsibility of these senior-level executives. State safety managers may not be supervised below the deputy state director level. State safety managers are expected to be comprehensive practitioners — those who already possess the knowledge and experience to do this job before the BLM places them in this position.
 - b. Full-time safety professionals (0018 series) below the state level report directly to either the district/field office manager or associate district/field office manager. Unless districts can provide adequate travel and training funds for a district safety manager to complete core competencies as defined in Chapter 5, these positions should not be trainee positions.
 - c. OSHA allows for written plans, such as occupant emergency plans and fire prevention plans, to be communicated orally where there are 10 or fewer employees in an office. Therefore, collateral duty safety officers are assigned where offices have more than 10 employees to assist the district safety manager with interpretation and implementation of written plans. Collateral duty safety officers also report to a field office manager or an associate field office manager for safety and health issues.

4. Safety and Health Management Team.

The Safety and Health Management Team is an integral part of the BLM's safety program. The team was specifically created to assist with the development and implementation of the program.

5. Special Emphasis Programs.

On occasion, special emphasis is placed on aspects of BLM operations to reduce the risk to employees, contractors, and the public. These special emphasis programs may be of short duration or last a number of years, depending on injury, illness, or property damage metrics and trends. Risk management techniques are used during development and implementation of these programs. Where appropriate, chapters will be created for this handbook to address these special emphasis areas.

6. Forms.

The following forms and matrices have been developed to assist with program management:

- a. Form 1112-3, "Job Hazard Analysis," has been revoked and replaced by BLM Form 1112-5, "Risk Management Worksheet."
- b. Form 1112-4, "Employee Report of Unsafe or Unhealthy Working Condition."
- c. Risk Assessment Code Matrix (see Chapter 2, Figure 2).
- d. Risk Decision Authority Matrix (see Chapter 2, Figure 1).
- e. Form 1112-8, "Hazard Abatement Plan."
- f. Form 1112-11, "Authorization to Drive."

E. References.

1. Title 29 of the **Code of Federal Regulations (CFR)**, Part 1960.
2. Executive Order 12196.
3. Department of the Interior, Departmental Manual, part 485.
4. BLM Manual 1112, "Safety."
5. Occupational Safety and Health Act of 1970.

Chapter 2 – Operational Risk Management

A. Introduction.

Operational risk management (ORM) is a continuous five-step process that provides management with a systematic method for identifying and managing the risks associated with any BLM operation. The purpose of the BLM's principle risk reduction process is to enhance performance and maximize the ability to complete tasks. The risk management process reduces injuries/deaths, reduces adverse public opinion, and promotes conservation of resources. However, the process does not eliminate risk altogether, sanction or justify violating the law, require a "go" or "no-go" decision, or eliminate the necessity for standards. All BLM employees, to include volunteers, must use this process to reduce risks in their work environment.

B. Purpose.

This chapter establishes the requirements of the BLM ORM program. (The implementation process of facility safety inspections also employs the risk management process and is discussed in Chapter 10.)

C. Program Elements.

1. Four Principles.
2. The Five-Step Process.
3. Two Types of Risk Assessments.
4. Risk Assessment Tools.
5. Responsibilities.

D. Explanation of Program Elements.

1. Four Principles.

Four principles control all efforts associated with ORM. These principles are continuously employed throughout all operations.

- a. Integrate ORM into decision-making, planning, preparation, and execution of all BLM activities.
- b. Make risk decisions at the appropriate level in the chain of command. Use the BLM ORM Risk Decision Authority Matrix (see Figure 1) to determine the leadership level needed to accept the risk.
- c. Accept no unnecessary risk.
- d. Accept risk only if the benefit outweighs the potential cost.

Figure 1 – BLM ORM Risk Decision Authority Matrix

Risk Decision Authority (RDA) Matrix						
Hazard Probability Code		Frequent (A) Immediate danger to health and safety of the public, staff, or property and resources.	Likely (B) Probably will occur in time if not corrected, or probably will occur one or more times	Occasional (C) Possible occurrence in time if not corrected	Rarely (D) Unlikely to occur; may assume exposure will not occur.	
Severity Code						
Catastrophic Imminent and immediate danger of death or permanent disability.	I	1 STATE DIRECTOR/ ASSOCIATE DIRECTOR	1	2	3	
Critical Permanent partial disability or temporary total disability.	II	1	2 DISTRICT MANAGER	3	4	
Significant Hospitalized minor injury or reversible illness.	III	2	3 FIELD OFFICE MANAGER	4 BRANCH CHIEF	5	
Minor First aid or minor medical treatment	IV	3	4	5	5 LINE SUPERVISOR	

Risk Decision Authority Key:

RDA 1 - State Director/Associate State Director

RDA 2 - District Manager

RDA 3 - Field Manager

RDA 4 - Branch Manager

RDA 5 - Line Supervisor

2. The Five-Step Process.

- a. **Step 1.** Identify the hazards. Break down the operation into essential tasks and identify the hazards associated with each task.
- b. **Step 2.** Assess the risks. Analyze each hazard, and assess the risk using the ORM Risk Assessment Code Matrix (see Figure 2)
- c. **Step 3.** Develop control measures and make a risk decision. Develop control measures that eliminate or reduce the hazard and associated risk to the lowest feasible level. As control measures are developed, reevaluate hazards until all risks are reduced to a level in which benefits outweigh potential cost. The level of risk remaining after controls have been identified and selected is the residual risk. The decision to accept or reject the residual risk(s) associated with an action must be made at the appropriate level according to the Risk Decision Authority Matrix (see Figure 1).
- d. **Step 4.** Implement control measures. Put controls in place that eliminate hazards or reduce their risks to an acceptable level.
- e. **Step 5.** Supervise and evaluate. Enforce the use of selected controls. Evaluate the effectiveness of controls and adjust or update as necessary.

Figure 2 – ORM Risk Assessment Code Matrix

Risk Assessment Code (RAC) Matrix					
Hazard Probability Code		Frequent (A) Immediate danger to health and safety of the public, staff, or property and resources.	Likely (B) Probably will occur in time if not corrected, or probably will occur one or more times	Occasional (C) Possible occurrence in time if not corrected	Rarely (D) Unlikely to occur; may assume exposure will not occur.
Severity Code					
Catastrophic Imminent and immediate danger of death or permanent disability.	I	1 CRITICAL	1	2	3
Critical Permanent partial disability or temporary total disability.	II	1	2 SERIOUS	3	4
Significant Hospitalized minor injury or reversible illness.	III	2	3 MODERATE	4 MINOR	5
Minor First aid or minor medical treatment	IV	3	4	5	5 NEGLIBLE

Risk Assessment Code Key:

RAC 1 – Critical

RAC 2 – Serious

RAC 3 – Moderate

RAC 4 – Minor

RAC 5 – Negligible

3. Two Types of Risk Assessments.

The two types of ORM risk assessments that may be used by management and employees are formal and informal (field) risk assessments. Both types use the five-step process to continually identify and analyze risks.

a. Formal Risk Assessments.

- 1) For formal risk assessments, use BLM Form 1112-5, “Risk Management Worksheet,” together with the Risk Assessment Code Matrix (see Figure 2). This form must be completed during the planning phase of any project and for all critical, serious, and moderate-level risk operations.
- 2) The “Risk Management Worksheet” must be completely filled out and approved at the appropriate level. The approval must be in writing in order to properly document the risk analysis.
- 3) All personnel involved in the operation must be briefed on the formal risk assessment as it pertains to their operational area. As operational personnel and conditions change, the initial risk assessment and any associated briefings should be updated.
- 4) The line supervisor or work lead must have a copy of the “Risk Management Worksheet” at the worksite.
- 5) The line supervisor is responsible for ensuring that control measures identified in the approved “Risk Management Worksheet” are actually reducing the risk and not creating hazards. New hazards that are identified during the operation, or changes in levels of risk, should be noted and briefed to affected personnel as operations continue. Remember, the risk assessment process is a continual process, and risks and control measures need to be continually assessed for changes throughout the operation.
- 6) At the conclusion of the operation, the project’s risk assessment should be reviewed to determine its level of effectiveness. An informal after-action review should address shortfalls and make recommendations for future similar operations.

b. Informal (Field) Risk Assessments.

- 1) Field risk assessments are used when a formal “Risk Management Worksheet” is not necessary, such as for small projects or routine recurring work. However, work leads may still choose to document this process using the “Risk Management Worksheet,” especially for recurring work, and to review the worksheet on an annual basis to note any changes in procedures or equipment that affect risk levels.
- 2) Supervisors and work leads must go through the same process of identifying hazards, assigning risk, and reducing that risk to the point in which the benefit outweighs the residual risk. This can be done at the start of the day or in a tailgate session before the project starts.
- 3) Identified hazards and planned controls must be discussed with all employees involved in the project. As new hazards are identified during the operations, employees and work leads determine new control measures to be implemented during daily updates.
- 4) If the residual risk is medium or above, project approval must be

elevated to the level of supervision specified in the Risk Decision Authority Matrix (see Figure 1).

4. Risk Assessment Tools.

Risk assessments may be accomplished deliberately in the planning stage of an operation using the Risk Assessment Code Matrix and the “Risk Management Worksheet,” or in the field using only the Risk Assessment Code Matrix (see Figure 2).

- a. **Use of the “Risk Management Worksheet.”** The worksheet provides a tool to identify hazards, assess risk, develop and implement control measures, enforce use of selected controls, and evaluate their effectiveness. Block-by-block instructions are on the back of the form.
- b. **Use of the ORM Risk Assessment Code Matrix.** The Risk Assessment Code Matrix (see Figure 2) is a tool that can be used to determine how risky an identified hazard is in terms of probability and severity. Each hazard is first assessed in relation to the probability of a hazardous incident occurring. Then, the severity of each hazard must be addressed. Severity is expressed in terms of degree of injury or illness, loss of or damage to equipment or property, or environmental damage. Finally, probability and severity are translated into a risk level that must be either accepted or rejected.
- c. **Use of the Risk Decision Authority Matrix and Levels of Risk.** There are five levels of risk that leadership must consider and accept or reject. These levels are determined through the use of the Risk Assessment Code Matrix (see Figure 2). The Risk Decision Authority Matrix (see Figure 1) graphically displays the leadership levels for acceptance of risk and is based on the severity of a hazard, should it occur, and the probability that the hazard will occur. Risk decisions must be made at the appropriate level in the chain of command. The five **risk assessment code (RAC)** levels and leadership approval levels are:
 - 1) **Critical Risk (RAC 1).** Represents an immediate danger of death or permanent disability, system loss, or major property damage. Requires state director or associate state director approval.
 - 2) **Serious Risk (RAC 2).** Represents a high level of threat of permanent partial disability, temporary total disability in excess of 3 months, major system damage, or significant property damage. Requires district manager or equivalent approval.
 - 3) **Moderate Risk (RAC 3).** Represents a moderate level of risk of minor injury, lost workday accident, compensable injury/illness, minor system damage, or minor property damage. Requires field office manager or equivalent approval.
 - 4) **Minor Risk (RAC 4).** Represents a low level of risk of the need for first aid, minor medical treatment, or minor system repair. Requires branch chief or equivalent approval

- 5) **Negligible Risk (RAC 5).** While there remains a risk of injury or property damage, it is unlikely to occur. Requires line supervisor approval.

5. Responsibilities.

Risk management must be incorporated into all policy decisions, project planning, and field operations. BLM management and employees must use this process to reduce the risk associated with BLM operations and tasks to the lowest level possible, commensurate with accomplishing the task. Responsibilities for integrating risk management include:

- a. Managers must integrate risk management into all decisions, policies, processes, planning, and operations.
- b. Supervisors must ensure that their employees, including volunteers and supervisors who approve risk assessments, receive risk management training, commensurate with their assigned duties. Supervisors must ensure that risk assessments are completed for project work. Risk assessments must be briefed to volunteers, and a copy of the risk assessment must be signed by the supervisor and the volunteer to indicate that they have received a briefing. Signed risk assessments must be reviewed at least annually or whenever duties change, and the assessments must be attached to volunteer agreements.
- c. Work leads must employ the risk management process to preclude unacceptable risks.
- d. Safety managers should assist employees and managers with development of risk assessments and risk management training as needed. Risk management training is available online through [DOI Talent](#).
- e. All employees, including volunteers, must ensure communication of risk (i.e., hazards, risks, controls) vertically and horizontally (i.e., with supervisors, co-workers, subordinates) within their organizations.
- f. Each state and center may establish risk approval levels within their organization so that acceptance levels are equivalent to those in the Risk Decision Authority Matrix (see Figure 1).

E. References.

1. Department of the Interior, Departmental Manual, part 485, Chapter 6, Inspections and Abatement.

Chapter 3 – Budget Planning

A. Introduction.

The BLM has a responsibility to establish and maintain an effective and comprehensive safety and occupational health program. Adequate funding is needed in order to establish and maintain such a program for all employees, volunteers, and contractors.

B. Purpose.

To assist and encourage safe and healthful working conditions for all employees, adequate funding must be provided to accomplish compliance and ongoing safety and health activities and initiatives.

C. Program Element.

1. Resources.

D. Explanation of the Program Element.

1. **Resources.** All BLM sub-activities must provide adequate funding to ensure the safety and health of BLM employees, volunteers, and contractors. This funding must be adequate to fulfill compliance requirements and BLM directives, which include abatement of noted deficiencies and providing sufficient supplies, personal protective equipment, and training in the field of safety and occupational health.

Sufficient staff must be provided to support the safety and occupational health program at all levels within the BLM. State and center staff should include safety managers, district or field office safety specialists, and collateral duty safety officers. Safety and occupational health managers function as program leaders, planners, and advocates in the budget planning process, and they inform managers of special initiatives or new compliance standards that require additional or special funding. Program managers maintain a current list of and budget justifications for priorities and projects throughout the BLM that need special funding. Program managers coordinate with benefitting activity managers to ensure that appropriate safety-related items are identified and addressed.

E. References.

1. Occupational Safety and Health Act, section 19, Federal Agency Safety Programs and Responsibilities.
2. 29 CFR 1960.7, Financial Management.

Chapter 4 – Annual Action Plan and Annual Reports

A. Introduction/Purpose.

Establishing goals is an important cornerstone to every safety and occupational health program. This chapter directs each state and center to develop a synopsis of safety and health program accomplishments and a safety and health action plan each fiscal year.

B. Program Elements.

1. Safety and Health Action Plan
2. Required Annual Reports

C. Explanation of Program Elements.

1. Safety and Health Action Plan.

All offices must develop an annual safety and health action plan, which outlines courses of action with the purpose of improving the unit's safety program.

- a. Offices should base the plan on an assessment of what is needed in order to make the safety program successful. In making this assessment, consider the following:
 - 1) BLM Manual Section 1 requirements.
 - 2) BLM Handbook H-1112-1.
 - 3) BLM National Safety Office initiatives.
 - 4) State director priorities.
 - 5) Special requirements identified by the office.
- b. The action plans should be tailored to meet the following objectives:
 - 1) Enhance the role of leadership in promoting a culture of safety.
 - 2) Engage employees in reaching safety and health commitments.
 - 3) Identify, evaluate, and control employee exposures to workplace hazards.
 - 4) Implement, evaluate, and continuously improve the **Department of the Interior (DOI) Safety and Occupational Health Program**, and meet or exceed all federal safety and health regulations and requirements.
- c. Once the assessment is complete, offices should prioritize all required actions and identify the amount of time and money needed to complete the plan.
- d. Safety personnel should then identify the amount of work that can be accomplished during the fiscal year given the available resources. The action

plan should address the most important safety issues for that office. It is not necessary to initiate actions in all of the program elements listed in BLM Manual 1112.

- e. For each selected item, establish a measurable goal. This goal will allow management to determine if each item has been completed.
- f. In addition, each state office must complete their action plan using the format in Appendix 1 tailored to their identified needs and resources. Once complete, this plan will be presented to senior management in that office for approval. A copy of the approved plan must be provided to the BLM National Safety Office by the end of the calendar year.

2. Required Annual Reports.

a. Occupational Safety and Health Administration Recordkeeping.

- 1) All BLM offices must enter recordable accidents in a record or log within 7 calendar days following the date management was notified of the occurrence. All offices must log injuries and illnesses using OSHA Form 300, "Log of Work- Related Injuries and Illnesses," or its equivalent. Statistical information from OSHA Form 300 is managed by and obtained from the [DOI Safety Management Information System, accident reporting database](#)
- 2) A summary of the information contained in OSHA Form 300A, "Summary of Work-Related Injuries and Illnesses," for each workplace must be posted no later than February 1 of the new calendar year and must remain posted, at a minimum, until April 30 that year in a conspicuous place(s), where notices to employees are customarily posted.

b. Annual Accomplishment Report.

Each state office must prepare an annual accomplishment report. The report must include, at a minimum: accomplishments that were made toward reaching the goals and objectives in the annual safety and health action plan.

- 1) A review of accident statistics and trends from the previous year.
 - 2) Other significant accomplishments or changes in the program.
- c. The state safety manager must complete and present this report to the senior managers at the state office and/or to the state leadership team. A copy must also be forwarded to the BLM National Safety Office by March 1 to be included in the BLM's annual OSHA report.
 - d. State safety managers should provide a midyear report to the state leadership team on: (1) progress toward annual action plan goals, (2) any goals that will not be met and why, and (3) expected final results to be reported in the end-of-year accomplishments briefing.

D. References.

1. 29 CFR 1960.66-74, Subpart I, Recordkeeping and Reporting Requirements.
2. 29 CFR 1904.30-38, Subpart D, Other OSHA Injury and Illness Recordkeeping Requirements.

Chapter 5 – Training and Core Competencies

A. Introduction.

Training is a key element in the successful prevention of injuries/illnesses and property loss and is an essential building block of an effective safety and occupational health program. Used appropriately, training provides workers the knowledge to work safely both at work and at home. Effective training helps create a safe and healthful work environment and improves employee morale and productivity, thereby improving organizational effectiveness.

B. Purpose.

Many OSHA standards have training as a required and foundational element of an effective safety and occupational health program. Used effectively, training helps create a safe and healthful working environment, which is essential to optimizing employee performance and achieving organizational goals.

C. Program Elements.

1. Requirements.
2. Senior Management Training.
3. Supervisor Training.
4. Employee Training.
5. Safety and Health Manger/Specialist and Collateral Duty Safety Officer Training.
6. Safety Committee Member Training.

D. Explanation of Program Elements.

1. Requirements.
 - a. Employee safety and occupational health training requirements may be task driven, or they may be OSHA requirements. For example, only some employees are required to receive forklift training, but all employees are required to receive training in blood borne pathogens. Supervisors must determine their employees' training needs based on the types of hazards that an employee may be exposed to during the conduct of their duties. A risk assessment must be used to determine specific training needs for an employee to perform their job safely. For information on specific training requirements for occupational health programs, refer to Chapters 19-33 of this handbook. Special training is required prior to operation of government vehicles or equipment. These specific training requirements are addressed in Chapters 14-18 of this handbook.
 - b. Training requirements for all employees are identified in 29 CFR 1960,

Subpart H, Training; 29 CFR 1910, Occupational Safety and Health Standards; 29 CFR 1926, Safety and Health Regulations for Construction; 49 CFR, Transportation; and Department of the Interior, Departmental Manual, part 485, Chapter 13, Safety and Health Training. For a summary of required safety training, refer to Table 1 in this chapter. All safety and occupational health training must be documented, and DOI Talent must be used as the employee's official training record. All employees are responsible for attending required safety training and for abiding by safe practices outlined in their training programs.

- c. DOI University is an accepted source of online safety training provided through DOI Talent for executives, supervisors, collateral duty safety officers, and employees. Recommended sources for safety and occupational health training are listed on the [BLM Space website](#).

2. Senior Management Training.

Management officials must be provided orientation and other learning experiences that enable them to manage the safety and health programs for their organizations. "Safety: Authorities, Roles, and Responsibilities for Executives" is a course available in DOI Learn that provides basic safety training for senior-level officials. This training addresses the leadership perspective of executive responsibilities, organization of the DOI Safety and Occupational Health Program, and the DOI Safety and Health Strategic Plan.

3. Supervisor Training.

Supervisors must be provided safety and health training that includes supervisory responsibility for providing and maintaining safe and healthful working conditions for employees; procedures for reporting hazards; procedures for investigating accidents; procedures for reporting accidents into the DOI Safety Management Information System; procedures for investigating reprisal allegations; procedures for abating hazards; and procedures for implementing the risk management process. Supervisory safety training can be obtained from DOI Talent. Supervisors should consult their state safety manager for additional sources of appropriate supervisory safety training.

Supervisors must receive training in the OSHA standards that are applicable to the work performed by their employees. Supervisors must ensure that employee and safety personnel training are consistent with the most current version of OSHA or consensus standards.

4. Employee Training.

- a. Supervisors must ensure employees, to include volunteers, are provided appropriate safety and health training, including specialized job safety and health training that is necessary to perform assigned duties safely. Each employee exposed to a job hazard must be provided with information and training on the nature of the job hazard(s), hazard recognition, and the

protective measures the employee must follow to prevent or minimize exposure to job hazards, prior to assignment of work exposing the employee to the hazard(s). Supervisors must be provided training in the OSHA standards applicable to the work performed by their employees. All employees must receive safety and health orientation. This training includes information on the Occupational Safety and Health Act of 1970; Executive Order 12196; 29 CFR 1960; Department of the Interior, Departmental Manual, part 485; BLM Manual 1112, "Safety;" BLM Handbook H-1112-1, "Safety and Health Management;" and state/center, district, or field office safety and health programs, as appropriate. DOI Learn provides BLM New Employee Orientation, which includes a safety component. Also, local orientations should be provided for new or transferring employees. Topics regarding local safety orientations may be found in the New Employee Safety Checklist.

- b. Unless specifically outlined in the individual or group volunteer agreement, volunteers must be provided safety and health orientation and specific safety training for the work to be performed. Safety orientation should be consistent with training requirements for employees performing similar tasks. However, safety orientation may be less comprehensive for groups of volunteers when the service is through a volunteer group agreement under the supervision of an experienced BLM group leader. Prior to beginning work, a risk assessment must be conducted to identify specific knowledge, skills, and training necessary to perform the activity safely and effectively. The job hazards, risks, and safe work procedures defined in the risk assessment must be communicated to the volunteer(s), and a copy must be attached to the volunteer agreement. Forms and checklists for volunteer safety must be completed and made a part of the project file and are located at the [BLM website](#).
- c. Table 1 describes safety training programs and training frequency. The list is not all-inclusive. Consult with local safety personnel for specific requirements.

Table 1 – Safety and Health for Field Operations

Position/Task	Authority	Frequency
Safety Training for Managers	29 CFR 1960.54 H 1112-1, chapter 5	Once
Safety Training for Supervisors	29 CFR 1960.55 H 1112-1, chapter 5	Once
Safety Training for Collateral Duty Safety Officers (CDSOs)	29 CFR 1960.58 H 1112-1, chapter 5	Within six (6) months of appointment
Safety Training for Safety Specialists	29 CFR 1960.56 H 1112-1, chapter 5	Commensurate with Core Competencies and Individual Development Plan (IDP)
Safety Orientation for Employees	29 CFR 1960.59 H 1112-1, chapter 5	Once ALL employees

Position/Task	Authority	Frequency
Safety Committee Training	29 CFR 1960.58	Within 6 months of appointment
Anhydrous Ammonia	29 CFR 1910.111	As determined by Risk Assessment (RA)
Arc Welding	29 CFR 1910.254 29 CFR 1926.351	Once, then as determined by RA
Arctic-Subarctic Survival		As determined by RA
Asbestos	29 CFR 1910.1001	As determined by RA
ATV Operation	H 1112-1, chapter 17	Prior to initial assignment and every 3 years thereafter
Aviation Safety Training	Aviation Management Directives H 1112-1, chapter 14	Passengers (between Public Use Airports or Controlled Helibases/ Helispots) — standard Briefing by the Pilot or Fixed-Wing or Helicopter Manager Resource Project Aircrew Member — training requirement varies, contact local or State Aviation Manager
Blaster's Certification and Training	H-1112-1, chapter 38	24 hours initial training, CDL prerequisite 8 hrs. yearly refresher
Blood borne Pathogens	29 CFR 1910.1030 H 1112-1, chapter 24	Annually for employees at increased risk due to assigned duties. Once – awareness level for employees not at increased risk
Chain Saw Certification	29 CFR 1910.266	Prior to initial assignment. S-212 or equivalent S-212 or equivalent

Position/Task	Authority	Frequency
Commercial Driver's License (CDL)	49 CFR 383-395	5 years, as determined by RA
Confined Space	29 CFR 1910.146	Prior to assignment; prior to change in permit space operations
Dangerous Animal Encounters		As determined by RA
Defensive Driving	H-1112-1, chapter 15	Prior to operating a motor vehicle for official purposes; once every 3 years
Desert Survival		As determined by RA
Emergency Medical Training (EMT)	29 CFR 1910.151	As determined by RA
Epinephrine (Bee Stings)	29 CFR 1910.151	As determined by RA
Ergonomics		As determined by RA
Evacuation/Fire Drill	29 CFR 1910.38	Upon initial employment
Fall Protection	29 CFR 1926.500	Prior to assignment
Towers	29 CFR 1910.29	
Telecommunication	29 CFR 1910.268	

Position/Task	Authority	Frequency
Firearms Safety (Proficiency Test) Firearms Training	H-1112-1, chapter 37	Annually — as identified in H-1112-2 and in RA
Fire Extinguisher	29 CFR 1910.157	Annually if use is required by the facility occupant emergency plan
First Aid/ Cardiopulmonary Resuscitation (CPR)	26 CFR 1910.151	First Aid — every 3 years or per certifying authority CPR — annually or per certifying authority
First Responder Awareness Level (HAZMAT)	29 CFR 1910.120	Upon initial employment and annually thereafter
Forklift Safety	29 CFR 1910.178 H 1112-1, chapter 18	Prior to operating Forklift
Gas Welding	29 CFR 1910.253 29 CFR 1926.350	Once, then as determined by RA
Hazard Communication (HAZCOM) “Employee Right-to-Know”	29 CFR 1910.1200 H 1112-1, chapter 21	Prior to initial assignment and whenever a new chemical, physical, or health hazard is introduced to work area
Hazard Tree Evaluation	29 CFR 1910.266	As determined by RA.
Hazardous Waste Operations and Emergency Response (HAZWOPER)	29 CFR 1910.120(e)	8/24/40 hours initially depending on duty assignment. Annual refresher as determined by RA
Hearing Conservation	29 CFR 1910.95 H 1112-1, chapter 27	Prior to exposure to noise at or above 8 hr. time-weighted average of 85 decibels or higher and annually, thereafter

Position/Task	Authority	Frequency
Horse Safety		As determined by RA
Lifting (Manual)Techniques		As determined by RA
Lockout/Tagout	29 CFR 1910.147 H 1112-1, chapter13	Once. Retraining as determined by RA when job assignment, machines, equipment or processes change
Mine Inspection Safety Procedures	BLM Handbook 3809-1, chapter 9	As determined by policy and RA
Motorized Watercraft	H-1112-1, chapter16	Prior to Operation. Motorboat Operator Certification Course: Initial training, 24 hrs. Refresher training, 8 hrs. every 5 years
Non-motorized Watercraft	H-1112-1, chapter 16	Prior to initial assignment
Nuclear Gauge Operators	NUREG 1556 10 CFR	Prior to initial assign-ment, then once every 5 years
Nuclear Gauge - Radiation Safety Officer	NUREG 1556 10 CFR	Prior to initial assignment, then once every 3 years
Oil and Gas Inspection Safety Procedures	BLM Handbook 3160-6	As determined by RA
Power-Operated Hand Tools	29 CFR 1926.302	Once, then as determined by RA
Personal Protective Equipment (PPE) Personal Protective Measures (PPM)	29 CFR 1910.132 29 CFR 1926.21	As determined by RA

Position/Task	Authority	Frequency
Respiratory Protection	29 CFR 1910.134	Prior to initial assignment, then annually
Risk Management	H-1112-1, chapter 2	Once. Periodically commensurate with duties
Safety Sign and Tag Recognition	29 CFR 1910.145	Once, then as determined by RA
Snowmobile Operation	H-1112-1, chapter 18	Prior to initial assignment, then every 3 years
Swift Water Rescue		As determined by RA
Welding, Cutting, Brazing	29 CFR 1910.252	Once, then as determined by RA
Wilderness Trauma Care	29 CFR 1910.151	As determined by RA
Wildland Firefighting	BLM Manual 9215 Referencing National Wildfire Coordinating Group's PMS 310-1: Wildland Fire Qualification Subsystem Guide	As determined by position requirements
Winch Operation		As determined by RA
Woodworking Tools	29 CFR 1910.213 29 CFR 1926.304	Once, then as determined by RA

5. Safety and Health Manager/Specialist and Collateral Duty Safety Officer Training.

- a. Competencies are the technical skills, knowledge, and behavioral characteristics essential to successfully perform the duties of a specific position. Competencies for BLM safety personnel are organized into three functional areas:
 - 1) Business Competencies.
 - 2) Professional Competencies.
 - 3) Technical Competencies.

This framework is further developed in the [“DOI Safety Training and KSAs Guidebook”](#)

Safety personnel should use this guidebook to identify requirements for inclusion in individual development and individual training plans. Training for safety personnel must be consistent with the most current version of OSHA or consensus standards.

- b. Full-time safety personnel and collateral duty safety officers must be provided occupational safety and health training through courses, laboratory experiences, field study, and other formal learning experiences to enable them to perform the necessary technical monitoring, consulting, testing, inspecting, hazard recognition, hazard evaluation and control, analysis of injury and illness data, and other related tasks necessary for effective program development and implementation. For full-time safety personnel, those major tasks include:
 - 1) Serving as program manager and technical expert for safety and health.
 - 2) Coordinating the safety and occupational health program.
 - 3) Conducting formal and recurring safety inspections.
 - 4) Ensuring all accidents and incidents are investigated and reported.
 - 5) Serving as a member and/or advisor to safety work groups.
 - 6) Conducting and/or coordinating safety and occupational health training.
 - 7) Administering specialized safety program functional areas, as needed.
 - 8) Conducting projects, special studies, and reviews on occupational safety and health issues and unhealthful working conditions.
 - 9) Providing leadership for the safety and health program.
- c. Managers must use the competencies outlined in the “Safety Training and KSAs Guidebook” when assessing potential candidates for state and district safety manager positions in order to make quality selections for these critical assignments. Full-time, comprehensive safety practitioners (someone who already has the knowledge and experience to do the job before the BLM places them in the position) should be selected when available, or managers

must commit to providing funding for training and travel expenses necessary to complete training that satisfies the requirements of the DOI guidebook.

6. Safety Committee Member Training.

Within 6 months of appointment, safety and health committee members must be provided training commensurate with the scope of their assigned responsibilities. For example, if the committee is expected to conduct facility safety inspections, their training must be sufficient to provide them with the ability to recognize hazards in the workplace. Training for safety committees must include an introduction to the BLM safety and occupational health program; recognition of hazardous conditions and environments; procedures for reporting, evaluating, and abating hazards; identification and use of safety and health standards and other rules and regulations; and agency procedures for reporting and investigating allegations of reprisal. Committee members must also be informed of section 19 of the Occupational Safety and Health Act, which describes an agency's safety programs and responsibilities, and Executive Order 12196, which authorizes employee's official time to participate in safety and occupational health activities.

E. References.

1. 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters.
2. 29 CFR 1910, Occupational Safety and Health Standards.
3. 29 CFR 1926, Safety and Health Regulations for Construction.
4. 49 CFR, Transportation.
5. Occupational Safety and Health Administration, Booklet 2254, "Training Requirements in OSHA Standards and Training Guidelines."
6. Department of the Interior, Departmental Manual, part 485, Chapter 13, Safety and Health Training.
7. "DOI Safety Training and KSAs Guidebook."

Chapter 6 – Safety and Health Promotion

A. Introduction.

An effective safety and health promotion effort enhances the overall safety program by providing useful information to employees concerning both on- and off-the-job activities. Promotional activities are meant to increase awareness of how to conduct operations safely.

B. Purpose.

Personnel need to consider their safety and health in a variety of environments. This chapter addresses various promotional activities and awards that can be used to increase safety awareness.

C. Program Elements.

1. Promotional Activities.
2. Awards.
3. Award Types.
4. Other Awards.
5. Awards Criteria.

D. Explanation of Program Elements.

1. Promotional Activities.

A wide variety of tools are available for promotional activities. When selecting a tool, keep the target audience in mind. Promotions that have proven effective in the past include:

- a. Newsletters or magazines,
- b. Safety alerts,
- c. [Consumer Product Safety Commission](#) notices,
- d. Seasonal emphasis campaigns (e.g., winter driving, holidays, summer),
- e. Videos, guest speakers, and discussions at all-employee meetings,
- f. Safety Week special emphasis activities, and
- g. Tailgate safety sessions.

2. Awards.

Awards provide recognition of units and individuals who best exemplify safe and healthful practices. Units and individuals are recognized for outstanding accident prevention efforts in accordance with the following criteria:

- a. The BLM National Safety Office will initiate award presentations for units or individuals whose contribution to the BLM's risk management efforts has impact beyond the state level.
- b. State safety offices will initiate procedures for awarding units or individuals whose contribution to the BLM's risk management efforts has impact beyond the field office level.
- c. Field office safety personnel and line managers will award groups or individuals for significant achievements in risk reduction efforts.

3. Award Types.

The following safety awards are available for both units and individuals:

- a. BLM Director's Safety Award
- b. Bureau Safety Manager's Special Award of Excellence in Safety
- c. BLM Award of Excellence in Safety
- d. BLM Accident Prevention Award of Honor in Safety
- e. BLM Accident Prevention Award of Accomplishment in Safety
- f. BLM Motor Vehicle Driver Safety Award
- g. National Wildland Fire Safety Award
- h. State Safety Award
- i. Safety Committee Award
- j. Collateral Duty Safety Officer Award

4. Other Awards.

Monetary awards, time-off awards, and gifts may be given in accordance with Bureau policy separately or in conjunction with the above nonmonetary awards.

5. Awards Criteria.

- a. BLM Director's Safety Award.
 - 1) **Recipients.** Field or district offices or centers
 - 2) **Eligibility Requirements.** This award recognizes the field or district office or center that demonstrates the implementation of the most effective safety and occupational health management program in the BLM. All BLM field or district offices or centers are eligible to compete for this award.
 - 3) **Initiator.** State directors, center directors, or respective safety and health managers.

- 4) **Nomination.** All awards are nominated by members of the BLM Executive Leadership Team and forwarded to the Assistant Director for Human Capital Management (internal awards). The Executive Leadership Team member will sign a nomination letter to the BLM Director that includes the following information:
 - a) Name of the employee(s).
 - b) Actions that warrant the award and support the basis for selection.
 - c) A BLM contact person who is able to answer questions about the nomination.
- 5) **Documentation.** The field/district office or center must provide tangible and convincing evidence in the form of written policy and programs, management, supervisor and employee communications, hazard reporting logs, photos, videos, and other documentation. Evidence must, at a minimum, include proof of:
 - a) Management commitment and program and policy communication,
 - b) Annual and strategic goal setting and accomplishment in safety performance,
 - c) Supervisor and employee training in risk management, hazard recognition, and hazard control,
 - d) Inspection, identification, and prioritization of resources for hazard control or correction,
 - e) Accident reporting, investigation, and corrective action implementation,
 - f) Employee involvement, safety committee activities, and safety promotions, and
 - g) A continuously decreasing rate of accidents and injuries or a zero accident rate maintained over a period of 2 or more years, as indicated by the DOI Safety Management Information System.
- 6) **Judging.** The BLM Deputy Director for Operations will chair an awards review committee comprised of members of the Executive Leadership Team. This committee will meet at the appropriate times to review all award nominations and provide final recommendations to the BLM Director.
- 7) **Type of Recognition.** The office or center will receive a specially designed certificate and a plaque. This award will be presented to one office within the BLM each year.

b. Bureau Safety Manager's Special Award of Excellence in Safety.

- 1) **Recipients.** Field units or individuals.

2) Eligibility Requirements.

- a) A field unit that performed a special act or took unusual initiative in risk management, or made significant improvements in its safety record when compared with the previous fiscal year, and experienced no lost time accidents for the period of time nominated.
- b) An individual who performed a special act or took unusual initiative in risk management that deserves special recognition.
- c) **Initiator.** Local line officer, supervisor, state directors, center directors, or respective safety and health managers.

3) **Nomination.** Nominations will be forwarded to the Bureau Safety Manager.

4) **Documentation.** The nomination package must include a description of the unit's or individual's performance and should include:

- a) The unit, location, and type and number of assigned personnel,
- b) Endorsement of the state director or center director,
- c) Methods used to effect or sustain accident reduction (e.g., safety training or new initiatives),
- d) Accident statistics,
- e) Major accomplishments, and
- f) Objectives for the coming year.

5) **Judging.** Bureau Safety Manager.

6) **Approver.** Bureau Safety Manager.

7) **Type of Recognition.** Certificate.

c. BLM Award of Excellence in Safety.

1) **Recipients.** Field units.

2) **Eligibility Requirements.** A field unit that completed 36 consecutive months without experiencing a lost time accident. Awards must not be approved for overlapping timeframes.

3) **Initiator.** Unit leadership, field office manager, center director, state director, or respective safety and health managers.

4) **Nomination.** Nominations must be submitted through the unit's leadership channels to the respective state or center for screening and verification of the unit's performance.

5) **Documentation.** Each level of the leadership channel must endorse the request and verify that the unit is eligible for the award.

6) **Judging.** As determined by the state or center.

- 7) **Approver.** State or center directors.
 - 8) **Type of Recognition.** Plaque.
- d. BLM Accident Prevention Award of Honor in Safety.
- 1) **Recipients.** Field units.
 - 2) **Eligibility Requirements.** A field unit that completed 24 consecutive months without experiencing a lost time accident. Awards must not be approved for overlapping timeframes.
 - 3) **Initiator.** Unit leadership, field office manager, center director, state director, or respective safety and health managers.
 - 4) **Nomination.** Nominations must be submitted through the unit's leadership channels to the respective state or center for screening and verification of the unit's performance.
 - 5) **Documentation.** Each level of the leadership channel must endorse the request and verify that the unit is eligible for the award.
 - 6) **Judging.** As determined by the state or center.
 - 7) **Approver.** State or center directors.
 - 8) **Type of Recognition.** Certificate.
- e. BLM Accident Prevention Award of Accomplishment in Safety.
- 1) **Recipients.** Field units.
 - 2) **Eligibility Requirements.** A field unit that completed 12 consecutive months without experiencing a lost time accident. Awards must not be approved for overlapping timeframes.
 - 3) **Initiator.** Unit leadership, field office manager, center director, state director, or respective safety and health managers.
 - 4) **Nomination.** Nominations must be submitted through the unit's leadership channels to the respective state or center for screening and verification of the unit's performance.
 - 5) **Documentation.** Each level of the leadership channel must endorse the request and verify that the unit is eligible for the award.
 - 6) **Judging.** As determined by the state or center.
 - 7) **Approver.** State or center directors.
 - 8) **Type of Recognition.** Certificate.
- f. BLM Motor Vehicle Driver Safety Award.

- 1) **Recipients.** BLM employees.
 - 2) **Eligibility Requirements.** A nominee must complete the following without any “at fault” on-duty vehicle accidents or moving traffic violations:
 - a) 12 months or 10,000 miles of BLM administrative vehicle operation,
 - b) 12 months or 8,000 miles of off-highway/off-road driving, and
 - c) 12 months or 1,500 hours of materials handling equipment operation.
 - 3) **Initiator.** Unit leadership or local line supervisor.
 - 4) **Nomination.** Nominations will be made in accordance with state policy.
 - 5) **Documentation.** As required by state policy.
 - 6) **Judging.** As required by state policy.
 - 7) **Approver.** As required by state policy.
 - 8) **Type of Recognition.** Certificate.
- g. **National Wildland Fire Safety Award.** This award is managed by the BLM Fire and Aviation Directorate, and an annual award announcement identifies award criteria.
- h. **State Safety Awards.** States are encouraged to initiate a state-level award to recognize individual or group proactive achievements in safety.
- i. **Safety Committee Award.**
- 1) **Recipient.** Field office, district office, or center safety committees.
 - 2) **Eligibility Requirements.** A committee must have an approved charter and must be recognized by management. The committee must have been activated for at least 1 year. The committee must have representatives from all program areas in the office and a management representative.
 - 3) **Initiator.** Field office, district office, or center manager.
 - 4) **Nomination.** Nominations must be forwarded through the state safety manager and endorsed by the state or center director.
 - 5) **Documentation.** The documentation package should include a detailed description of the following:

- a) Accomplishments for the past year, such as any actions that can be tied directly or indirectly to accident reduction (loss control measures developed and implemented); best business practices implemented; input to the local annual safety action plan; participation in promotional activities; or any material published by the committee (e.g., minutes, pamphlets, brochures),
 - b) Training completed by committee members, as required by 29 CFR 1960,
 - c) Frequency of meetings and how minutes are distributed to employees,
 - d) Copy of the approved charter, and
 - e) Other significant accomplishments for the period of time nominated.
- 6) **Judging.** A national panel convened by the BLM National Safety Office.
 - 7) **Approver.** The BLM Designated Agency Safety and Health Official (DASHO)
 - 8) **Type of Recognition.** Plaque.
- j. Collateral Duty Safety Officer Award.
- 1) **Recipients.** Field office, district office, or center collateral duty safety officer.
 - 2) **Eligibility Requirements.** The collateral duty safety officer must have been assigned to the position for at least 12 consecutive months.
 - 3) **Initiator.** Field office, district office, or center manager.
 - 4) **Nomination.** Nominations must be forwarded through the state safety manager and endorsed by the state or center director.
 - 5) **Documentation.** The documentation package should include a detailed description of the following:
 - a) Meeting or demonstrating significant progress toward completion of core competency training requirements,
 - b) Safety initiatives that were developed or implemented,
 - c) Safety and occupational health objectives that were exceeded, and
 - d) Other successes or special achievements for the period of time nominated.
 - 6) **Judging.** National panel convened by the BLM National Safety Office.
 - 7) **Approver.** The BLM DASHO.

8) Type of Recognition. Plaque

E. References.

1. State safety web pages.
2. [BLM National Safety Office web page.](#)
3. [National Interagency Fire Center.](#)
4. [Department of the Interior SafetyNet.](#)
5. [National Safety Council.](#)
6. [Consumer Product Safety Commission.](#)

Chapter 7 – Safety Committees

A. Introduction.

A safety committee is a tool that allows employees to voice concerns about safety issues without fear of criticism from coworkers and provides an opportunity for employees to have safety concerns addressed. In addition to providing an open line of communication between management and employees, safety committees involve employees in processes and procedures that are in place at the facility and empower employees with responsibilities and authority for recommending safety improvements.

B. Purpose.

Organizations must establish safety and health committees within the BLM at the state, district, and field office levels. The committees will provide advice and assistance to managers and safety professionals. They should also provide a channel of communication between employees and management to assist management in providing a safe and healthful workplace.

Committees should use a charter to set forth the role of individual committees in safety and health programs and must ensure that committee members are trained on roles and responsibilities within 6 months of appointment.

C. Program Elements.

1. State/Center Safety Management Committee.
2. District-Level Safety Management Committee.
3. Field Office-Level Safety and Health Committee.

D. Explanation of Program Elements.

1. State/Center Safety Management Committee.
 - a. The purpose of a state or center safety management committee is to provide senior-level oversight and direction of the state safety program and to monitor its performance. Typical duties should include:
 - 1) Assisting in the development and implementation of the annual state safety and health action plan.
 - 2) Reviewing significant accident trends in the state and making recommendations for corrective actions. The state safety manager must ensure information made available to the safety management committee is sanitized (containing no **personally identifiable information** (PII) to preserve Privacy Act information.
 - 3) Addressing issues forwarded by district-level safety committees.
 - 4) Making recommendations to members of management so they can

assure adequate resources are provided to implement the safety program.

- 5) Promoting and encouraging members of the management team to promote risk management concepts.
 - 6) Ensuring that records are kept of all committee meetings and activities and submitting the records to the state safety and occupational health manager.
 - 7) Promoting best practices between district safety programs and sharing lessons learned.
- b. The state leadership team will determine safety management committee membership, but the committee should include senior managers from the district and/or field offices, as well as the state office. The associate state director should serve as the chairperson.

2. District-Level Safety Management Committee.

- a. The purpose of a district safety management committee is to provide district-level oversight and direction to the safety program. The committee must support the overall direction of the state safety program integrated within the district and monitor its performance. Typical duties should include:
- 1) Assisting with (when required) and reviewing the district safety action plan.
 - 2) Reviewing sanitized accident reports and trends that do not contain PII (in order to preserve Privacy Act information) and making recommendations to management for corrective actions.
 - 3) Addressing issues forwarded to the district safety management committee by the field office safety committees or other employees.
 - 4) Recommending abatement options to members of management, so management can allocate resources to address safety and health deficiencies.
 - 5) Promoting and encouraging members of the management team to promote risk management concepts.
 - 6) Assisting field office managers and supervisory personnel with the implementation of district safety initiatives at the district level.
 - 7) Supporting management by initiating safety promotional activities, such as awards programs, safety rallies, etc.
 - 8) Ensuring that records are kept of all committee meetings and activities and making the records available to employees within the district.
- b. Committee membership is determined by district leadership, but the committee should include senior field office managers and employee

representatives from the field office safety committees. Someone other than the district safety and occupational health manager/specialist or field office collateral duty safety officer should chair the district safety committee.

3. Field Office-Level Safety and Health Committee.

- a. A field office safety and health committee functions in much the same manner as the district safety management committee and is established where district-level safety committees do not exist or are impractical due to excessive geographic separation. Field offices are encouraged to participate in district-level safety committees. Typical duties may include those listed for district safety management committees and the following:
 - 1) Developing and reviewing the field office safety action plan based on direction in the district safety action plan.
 - 2) Assisting in the review of employee complaints of unsafe or unhealthful working conditions.
 - 3) Ensuring that records are kept of all committee meetings and activities and making the records available to employees in the field office.
- b. Committee membership is determined by field office leadership, but the committee should include senior field office managers and employee representatives. Someone other than the district safety and occupational health manager/specialist or collateral duty safety officer should chair the field office safety and health committee.

E. References.

1. 29 CFR 1960.58, Training of collateral duty safety and health personnel and committee members.
2. Executive Order 12196.
3. Department of the Interior, Departmental Manual, part 485, Chapter 9, Department Safety and Occupational Health Councils, Committees, and Working Groups.

Chapter 8 – Employee Reports of Unsafe/Unhealthy Working Conditions

A. Introduction.

All employees are responsible for identifying and reporting potentially unsafe or unhealthy working conditions. An essential element of the BLM safety and occupational health program is detecting unsafe or unhealthy working conditions at the earliest possible time and prompt correction of hazards at the lowest possible working level. Executive Order 12196 requires that agency inspections be conducted within 24 hours of employee reports of imminent danger conditions, within 3 working days of reports of potentially serious conditions, and within 20 working days of reports of other than serious safety and health conditions. However, an inspection may not be necessary if, through normal management action and with prompt notification of employees and safety and health committees, the identified hazardous condition(s) can be and are abated immediately.

B. Purpose.

The purpose of employee reports is to inform the agency of the existence of or potential for unsafe or unhealthy working conditions. A report of this nature is not a grievance. This chapter provides guidance in establishing a channel of communication between BLM employees and those with responsibilities for safety and health matters (e.g., their supervisor, safety and health officials, safety and health committees, safety and health inspectors, the head of the agency, or the Secretary). These channels of communication are intended to assure prompt analysis and response to reports of unsafe or unhealthy working conditions in accordance with the requirements of Executive Order 12196. Since many safety and health problems can be eliminated as soon as they are identified, the existence of a formal channel of communication must not preclude immediate corrective action by an employee's supervisor in response to oral reports of unsafe or unhealthy working conditions where such action is possible. Nor should an employee be required to await the outcome of such an oral report before filing a written report pursuant to the provisions of this chapter.

Any employee or representative of employees who believes that an unsafe or unhealthy working condition exists in a workplace, where such employee is employed, has the right and is encouraged to make a report of the unsafe or unhealthy working condition to a supervisor and an appropriate agency safety and health official and request an inspection of such workplace for this purpose. The report must be written either by the individual submitting the report or, in the case of an oral notification, by the supervisor, official or other person designated to receive reports in the workplace. Any such report must contain the name of the employee or representative of employees. Upon the request of the individual making the report, no person will disclose the name of the individual making the report or the names of individual employees referred to in the report, to anyone other than authorized representatives of the Secretary. In the case of imminent danger situations, employees must make reports by the most expeditious means available.

C. Program Elements.

1. Policy.
2. Responsibilities.
3. Time Requirements.
4. Recordkeeping.
5. Appeals Process.

D. Explanation of Program Elements.

1. Policy.

Essential elements of the BLM safety and occupational health program are detecting unsafe or unhealthful working conditions at the earliest possible time and prompt correction of hazards at the lowest possible working level. All BLM employees must report unsafe or unhealthful working conditions to their immediate supervisor or, if unavailable, to the next supervisory level, who must then promptly investigate the situation and take appropriate corrective action. Employees may also inform their local safety specialist or state safety manager or a member of the safety committee.

2. Responsibilities.

Supervisors and safety professionals must ensure that the following procedures for employees to report unsafe/unhealthful working conditions are in place at all work locations.

- a. Notices publicizing the right of employees to report hazardous situations must be posted at all places employees normally report for duty. The OSHA “Job Safety and Health: It’s the Law” poster provides this information. Instructions for obtaining the poster are at the [Occupational Safety and Health Administration website](#).
- b. Employees have the right to remain anonymous if they so desire. The OSHA poster provides examples of how employees can report anonymously.
- c. Oral reports to supervisors are encouraged as the quickest and most effective method of hazard identification and abatement. Employees may also submit concerns in writing or use Form 1112-4, “Employee Report of Unsafe or Unhealthful Working Condition.” This form is provided for the assistance of employees but is not required. Employees may submit reports in any format. Although offices often use an informal process of reporting hazards, a formal process should be established for each office and communicated to all employees.
- d. Step-by-step procedures and processing channels must be in place for employees to report conditions believed to be unsafe or unhealthy. For example, reported hazards can be listed and their status tracked on an internal office record of deficiencies until they are abated. Managers must ensure that employees remain informed of progress toward full abatement until abatement

is complete.

- e. The report originator must receive a timely and effective response (see section D.3 for specific time requirements).
- f. Procedures to appeal must be in place in case the employee is unsatisfied with the response to a report.
- g. Safeguards must be in place to ensure that employees are not subjected to restraint, interference, coercion, discrimination, or reprisal by virtue of their filing a report, either formally or informally, on unsafe/unhealthy working conditions. Allegations of reprisal will be filed in accordance with existing BLM grievance procedures.
- h. Until hazards are abated, notices must be posted in the immediate vicinity of the hazard area to advise employees of serious unsafe/unhealthy working conditions and interim protective measures.

3. Time Requirements.

- a. Reports of imminent danger conditions must be investigated within 24 hours. Imminent danger is defined as a situation posing the threat of immediate death or serious physical injury.
- b. Potentially serious conditions must be investigated within 3 working days.
- c. Other hazardous conditions must be investigated within 20 working days.
- d. Employees or representatives who submit a report must be notified in writing by the official in charge of the establishment within 15 calendar days if the official does not plan to make an inspection.
- e. A copy of the BLM's report of an inspection, made as a result of an employee's formal report of an unsafe or unhealthy condition, must be provided to the employee or the employee's representative within 15 calendar days after completion of investigating a safety concern and within 30 calendar days for a health concern. If additional time is required, the employee or representative must be notified of the expected due date.

4. Recordkeeping.

- a. Employee reports of hazardous conditions must be logged as required by 29 CFR 1960.28(d)(1).
- b. A record of the report and subsequent investigation must be retained for at least 5 years following the end of the fiscal year in which final action on the report was taken. The record should be retained in the files of the safety office that conducted the investigation.

5. Appeals Process.

In the event that an employee is dissatisfied with the response to the initial report of unsafe or unhealthful working conditions, the employee has the right to appeal as follows:

- a. **State Safety Manager.** The state safety manager must investigate the report on behalf of the state director. This investigation should take no more than 20 days from the time of receipt. A written report should be provided to the employee giving the results of the investigation within 15 days of completion. If it is not possible to complete the investigation of the situation within the designated timeframe, an interim report must be provided to the employee.
- b. **BLM Chief of Safety, Health, and Emergency Management.** If the employee is dissatisfied with the state safety manager's investigation results, the employee may appeal to the BLM Chief of Safety, Health, and Emergency Management, who will investigate. This investigation should take no more than 20 days from the time of receipt. A written report should be provided to the employee giving the results of the investigation within 15 days of completion. If it is not possible to complete the investigation of the situation within the designated timeframe, an interim report must be provided to the employee.
- c. **BLM Designated Agency Safety and Health Official.** If the employee is dissatisfied with the BLM Chief of Safety, Health, and Emergency Management's investigation results, the employee may appeal to the BLM DASHO, who will investigate. This investigation should take no more than 20 days from the time of receipt. A written report should be provided to the employee giving the results of the investigation within 15 days of completion. If it is not possible to complete the investigation of the situation within the designated timeframe, an interim report must be provided to the employee. This is the employee's final appeal within the BLM. For the BLM, the DASHO is the Assistant Director for Human Capital Management.
- d. **U. S. Department of Labor, OSHA.** Employees are authorized, in accordance with 29 CFR 1960, to file a report with the Department of Labor, OSHA, at any time. Employees are recommended to try to resolve the issue at the local level first, before filing a report with OSHA.

E. References.

1. Department of the Interior, Departmental Manual, part 485, Chapter 8, Employee Reports of Unsafe Conditions and Allegations of Reprisal.
2. 29 CFR 1960.8, Agency Responsibilities.
3. 29 CFR 1960, Subpart D, Inspection and Abatement.
4. 29 CFR 1960, Subpart G, Allegations of Reprisal.

Chapter 9 – Accident Investigation and Reporting

A. Introduction.

Employees are required to immediately report to their supervisor every job-related accident or incident.

B. Purpose.

Managers and supervisors must investigate and record all personal injuries and property damage promptly and accurately to the [Department of the Interior Safety Management Information System \(SMIS\) website](#). SMIS information system is used to furnish data for mandatory OSHA reports, fire safety reports, property damage reports, and the evaluation of safety and health programs. All reportable accidents must be logged into SMIS within 7 calendar days of the incident.

C. Program Elements.

1. Office of Workers' Compensation Forms.
2. Investigations and Reporting Different Types of Accidents.
3. Serious Accidents.
4. Serious Accident Investigation Team.
5. Responsibilities Following Serious Accidents.
6. Accident Files and Records Maintenance.

D. Explanation of Program Elements.

1. Office of Workers' Compensation Forms.

When an occupational injury or disease occurs, the required forms for examination or treatments, compensation claims, attending physician's report, and termination of total or partial disability should be obtained from the employee's personnel or compensation office. Information on the procedures for filing claims for occupational injury (Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation, Form CA-1), occupational illness (Notice of Occupational Disease and Claim for Compensation, Form CA-2), and occupational fatalities (Official Superior's Report of Employee's Death, Form CA-6) is available from the appropriate servicing personnel office or the BLM Handbook entitled, Managing Human Resources: Office of Workers Compensation Program (Information Bulletin 97-132, September 1, 1997). Completed forms are sent to the BLM OWCP coordinator for processing. Copies are placed in the Employee's Medical Folder.

2. Investigations and Reporting Different Types of Accidents.

Following treatment of the injured employee, the supervisor must initiate investigations of all accidents/incidents, either personally or through a trained accident investigator. The accident investigation will include compiling facts that led up to the incident, actions or inactions culminating in the incident, and post-incident actions relating to the incident.

- a. **Visitor Accidents.** All known visitor accident/incidents on public lands must be reported on the **SMIS electronic Accident/Incident Report** (SMIS report).
- b. **Agency Provided Medical Care.** If an employee's injuries are treated via **agency-provided medical care (APMC)**, a SMIS electronic Accident/Incident Report, must be completed. The immediate incident supervisor, the BLM employee, and the home unit supervisor will work together to ensure that the SMIS report is submitted.
- c. **Motor Vehicle Accidents.** The operator of any motor vehicle used for official business and involved in an accident is required to provide data on that accident. The data is needed for safety analysis, tort claim actions, and property damage reimbursements. The data will be provided on the forms specified below to the operator's supervisor within 1 working day of the incident.
 - 1) **SMIS Accident/Incident Report the SMIS.** The SMIS report is completed by the supervisor, not the employee, and is based on the report of the employee(s) involved and the results of the supervisor's investigation to determine the cause of injuries or property damage.
 - 2) **Standard Form-91 (SF-91), Operator's Report of Motor Vehicle Accident (REV.2 93).** Section I through IX is completed by the operator at the scene of the accident. The supervisor must complete Section X and sign as the Accident Investigator in Block 87. The District/Field Office Manager must complete Section XIII and sign as the Accident Reviewing Official in Block 88. For all GSA vehicles, the original SF-91 will be sent to the GSA vehicle motor pool manager. For Department of the Interior vehicles, the SF-91 will be sent to the appropriate Fleet Manager.
 - 3) **Standard Form-94 (SF-94), Statement of Witness.** SF-94 will be completed at the scene of the accident and forwarded with SF-91.
 - 4) **State and/or Local Reports From Police or Motor Vehicle Departments.** A copy of all police or motor vehicle department reports will be submitted with Standard Form 91, or when received, and forwarded through channels. Operators are responsible for submitting state motor vehicle accident forms, as required, to the motor vehicle department.
- d. **Aircraft Accidents.** The DOI Office of Aviation Services coordinates the technical investigations of all Departmental aircraft accidents. This action does not alleviate the requirement for Bureaus to submit SMIS reports. Some of the information in technical aircraft accident investigation reports is

sensitive and is not subject to discovery within the provisions of the **Freedom of Information Act (FOIA)**. Sensitive information resulting from technical aircraft investigations will not be included on the SMIS report. In the Narrative of Accident/Incident, include only the words "Aircraft Accident." "Corrective Action Taken or Planned" will be left blank. OAS is designated as the Office of Record for all original copies of aircraft accident reports (see 352 DM 6 for additional information).

- e. **Boating Accidents. U.S. Coast Guard (USCG) Form 3865, Boating Accident Report**, will be completed whenever an accident occurs in waters within USCG jurisdiction and results in the loss of life, injury causing incapacitation in excess of 72 hours, or property damage in excess of \$500 (see 33 CFR 173.55 - Report of Casualty or Accident). This report will be submitted to the USCG. A SMIS report is also required.
- f. **Wildland and Prescribed Fire-Related Shelter Deployments and Entrapments.** The initial report of shelter deployments and/or entrapments will be made in accordance with the instructions listed on the **National Fire Equipment System (NFES) Form No. 0869, National Wildland Fire/Entrapment Report**. The final reports, which are completed at the local level, will be forwarded to the National Interagency Fire Center for review, data collection, and dissemination.

3. Serious Accidents.

A serious accident is defined as an accident caused by an employee action, BLM condition, or activity that results in:

- a. One or more fatalities or imminently fatal injuries or illnesses to employees, volunteers, contractors, emergency firefighters, or the public;
- b. Three or more employees, volunteers, contractors, emergency firefighters, or public individuals hospitalized;
- c. Property damage, including site mitigation and cleanup, of \$250,000 or more; or
- d. Accidents that a State Director, the BLM DASHO, or the Bureau Safety Manager feel warrant further investigation.

4. Serious Accident Investigation Team.

Serious accidents will be investigated by a **Serious Accident Investigation Team (SAIT)** or **Trained Investigator (TI)** assigned or approved by the BLM Safety Manager and appointed by the BLM DASHO.

5. Serious Accident Responsibilities.

- a. **Employees.** Employees must:

- 1) Upon arriving at a serious accident scene:
 - a) Obtain emergency aid for the injured,
 - b) Protect others from injury,
 - c) Protect property from unnecessary damage, and
 - d) Promptly notify their supervisor and provide complete and accurate information.
- b. **Supervisors.** Supervisors must:
 - 1) Obtain emergency aid for injured personnel and to provide protective measures for others,
 - 2) Notify, immediately, the appropriate office head (i.e., Resource Area Manager, District/Field Manager, State or Center Director) and the designated Safety and Health Manager/Coordinator,
 - 3) Secure the accident site and protect physical and administrative evidence until the investigator has completed work and released the site, and
 - 4) Brief the investigator(s) upon arrival and support the investigators as requested.
- c. **Managers.** The BLM manager, usually the District/Field Manager or Associate Director who has direct line supervision over employee activity, will:
 - 1) Implement the actions specified in the National Wildfire Coordinating Group publication, "Agency Administrator's Guide to Critical Incident Management" (PMS 926/NFES 1356),
 - 2) Review actions to be taken in the event of a fatality of a BLM employee as set forth in the BLM publication, Employee Casualty Guide for Managers and Supervisors (republished in 1999 and available from the Printed Materials Distribution Section (PMDS), BC-650B, Order No. P-307),
 - 3) Provide oversight of the accident investigation,
 - 4) Fund all expenses required to conduct a thorough accident investigation, and
 - 5) Ensure the correction of any deficiencies noted in the Management Evaluation Report recommendations developed by the SAIT and the corrective action plan, and provide a status report to the DASHO, through the First Level Executive Manager, at least every 90 days until all appropriate, corrective actions are implemented.
- d. **Safety and Health Managers.** It is the responsibility of safety and health managers to:
 - 1) Ensure that a verbal report of all serious accidents is sent, as soon as possible, to the Bureau Safety Manager,

- 2) Discuss immediate actions the manager should take to get ready for the SAIT,
- 3) Arrange for SAIT Investigator's Kit to be shipped to the office manager,
- 4) Notify the nearest Federal OSHA Area Office (after hours, call 1-800-321- OSHA) of a serious accident within 8 hours of the accident. This report will include the establishment name, location of the accident, time of the accident, number(s) of fatalities or hospitalized employees, contact person, phone number, and a brief description of the accident, and
- 5) Forward a written preliminary notice within 48 hours of the incident to the Safety Manager, which contains only the basic facts intended for information sharing purposes.

e. **BLM Safety Manager.** The BLM Safety Manager should:

- 1) Ensure that adequate measures are in place to promptly begin a serious accident investigation. As the BLM DASHO's designated representative, assign or approve the assignment of selected individuals to an SAIT. Ensure that appropriate, qualified personnel and resources are immediately available to conduct and support the investigation,
- 2) Review the findings from serious accident investigations, approve the findings and recommendations if appropriate, and prepare addendums to the findings and recommendations,
- 3) Provide for long-term storage of evidence,
- 4) Ensure DOI and OSHA notifications are accomplished, and
- 5) Authorize the SAIT, when appropriate, to combine the Factual and Management Reports.

f. **BLM DASHO.** The BLM DASHO will:

- 1) Authorize an SAIT or TI with the assistance of the BLM Safety Manager. In the case of a serious, fire-related accident occurring during a Department of Agriculture Forest Service managed fire, a Department of the Interior managed fire, or a jointly managed fire, the SAIT will include personnel from both the Department of the Interior and the Department of Agriculture. Coordinate with the SAIT Team Leader or TI to ensure that appropriate personnel and resources are immediately available to conduct and support the investigation. Ensure that the SAIT or TI has full authority to investigate, interview individuals, search records, record and attach evidence, and obtain the resources necessary to complete the investigation. Obtain the Factual and Management Reports (due within 45 calendar days of the accident occurrence) and send a copy of the Factual Report to the DOI Office of Managing Risk and Public Safety.

- 2) Review the Factual Report and Management Report.
- 3) Ensure, upon acceptance of the Management Report recommendations, that a corrective action plan is developed by the First Executive Level Manager (Assistant Directors, State and Center Directors), whose organization incurred the accident. The plan must incorporate management initiatives developed to address the causal factors of the accident based upon Management Report recommendations. The corrective action plan is to be completed within 21 working days of the receipt of the Management Report.
- 4) Ensure that the final report, which includes the Factual Report, the Management Report and its recommendations, and the corresponding corrective action plan are sent to the Departmental DASHO.
- 5) Recommend to the Bureau Director, if appropriate, the appointment of a Board of Review.

6. Accident Files and Records Maintenance.

Bureau safety and health records disposal is governed by record schedules approved by the Archivist of the United States, National Archives and Records Administration, and BLM Manual Section 1272. Access to accident records by employees and their representatives will be in accordance with 29 CFR1910.20.

Chapter 10 – Inspections and Abatements

A. Introduction.

Hazard identification and abatement are key components of an effective safety and occupational health program and are essential to reducing injury and property loss caused by accidents. Effective inspections are the tools that evaluate worksite conditions to ensure the BLM is providing a safe and healthful working environment for employees, volunteers, and contractors and a safe experience for members of the visiting public.

B. Purpose.

This chapter specifies the minimum requirements for conducting formal inspections of BLM facilities for hazards and timely abatement of identified hazards.

C. Program Elements.

1. Requirements.
2. Safety Inspections.
3. Qualifications for Inspectors.
4. Formal Inspection Procedure.
5. Occupational Safety and Health Administration Inspections.
6. Inspection of Unsafe or Unhealthful Working Conditions.
7. Imminent Danger.
8. Deficiency Abatement Requirements.
9. Inspection Records.

D. Explanation of Program Elements.

1. Requirements.

There are two components to a comprehensive evaluation of a safety program. The first is an inspection of the physical facilities to identify and abate unsafe conditions. The second is an evaluation of the safety program and management (see Chapter 11); safety program evaluations are essential to identify risks and develop procedures to reduce risk to an acceptable level. Both components must be inspected to obtain a complete view of a unit's safety program.

2. Safety Inspections.

- a. The routine inspection of all operations, workplaces, and facilities is a continuous part of every supervisor's responsibility. The identification of

hazards requires a daily review of facilities, workplaces, equipment, and operations by every BLM employee as a part of their daily work routine.

- b. Formal safety inspections of physical facilities must be made by a qualified inspector at least once each fiscal year to review existing conditions and to assess the adequacy of safety efforts to eliminate hazards and reduce accidents and illnesses. More frequent inspections must be conducted where there is an increased risk of accident, injury, or illness where identified by a workplace hazard assessment.
- c. Preoccupancy Inspections.
 - 1) All structures designed for occupancy, including leased office space, must have a safety inspection before occupancy. Any deficiencies noted during the inspection must be brought to the attention of the builder or lessor.
 - 2) All serious deficiencies must be abated before occupancy.
 - 3) Minor deficiencies must be corrected, or a plan must be submitted by the lessor or builder to verify that corrective action will be taken to abate the hazards.
- d. A sample checklist to assist with facility safety inspections is at Appendix 7.

3. Qualifications for Inspectors.

- a. Pursuant to 29 CFR 1960.25, a formal inspection program requires trained, qualified, and competent inspectors. The BLM must provide training for safety and health inspectors with respect to appropriate standards and the use of appropriate equipment and testing procedures necessary to identify and evaluate hazards, and general abatement procedures. If an organization does not have the required expertise, arrangements should be made to obtain outside assistance.
- b. The term “safety and health inspector” means a safety and/or occupational health specialist or other person authorized pursuant to Executive Order 12196, section 1201(g), to carry out inspections for the purpose of 29 CFR 1960.25, Subpart D, and a person having equipment and competence to recognize safety and/or health hazards in the workplace. OSHA offers the specialized training courses to help equip inspectors with the required knowledge (more detailed course descriptions can be found at the [Occupational Safety and Health Administration website](#)). OSHA courses include the following:
 - 1) Course #6005, Collateral Duty Course for Other Federal Agencies. This training introduces OSHA regulations and enables participants to recognize basic safety and health standards in the workplace and effectively assist agency safety and health offices with inspection and abatement efforts.

- 2) Course #511, Occupational Safety and Health Standards for General Industry. This course covers OSHA policies, procedures, and standards, as well as general industry safety and health principles.
- 3) Course #510, Occupational Safety and Health Standards for Construction.

This course covers OSHA policies, procedures, and standards, as well as construction safety and health principles.

- 4) Course #3095, Electrical Standards. This course is designed to provide the student with a survey of OSHA's electrical standards and the hazards associated with electrical installations and equipment.
- 5) Course #2255, Principles of Ergonomics. This course covers the use of ergonomic principles to recognize, evaluate, and control workplace conditions that cause or contribute to musculoskeletal and nerve disorders.

4. Formal Inspection Procedure.

- a. For formal inspections, a written notice should normally be given prior to the inspection. However, if the safety professional determines that an unannounced inspection is justified, unannounced inspections may be made. The formal notification procedure does not apply to safety professionals and collateral duty safety personnel inspecting local facilities.
- b. Inspections must be conducted in a manner to preclude unreasonable disruption of the operations of the workplace. The inspector must make a formal, comprehensive walkthrough inspection. Checklists may be used to ensure completeness of the inspection. Inspections should be conducted according to the following protocol:
 - 1) **Initial Conference.** The inspector should meet with the senior management official of the facility to discuss current safety objectives, scope of inspection procedures, specific problem areas, and previous findings and recommendations. The inspector should extend an invitation to the safety committee chairperson and employee representative, if any, to accompany the inspector during the inspection.
 - 2) **Inspection.** The inspector should perform onsite inspections of physical facilities, materials, equipment, and work operations to determine the extent of compliance with OSHA and applicable industry standards, such as National Fire Codes, National Electric Code, and the **American National Standards Institute (ANSI)**, and with BLM and DOI safety and occupational health requirements. The inspector should interview employees, supervisors, and managers concerning matters of safety and health.
 - 3) **Safety Program Management Review.** A safety program

management review may be conducted in conjunction with the facility inspection to determine if program elements are missing or need enhancement. See Chapter 11 for additional information on program reviews.

- 4) **Findings.** The inspector should identify all instances of noncompliance of safety and health standards and recommend corrective actions to the senior management official in charge of the facility.
- 5) **Close-Out Conference.** The inspector should discuss findings and preliminary recommendations with the senior management official of the facility. The inspector should also identify areas of concern and exchange views on significant items. A preliminary report of the findings should be left with the field office manager.
- 6) **Written Reports.** The inspector must provide a written report to the senior management official in charge of the workplace inspected within a reasonable time, but not later than 15 working days after the inspection. Reports should list all deficiencies noted during the inspection; a risk assessment code (see Figure 3) defining the degree of hazard for each deficiency; recommended abatement procedures; and a citation of the reference standard that was violated.
 - a) Written reports must state the date by which abatements or abatement plans must be completed and the date in which a response is required from the senior management official describing steps taken to abate the deficiencies.
 - b) Inspection reports should indicate if any follow-up monitoring will be accomplished.

5. Occupational Safety and Health Administration Inspections.

- a. District and field office managers must notify the state office (safety manager) immediately upon becoming aware of an OSHA inspection at their site. OSHA is authorized to conduct inspections of BLM worksites without advance notice, and the BLM must give OSHA access, at a reasonable time and without delay, to worksites, employees, and any requested records.
- b. If violations are noted during an OSHA compliance inspection, the OSHA area director will issue a “notice of unsafe or unhealthful conditions” in writing. If notices of unsafe or unhealthful conditions are issued in writing by OSHA, the BLM site manager and the state safety manager will request a meeting with the OSHA area director within 15 days of receipt to clarify any inaccuracies and discuss OSHA’s expectations for abatement. The BLM manager, with assistance from the state safety manager, must meet with the OSHA area director at an informal conference to be certain that the facts upon which the violations were based are accurate, that the notice was properly substantiated, and to clarify the abatement measures OSHA is requiring the

site manager to take. The violations and abatement measures can be negotiated to some extent, and OSHA commonly makes adjustments based on information received at the conference. If the violation is clearly underserved, the BLM can appeal to the OSHA regional administrator and, lastly, to the OSHA Office of Federal Agency Programs in Washington, D.C.

- c. Notices of unsafe or unhealthful conditions issued to federal agencies do not have monetary fines attached to them as in private industry, but OSHA may use other procedures to gain management's attention if the area director feels employee safety or the OSHA inspection results are not being taken seriously at that site. OSHA may elevate the notice to a higher level in the BLM or the DOI, and based on their classification of the violations, a copy of the inspection report and documentation may be sent to the Associate Deputy Secretary in the DOI Office of the Secretary. The OSHA area or regional director may also hold a press conference releasing information that makes BLM managers appear, at best, indifferent to the hazards at that worksite or, at worst, in willful violation of the Occupational Safety and Health Act.
- d. Additionally, OSHA policy allows a notice of unsafe or unhealthful conditions issued to any BLM office within 5 years of the current inspection to be considered as a repeat violation during subsequent inspections anywhere in the nation. Reducing repeat violations is important to managers because these repeated infractions can be evidence that OSHA can use to classify further violations as "willful." Since the Code of Federal Regulations (CFR) applies to BLM managers, "willful" violations of the CFR can be construed to be actions outside the scope of employment and not protected by the discretionary function exception to the Federal Tort Claims Act. In certain extreme cases, willful violation of the Occupational Safety and Health Act that results in a fatality can be referred to the Department of Justice, or the Department of Justice can decline to represent the manager in a criminal indictment or civil tort case.
- e. For these reasons, expert knowledge in OSHA regulations and OSHA's internal policy for inspections is critical to managing an OSHA inspection properly. The state safety manager can provide recommendations to management and assistance with producing the OSHA Injury and Illness Recordkeeping Forms (300 series) or other required records. If notices are issued, the state safety manager can assist in deciding which notices should be disputed, and the state safety manager may already have a working relationship with that particular OSHA area director, which establishes credibility. Additionally, state safety managers should disseminate information to the field on previously issued OSHA notices to prevent the issuance of repeat and willful notices.

6. Inspection of Unsafe or Unhealthful Working Conditions.

- a. Employees who believe that an unsafe or unhealthful working condition exists in any workplace must report the condition to their supervisor. Employees

may request an inspection of their workplace by (1) giving verbal or written notice of the alleged unsafe or unhealthful working condition to the immediate supervisor, local safety specialist, state safety manager, or a safety committee member per local office procedures; or (2) if no action results, submitting a written report to the next higher organizational level. In imminent danger situations, employees should make reports first by telephone. Confirm telephone reports in writing as soon as practicable thereafter. This does not preclude employees from exercising their rights under 29 CFR 1960.28.

- b. The report should state the grounds for the alleged complaint and should be signed by the employee or representative of employees. Upon request of the person making such report, the state safety manager or the human resources officer must not disclose the name of the person or others referred to in the report to anyone other than an authorized representative of the Secretary of Labor.
- c. Employees reporting unsafe or unhealthful conditions must be notified in writing of action taken or planned by the unit receiving the report. If an employee is dissatisfied with the final disposition by the BLM, the employee may forward the complaint in writing to the Chief of the BLM Division of Safety, Health, and Emergency Management. If disposition is still unsatisfactory, the employee may write the Office of Federal Agency Programs, Occupational Safety and Health Administration, U.S. Department of Labor, Washington, D.C., 20210.

7. Imminent Danger.

Imminent danger is defined as a situation posing the threat of immediate death or serious physical injury. Imminent danger situations discovered during any safety and health inspection must be brought immediately to the attention of supervisory personnel.

Affected work must be stopped by local management personnel or by the inspector. Personnel not required for abating the hazard must be evacuated from the affected area. Immediate abatement actions must be initiated, or the operation must be terminated

8. Deficiency Abatement Requirements.

- a. Once a deficiency has been identified, the senior management official for the facility must ensure that corrective action is completed in a timely manner. Operating plans and budgets must include funds for proper resources to correct safety and health deficiencies according to a priority based upon the degree of the hazard.
- b. The degree of hazard for each physical deficiency is determined by using the risk assessment code matrix to compare the probability of an accident occurring with the severity if it does occur. The degree of hazard should be assigned a risk assessment code based on Figure 3.

Figure 3 – ORM Risk Assessment Code Matrix

Risk Assessment Code Matrix

Risk Assessment Code (RAC) Matrix					
Hazard Probability Code		Frequent (A) Immediate danger to health and safety of the public, staff, or property and resources.	Likely (B) Probably will occur in time if not corrected, or probably will occur one or more times	Occasional (C) Possible occurrence in time if not corrected	Rarely (D) Unlikely to occur; may assume exposure will not occur.
Severity	Code				
Catastrophic Imminent and immediate danger of death or permanent disability.	I	1 CRITICAL	1	2	3
Critical Permanent partial disability or temporary total disability.	II	1	2 SERIOUS	3	4
Significant Hospitalized minor injury or reversible illness.	III	2	3 MODERATE	4 MINOR	5
Minor First aid or minor medical treatment	IV	3	4	5	5 NEGLIBLE

Risk Assessment Code Key:

- RAC 1 – Critical**
- RAC 2 – Serious**
- RAC 3 – Moderate**
- RAC 4 – Minor**
- RAC 5 – Negligible**

- c. Abatement timeframes for all identified hazards are outlined in Figure 4. If the hazard cannot be abated within 30 days, a written abatement plan must be submitted to the safety officer who conducted the inspection. The abatement plan must include any interim actions taken to reduce the hazard until it can be fully corrected. Abatement plans must be submitted using BLM Form 1112-8, "Hazard Abatement Plan."

Figure 4 – Abatement Timeframes

RAC	Initial Abatement Timeframe
1	As soon as possible within that work shift.
2	As soon as possible, but no later than 15 calendar days.
3	Within 12 months.
4	Within one budget cycle (no longer than 2 years).
5	Incorporate abatement into the 5-year plan.

- d. Spot checks should be done by a safety officer to ensure that any interim measures taken to abate hazards have been implemented and are still effective. Abatement plans should be reviewed periodically to ensure adequate resource allocation and to ensure that corrective actions have been accomplished. Deficiencies must be abated on a worst-first basis, using the assigned RAC for prioritization—critical, serious, moderate, minor, and negligible (see Figures 3 and 4).

9. Inspection Records.

Safety and health inspection records must be kept for 5 years.

E. References.

1. 5 U.S.C. 7902, Safety programs.
2. Executive Order 12196.
3. 29 CFR 1960.26, Subpart D, Inspection and abatement.
4. Occupational Safety and Health Act of 1970.
5. 29 U.S.C. 651, Congressional statement of findings and declaration of purpose and policy.
6. BLM Manual 1112, "Safety," Section .13 Inspections.

Chapter 11 – Program Evaluation

A. Introduction.

Evaluations are essential to assessing and validating the effectiveness of BLM and office safety and occupational health programs. Evaluations ensure continuous improvement by identifying strengths and addressing program limitations.

B. Purpose.

Program evaluations are designed to provide a periodic review of safety and occupational health programs to determine if initiatives are having the desired effect by assessing policy implementation and addressing unintended results. The periodic review further evaluates program initiatives and allows for making program changes to correct any discrepancies or weaknesses. An additional purpose of the reviews is to identify best practices that should be shared with other offices.

C. Program Elements.

1. State/Center Reviews.
2. National Program Management Reviews.

D. Explanation of Program Elements.

1. State/Center Reviews.
 - a. State/center safety managers are responsible for reviewing their state/center safety program to assess program efficacy. Some offices should be reviewed each year to complete a 3-year cycle for the entire state. Evaluations will include visits to field operations and activities, interviews, and a closing conference to report preliminary evaluation findings and recommendations. Written reports with results of the reviews and a list of corrective actions must be developed by the safety staff within 30 days and transmitted to the district manager from the state director. The district/field office must develop a corrective action plan and reply to the state director and safety manager within 30 days of receiving the report. Any long-term corrective actions must be incorporated into district/field office annual action plans, and progress on corrective action plans must be tracked annually. At a minimum, this review must evaluate:
 - 1) The previous year's accident data and trends.
 - 2) The effectiveness of the previous year's initiatives and the office's annual action plan.
 - b. The state/center safety manager must modify, delete, or implement new initiatives to correct any identified problems. These changes must be reflected

in the annual safety and health action plan for the following year.

2. National Program Management Reviews.

- a. The Chief of Safety, Health, and Emergency Management is responsible for conducting a safety program management review of each state and center every 3 years. At a minimum, this review must evaluate:
 - 1) Overall management, supervisory, and employee involvement.
 - 2) The extent to which BLM policies and procedures are implemented.
 - 3) Organizational structure and accountability of the program.
 - 4) The adequacy of resources to effectively manage a safety and occupational health program (i.e., staffing levels; funding for abatements, supplies, training; etc.).
 - 5) The frequency and adequacy of accident and injury reporting, investigations, training, promotional activities, and other program activities.
 - 6) Areas of special emphasis.
- b. Evaluations primarily consist of conducting surveys; interviews with employees, supervisors, safety committee members, and management; a review of written policies; and a review of accident trends for the state/center. A closing conference to discuss any findings and recommendations with senior management concludes the review, followed by a written report. The written report must highlight best practices and areas needing improvements, and it must compile actions needed for a corrective action plan.
- c. Additional reviews may be scheduled on an ad hoc basis as determined by the BLM Designated Agency Safety and Health Official or the state director.

E. References.

1. Department of the Interior, Departmental Manual, part 485, Chapter 3, Annual Action Plans and Status Reports
2. Department of the Interior, Departmental Manual, part 485, Chapter 5, Program Evaluations.

Chapter 12 – Fire Safety

A. Introduction/Purpose.

This chapter establishes the minimum standards for the prevention of structural fires and for the protection of occupants from fire in buildings and structures.

B. Program Elements.

1. Structure Fire Prevention and Employee Protection.
2. Personal Safety for Fire Emergencies
3. Occupant Emergency Plans.
4. Inspections and Recordkeeping.
5. Fire Prevention Plans.
6. Prescribed/Wildland Fire Safety.

C. Explanation of Program Elements.

1. Structure Fire Prevention and Employee Protection.
 - a. Existing buildings may be modified if their application is clearly impractical in the judgment of the authority having jurisdiction, but only where it is clearly evident that a reasonable degree of safety is provided.
 - b. Any existing building that is modified or remodeled must conform to the provisions of new construction standards and codes and all state, federal, and local codes. When in fixed locations and occupied by employees, all vehicles, trailers, vessels, or other mobile structures will be treated as buildings.
 - c. Standard Facility Requirements.
 - 1) Every building or structure must be constructed, arranged, equipped, maintained, and operated to avoid undue danger to the lives and safety of its occupants from fire, smoke, fumes, or resulting panic during a period of time reasonably necessary for escape in the case of fire or other emergencies.
 - 2) Exits must be arranged and maintained to provide free and unobstructed egress from all parts of the building when it is occupied. No lock (manual or electronic) or fastening must be installed to prevent free escape from the inside of any building. Exits must be clearly marked. Alternate exits must be provided to preclude entrapment if one exit is blocked by fire or smoke.
 - 3) In every building or structure of such size, arrangement, or occupancy that a fire may not provide adequate occupant warning,

alarm/detection systems must be provided where necessary to warn occupants of the existence of fire.

- 4) Flammable items must be stored so as to not increase the risk of fire. Storage cabinets containing flammable items must be identified and marked to inform local firefighters of their location and contents. Flammable materials must be segregated from other items. Approved containers with tight fitting closures will be used to store flammable liquids, paints, oils, etc. Empty drums that have contained low-flash-point products (e.g. gasoline, acetone, alcohol, etc.) will not be stored inside buildings.
- 5) Adequate ventilation must be provided for buildings where flammable liquids are stored. Any mechanical ventilation, heating, lighting, or exhaust systems must be installed according to electrical and fire code requirements.
- 6) Smoking will not be permitted within 50 feet of areas in which flammable liquids are stored or handled. "No Smoking" signs must be posted in these areas.
- 7) Fire extinguishers are to be mounted outside flammable storage buildings. Portable fire extinguishers are to be mounted, located, and identified so that they are readily accessible to employees without subjecting the employees to possible injury.
- 8) Materials should be stored a safe distance from heating devices such as stoves, steam pipes, heating ducts, and radiators. Materials should be stored separately according to the hazard they present and may not be placed within 18 inches of sprinkler heads.
- 9) Packing materials and rubbish will be stored to minimize fire and housekeeping hazards. Areas around warehouses and other buildings must be free of dry grass, vegetation, and debris.
- 10) Store compressed gas cylinders in cool, dry, well ventilated places and ensure compatibility, e.g., oxygen and acetylene must be stored separately, 20 feet apart. Close valves tightly. Keep protective caps in place. Place cylinders upright and fasten securely approximately 6 inches below the shoulder. Separate full and empty cylinders. See Illustration #6: The Dangers of Compressed Gas Cylinders.
- 11) Electric Space Heaters. Use of electric space heaters is prohibited unless heaters are equipped with tip-over safety switches and thermostat heat controls and their use is authorized.

2. Personal Safety for Fire Emergencies.

- a. Employees should become familiar with emergency exits, evacuation routes, fire extinguishers, fire alarms, emergency telephone numbers, first-aid supply locations, etc.

- b. Employees must not use elevators during fire emergencies.
- c. For hotel and motel rooms, employees should:
 - 1) Take notice of what is outside the window and make sure it can be opened. Make sure there is a smoke detector and that it appears to be operational.
 - 2) Count the number of doors to the emergency exit.
 - 3) Feel the door and knob BEFORE opening the door. If it is hot, the door should not be opened. Vents should be closed, and cracks around doors should be covered with wet towels to keep smoke out of the room.
 - 4) Take room keys when evacuating in case there is a need to return to the room to await rescue. Get in the habit of placing the room key and a flashlight where they can be grabbed on the way out of the room.
 - 5) When evacuating, doors should be closed to keep smoke and heat out of the room in case conditions in the hall are unbearable and there is a need to re-enter the room.

3. Occupant Emergency Plans.

- a. Each office in the BLM must develop a written emergency action plan to meet its specific needs. The plans must contain provisions for the following elements and ensure compliance with the requirements specified in 29 CFR 1910.38:
 - 1) Provide training to employees in the basics of fire reporting, fire prevention, emergency response, and evacuation.
 - 2) Ensure employees know how emergency messages will be communicated to them (i.e., fire alarms, audible messages).
 - 3) Evacuation procedures must include designated assembly areas and accountability procedures for employees and visitors. Employees must also be trained on procedures for emergencies that do not require evacuation (e.g., severe weather conditions that require shelter in place).
 - 4) Provide training to employees in the use and handling of a fire extinguisher and other systems provided for fire suppression. Where portable fire extinguishers are provided for employee use in the workplace, training must include the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting. This training is required annually.
 - 5) Ensure evacuation routes are posted in all facilities and that employees are aware of alternate evacuation routes.
- b. Employees working in other office settings or in travel status (i.e., training,

details, hotel stays) should become familiar with local facility emergency evacuation procedures. Meeting hosts are responsible for ensuring that guests are informed of their office's emergency response procedures and that guests are accounted for at assembly areas during an emergency.

- c. Each office in the BLM must ensure employees know proper reporting procedures and that emergency telephone numbers for fire and medical response are readily available.
- d. Each office in the BLM must conduct, at a minimum, one evacuation drill of each facility each year. Results of each drill must be documented by the local safety specialist, and lessons learned must be incorporated into evacuation guidance. Changes in guidance, as a result of lessons learned, must be communicated to all affected employees.
- e. Potential emergencies, such as sabotage, bomb threats, public demonstrations, natural disasters, and hazardous substance spills, must be included in the emergency action plan.

4. Inspections and Recordkeeping.

- a. Acceptance test and inspection reports of new fire protection systems must be performed as required by applicable fire standards.
- b. All fire detection and suppression systems/equipment must be inspected annually by a qualified person in accordance with the National Fire Protection Association's Standard 25 and Code 72.
- c. All fire extinguishers must be inspected annually by a qualified technician, and monthly visual inspections must be completed and documented by a responsible party. Monthly visual inspections consist of:
 - 1) Ensuring the unit is in place (i.e., hung below the wall sign noting its location).
 - 2) Ensuring the unit is mounted correctly on the wall.
 - 3) Ensuring the unit is fully charged (i.e., the gauge arrow is "in the green").
- d. Records of fire suppression equipment acceptance tests and inspections must be maintained by the persons responsible for such equipment and made available to inspectors on request.

5. Fire Prevention Plans.

- a. Where fire prevention plans are required by OSHA standards, they must address the elements outlined in 29 CFR 1910.39. At a minimum, elements of a fire prevention plan must include:
 - 1) A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and

their control, and the type of fire protection equipment necessary to control each major hazard.

- 2) Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials.
 - 3) Procedures to control accumulation of flammable and combustible waste materials.
 - 4) The name of employees assigned to provide equipment maintenance to prevent ignition and the control of fuel source hazards.
- b. Employee information. An employer must inform employees upon initial assignment to a job of the fire hazards to which they are exposed and when additional hazards are added. An employer must also review with each employee those parts of the fire prevention plan necessary for self-protection.

6. Prescribed/Wildland Fire Safety.

BLM employees will be trained, qualified, and carded to participate in prescribed/wildland fire activities. Untrained and/or unqualified personnel are prohibited from taking wildland fire suppression action. Notify your supervisor, dispatch center, or local law enforcement agent of any discovered wildland fire. For detailed safety policy information, refer to "Interagency Standards for Fire and Fire Aviation Operations," NFES 2724.

D. References.

1. 29 CFR 1910.35-39, Subpart E, Means of Egress.
2. 29 CFR 1910, Subpart L, Fire Protection.
3. 29 CFR 1926, Subpart F, Fire Protection and Prevention.
4. International Building Code (formerly Uniform Building Code).
5. National Fire Protection Association, NFPA 101, "Life Safety Code."
6. National Fire Protection Association, NFPA 10, "Standard for Portable Fire Extinguishers."
7. National Fire Protection Association, NFPA 25, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."
8. National Fire Protection Association, NFPA 72, National Fire Alarm and Signaling Code."
9. Department of the Interior, Departmental Manual, part 485, Chapter 19, Safety and Health Training.
10. Department of the Interior and Department of Agriculture, "Interagency Standards for Fire and Fire Aviation Operations," NFES 2724.

Chapter 13 – Electrical Safety Equipment

A. Introduction/Purpose.

This chapter provides requirements for establishing an electrical safety program for electrical equipment, portable electrical devices, and electrical appliances used within the BLM. The purpose of establishing an electrical safety program is to safeguard people and property from hazards resulting from the use of electrical equipment. Facility managers, engineers, and safety personnel must ensure these requirements are followed at all BLM facilities and during activities.

B. Program Elements.

1. Electrical Work at BLM Facilities.
2. Inspections of Electrical Equipment/Appliances.
3. Electrical Safety.
4. Lockout/Tagout Procedures.

C. Explanation of Program Elements.

1. Electrical Work at BLM Facilities.
 - a. Any location with electrical equipment creates potential dangerous working conditions; therefore, any electrical work practices must comply with the references provided at the end of this chapter. All work, repair, or maintenance must be performed only by a licensed electrician. This pertains to any work that includes removing electrical cover plates or control panel covers or otherwise exposing bare conductors, connectors, controls, or terminals. Only qualified electricians and inspectors may touch such exposed circuitry with any part of the body or with any tool, probe, or test device.
 - b. Only trained, qualified technicians may access the circuitry of any electrically powered vehicle for the purposes of performing maintenance or repairs on the electrical drive system of that vehicle. Technicians and employees must not work on energized circuits. Technicians must ensure that power is removed from the circuit prior to performing maintenance, changes, or repairs and that the circuit has been effectively locked out in accordance with hazard control program requirements (29 CFR 1910.147). Technicians must ensure that all prescribed personal protective equipment is worn in accordance with National Fire Protection Association NFPA 70E and local project risk assessments.
 - c. Qualified technicians are employees or contractors that have completed a recognized electrical training program or apprenticeship. Qualified BLM personnel with position descriptions that include performing facility electrical work must complete professional-level refresher training every 2 years in order to maintain their proficiency in current electrical codes, standards, and procedures.

2. Inspections of Electrical Equipment/Appliances.

- a. Inspections of portable electrical devices must be conducted prior to and after each use. Electrical equipment that is damaged or defective, incorrectly installed, being used for any purpose other than that for which it is specifically approved, or not in compliance with the references provided at the end of this chapter or its manufacturer's guide must be immediately removed from service and kept from use until the identified deficiencies are corrected. Damaged equipment must be tagged so that employees know that it is damaged and not to be used until it has been repaired.
- b. Machines that are not adequately safeguarded to protect equipment during under-voltage situations must have an under-voltage protective device installed. This device prevents a large induction or synchronous motor from drawing excessive current and starting under low-voltage conditions. Under-voltage situations occur when a machine automatically resumes motion after a low-voltage situation or power interruption.
- c. After a power failure, a machine can automatically resume motion and expose a worker to hazardous moving parts. Machines that are not adequately safeguarded to protect the worker from automatic start-up must have an anti-restart switch installed.
- d. Appliances and equipment must contain UL listing marks or meet National Electrical Code and be equipped with protective devices such as automatic shutoff protection. BLM shop supervisors and safety personnel must identify the machines that require this protection and ensure that under voltage protection devices or anti-restart switches are installed where needed.

3. Electrical Safety.

- a. **Ground fault circuit interrupters (GFCI)** must be used in all appropriate operations and installed in accordance with National Electrical Code standards. GFCIs require testing on a regular basis and are not a substitute for general grounding requirements. They are used in outdoor locations and indoor locations (receptacle type) that may be exposed to water. A GFCI is a fast-acting circuit breaker designed to shut off electric power in the event of a ground fault within as little as 1/40 of a second.
- b. Personal protective equipment must be worn, as prescribed, and meet the standard in 29 CFR 1910.137. Employees must be trained on proper selection, use, and disposal of electrical personal protective equipment.

4. Lockout/Tagout Procedures.

- a. Lockout/tagout programs must be established in accordance with 20 CFR 1910.147, to include employee training. The lockout/tagout policy establishes minimum requirements for controlling accidental release of hazardous energy

whenever maintenance or servicing operations are conducted on machines or equipment. Written programs must address specific procedural steps for the placement, removal, and transfer of lockout or tagout devices and the responsibility for them.

- b. Written programs must address specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout and tagout devices and other energy control measures. Written programs must include the following elements:
 - 1) Procedures to identify the specific equipment.
 - 2) Sequence of lockout.
 - 3) How to notify affected employees.
 - 4) Type(s) and magnitude(s) of energy, its hazards, and the methods to control the energy.
 - 5) Type(s) and location(s) of machine or equipment operating controls.
 - 6) Type(s) and location(s) of energy-isolating devices.
 - 7) Type(s) of stored energy and methods to dissipate or restrain.
 - 8) Method of verifying the isolation of the equipment.
 - 9) Procedures for restoring the equipment to service.
- c. Appropriate lockout or tagout devices must be affixed to energy-isolating devices to otherwise disable machines or equipment, preventing unexpected energizing, startup, or release of stored energy, in order to prevent injury to employees during servicing or maintenance operations. Lockout devices must be used to hold an energy-isolating device in a safe position and prevent the energizing of a machine or equipment. A prominent warning device must be securely fastened to an energy-isolating device in accordance with the established written procedure, to indicate that the energy-isolating device and the equipment being controlled may not be operated until the lockout or tagout device is removed. Tags must identify each individual employee working on the equipment. All employees must be trained to recognize the use of lockout and tagout devices when electrical equipment is accessible to employees in the workplace.

D. References.

1. National Fire Protection Association, NFPA 70, "National Electrical Code."
2. National Fire Protection Association, NFPA 70E, "Standard for Electrical Safety in the Workplace."
3. 29 CFR 1910.137, Electrical protective devices.
4. 29 CFR 1910.147, The control of hazardous energy (lockout/tagout).

5. 29 CFR 1910, Subpart O, Machinery and Machine Guarding.
6. 29 CFR 1910.242, Hand and portable powered tools and equipment, general.
7. 29 CFR 1910.243, Guarding of portable power tools.
8. 29 CFR 1910.244, Other portable tools and equipment.
9. 29 CFR 1910, Subpart Q, Welding, Cutting, and Brazing.
10. 29 CFR 1910, Subpart S, Electrical.
11. 29 CFR 1926.400, Subpart K, Electrical.

Chapter 14 – Aviation Safety

A. Introduction.

The BLM aviation safety program is modeled after the aviation industry and Federal Aviation Administration's Safety Management Systems. Each BLM employee and contractor involved with aviation has the responsibility to plan missions thoroughly, conduct missions with a conservative attitude, and to respect the aircraft and environment in which the missions operate. The BLM National Aviation Office aviation safety and training advisor is the focal point for the BLM national-level program. **State aviation managers** (SAMs) are the focal point for state aviation programs, and **unit aviation managers** (UAMs) are the focal point for district/field office aviation programs.

B. Purpose.

This chapter outlines the procedures and policies that must be followed for a BLM aviation safety program.

C. Program Elements.

1. Project Aviation Safety Plan.
2. Aviation Life Support Equipment.
3. Aircraft Mishap Prevention and Risk Assessment Tools.
4. Aircraft Safety Procedures.
5. Aviation Safety Communiqué (SAFECOM).
6. Aircraft Accident Investigation Process.
7. Program Evaluations.
8. Lessons Learned.
9. Awards.
10. Program Assistance.

D. Explanation of Program Elements.

1. Project Aviation Safety Plan.
 - a. Accident prevention is paramount when planning individual aviation projects. Flights must not deviate from DOI and BLM policy and procedures, except for safety of flight considerations. A written **project aviation safety plan** (PASP) or, at a minimum for low-complexity/one-time flight projects, BLM Form 9400-1a, "Aircraft Flight Request/Schedule," must be completed and approved for every non-fire mission flight or aviation project. The PASP must

be reviewed by the UAM and approved by the appropriate level of authority per the state/unit aviation plan. Managers should be briefed by the UAM prior to their approval of the plan.

- b. Projects that occur periodically over a season or fiscal year may have one PASP prepared and approved. In this situation, BLM Form 9400-1a is required for each periodic flight. The form must be approved at the UAM level with a courtesy notification to the SAM.
- c. For projects that are conducted by a unit aviation operations group (e.g., helitack, aerial supervision, smokejumpers), (1) if the mission is typical and routine for the operational group, (2) if mission risk assessment is documented in the group annual operations plan, and (3) if the state and unit plans allow the mission, then the project/flight can be conducted without a specific PASP, after completion of BLM Form 9400-1a.
 - 1) PASPs that have a final risk assessment of high or above require a SAM review prior to line manager approval.
 - 2) The reverse side of BLM Form 9400-1a may be used as a PASP for low- complexity/one-time non-fire mission flights.
 - 3) A courtesy copy of all PASPs must be routed to the SAM prior to implementation.
- d. Required elements of a PASP include:
 - 1) Supervision,
 - 2) Project name/objectives,
 - 3) Justification,
 - 4) Project date and location,
 - 5) Projected cost of aviation resources,
 - 6) Names of all aircraft, pilots, aircrew, passengers, and participants,
 - 7) Flight following and emergency search and rescue,
 - 8) Aerial hazard identification,
 - 9) Risk assessment using the Safety Management System worksheets, as appropriate,
 - 10) Personal protective clothing/equipment,
 - 11) Load calculations and/or weight and balance information requirements, and
 - 12) Supervisor and line officer approval signatures.
- e. A good resource for aviation project planning is the "Interagency Helicopter Operations Guide," Chapter 3. Personnel needing assistance with mission flight or project planning requirements should contact their UAM/SAM. When performing risk assessments, personnel may use maps, aerial photos,

Google Earth photos, or AeroPlanner maps to help identify and map the locations of hazards. Particular attention in the risk assessment is essential when determining how to mitigate the risk by reducing exposure to hazards in flight profiles, method of operations, external load operations, winter weather, and high/hot/heavy operations.

2. Aviation Life Support Equipment.

All personnel engaged in aviation activities must wear appropriate personal protective equipment, depending on the mission. Requirements are listed in DOI Departmental Manual, part 351, Chapter 1.7, and outlined in the “DOI Aviation Life Support Equipment Handbook” and mission-specific guides and handbooks. Reference the BLM National Aviation Plan, Chapter 5.22, for additional personal protective equipment requirements used for helicopter operations. Any questions concerning the requirements and procedures for obtaining personal protective equipment should be directed to the local aviation manager. Project leaders must ensure that appropriate and adequate aviation life support equipment, including personal protective equipment, is available and worn by individuals.

3. Aircraft Mishap Prevention and Risk Assessment Tools.

- a. Aviation operations at all levels are based on personnel safety through risk identification, mitigation controls, and accident prevention. Management at all levels in the organization is responsible for safe aviation operations under their control. This responsibility includes direct supervision, training, and providing safe working conditions. Using feedback, managers can monitor programs, reduce hazards, and implement controls to reduce risks to acceptable levels. Aviation operating plans and PASPs provide proactive accident prevention measures and risk management procedures and must be approved by a line manager or the delegated line manager.
- b. As discussed in Chapter 2 of this handbook, “Operational Risk Management,” the second step of risk management is assessment of the risks/hazards. Several tools may be used to document the risk involved in the operation. A good source for a variety of risk assessment tools is the “Interagency Helicopter Operations Guide,” Chapter 3.
- c. Several completed fire aviation assessments, as well as some resource aviation examples, are located at the Wildland Fire Lessons Learned Center website: <https://www.wildfirelessons.net/home>.

4. Aircraft Safety Procedures.

State and district aviation operational plans, as well as other guides and handbooks, must be followed. All aircraft operations, rental or contract, fall into two categories: general use or special use.

- a. **General-Use Flight Requirements.** Typically, a general-use flight is a point-to-point flight that originates at one developed airport or permanent helibase

and flies directly to another developed airport or permanent helibase.

Requirements include:

- 1) Designated flight manager,
 - 2) Cost analysis,
 - 3) Itinerary,
 - 4) BLM Form 9400-1a, "Aircraft Flight/Request Schedule,"
 - 5) DOI Aviation Management Directorate-approved and -carded pilot and aircraft,
 - 6) Flight plan/flight following filed with the Federal Aviation Administration or agency, as required by DOI Aviation Management Operational Procedures Memorandum No. 06-02, and
 - 7) A briefing given to the pilot and a safety briefing given to the passengers.
- b. **Special-Use Activities.** Special-use activities are defined as operations involving the utilization of airplanes and helicopters in support of BLM programs that are not point-to-point flight activities and that require special control measures due to their inherently higher risk. This may require deviation from normal operating practices where authorized. These operations are listed in DOI Aviation Management Operational Procedures Memorandum No. 13-29 and must meet the following requirements:
- 1) Aircraft and pilots must be approved for each special-use activity prior to use,
 - 2) Special-use flights or missions, except fire missions, must have an approved PASP. The plan must be reviewed by the UAM and approved by the appropriate line manager. Managers should be briefed by the UAM prior to their approval of the plan. A courtesy copy of all PASPs must be routed to the SAM prior to implementation,
 - 3) Passengers on a special-use flight must be essential to the mission, and
 - 4) Employees engaged in special-use activities must be qualified for the operation through required training. See DOI Aviation Management Operation Procedures Memorandum 06-04; "Wildland Fire Qualification System Guide," PMS 310-1; or "Interagency Standards for Fire and Fire Aviation Operations," as appropriate, or have a qualified aircraft manager supervising the mission.

5. Aviation Safety Communiqué (SAFECOM).

- a. The SAFECOM system is used to report any condition, observance, act, maintenance problem, or circumstance that has the potential to cause an

aviation-related mishap. The SAFECOM system is not intended for initiating punitive actions. Mission personnel are encouraged to collaborate on SAFECOM report development prior to submission to avoid any punitive implication and increase narrative accuracy of events.

- b. Submitting a SAFECOM report is not a substitute for “on-the-spot” correction(s) of a safety concern. It is a tool used to identify, document, track, and correct safety-related issues. All personnel involved in aviation activities are encouraged to submit SAFECOM reports when they feel it is warranted. SAFECOM reports may be made at the [SAFECOM website](#).

6. Aircraft Accident Investigation Process.

- a. The National Transportation Safety Board has the responsibility of investigating all aviation accidents, except military accidents (see 49 CFR 830 and 831, Public Law 106-181, and Federal Management Regulation 102-33.185). The DOI Office of Aviation Services is typically invited by the National Transportation Safety Board to be a party to the investigation. However, the National Transportation Safety Board is still the controlling authority. Policy, including responsibilities and procedures concerning DOI aircraft mishaps, can be found in DOI Departmental Manual, part 352, Chapter 6, “Aircraft Mishap Notification, Investigation and Reporting.” The Departmental Manual identifies two bureau positions that may be established to assist the DOI investigation team, (1) as a selected member of the investigation team working directly for the DOI Investigator-in-Charge or (2) as the bureau-designated onsite liaison to coordinate with the DOI Investigator-in-Charge.

NOTE: In many cases, the bureau will provide only one representative to the investigation team, and that individual will either perform only as a liaison or both as a team member and a liaison. When a National Transportation Safety Board investigator is participating, they will decide who participates as a team member.

- a. The BLM representative team member:
 - 1) Must be requested by the DOI Office of Aviation Services to be an investigation team member,
 - 2) Will be appointed by the BLM National Aviation Office Division Chief (FA- 500),
 - 3) Will normally be a BLM National Aviation Office staff member or a SAM,
 - 4) Must be fully trained and qualified to investigate aircraft accidents,
 - 5) Must not have a personal interest in the mishap,
 - 6) Will work directly for the DOI Investigator-in-Charge,
 - 7) Is bound by confidentiality regarding all aspects of the investigation and preliminary findings and conclusions, and

- 8) Will, at no time, express opinions of their own or recite opinions of others on the team.

b. The BLM liaison:

- 1) Will be appointed by the BLM National Aviation Office Division Chief (FA- 500),
- 2) Will provide onsite coordination and support to the DOI Investigator-in Charge for personnel, resources, transportation, office space, communications, etc.,
- 3) Will coordinate and facilitate in briefings and out briefings with local BLM management,
- 4) Will serve as a liaison between the investigation team and local BLM management, BLM specialists, and/or the incident management team,
- 5) Will provide the DOI Investigator-in-Charge with technical expertise and BLM organizational information,
- 6) Will make arrangements for interviews, site visits, document reviews, etc.,
- 7) Will not conduct interviews or investigative actions unless requested by the DOI Investigator-in-Charge,
- 8) Will be bound by confidentiality regarding all aspects of the investigation and preliminary findings and conclusions,
- 9) Will, at no time, express opinions of their own or recite opinions of others on the team, and
- 10) Must not have a personal interest in the mishap

7. Program Evaluations.

- a. Aviation program evaluations/reviews are an integral part of the system safety assurance program. BLM aviation program reviews are conducted at two levels within the DOI to ensure that safety standards, policy compliance, and BLM efficiency objectives are being met.
- b. Aviation functional operations and facilities are reviewed as part of the total Fire and Aviation Preparedness Review of field/district operations. Reviews are conducted every 3 years by a national-level review team. District- or state-level fire readiness reviews are conducted annually. The SAM is responsible for coordinating annual readiness reviews of the state's aviation crews/personnel, project, and base site visits and developing guidelines for UAM oversight of district/field office aviation activities. The SAM is responsible for ensuring the reviews are being conducted for aviation operations within the required timeframe and for identifying well-qualified individuals to conduct the review (reference "Interagency Standards for Fire and Fire Aviation Operations," Chapter 18, for information).

- c. The DOI Office of Aviation Services must administer an aviation program evaluation of each BLM state and the BLM National Aviation Office every 5 years. The purpose of these evaluations is primarily to review non-fire aviation activities as they relate to administration, operations, safety, training, and security. The BLM National Aviation Office will identify qualified individuals to assist with the review (reference the “2012 National Aviation Plan,” Appendix 6 for the aviation program evaluation schedule). The SAM will assist with the review and provide scheduling and logistical support. Additional reviews may be conducted if a need is identified by the aviation division chief.

8. Lessons Learned.

National- and state-level aviation program managers are responsible for providing input regarding training curriculum development, lessons learned messages, new procedure development, and operational methodologies. SAMs are responsible for disseminating pertinent aviation safety information, actively engaging resource and fire managers during annual work plan development. Additional information regarding lessons learned is available at the [Wildland Fire Lessons Learned Center](#)

9. Awards.

Aviation safety awards are a positive part of the aviation program and are provided to all organization levels. National awards are given to pilots and employees in accordance with the guidelines in the DOI Departmental Manual, part 352, Chapter 7. Air award recommendations may be submitted to the SAM, who will forward them to the BLM National Aviation Office aviation safety specialist.

10. Program Assistance.

Technical and program assistance, advice, and planning are available through local UAMs, SAMs, or BLM National Aviation Office personnel. Only qualified aviation managers or dispatchers may procure aircraft services.

E. References.

1. Federal Aviation Administration Regulations.
2. Department of the Interior, Departmental Manual, parts 350-354.
3. BLM Manual 9400, “Aviation Management.”
4. “Aerial Capture, Eradication and Tagging of Animals (ACETA) Handbook.”
5. “Aviation Life Support Equipment Handbook.”
6. BLM Handbook H-4740-1, “Wild Horse and Burro Program Aviation Management.”

7. Interagency Aviation Transport of Hazardous Materials Handbook.
8. "National Interagency Fire Center Military Use Handbook."
9. "BLM National Aviation Plan."
10. "Interagency Aerial Ignition Guide."
11. "Interagency Aerial Supervision Guide."
12. "Interagency Airspace Coordination Guide."
13. "Interagency Airtanker Base Operations Guide."
14. "Interagency Helicopter Operations Guide."
15. "Interagency Helicopter Rappel Guide."
16. "Interagency Single Engine Air Tanker Operations Guide."
17. "Interagency Smokejumper Pilots Operations Guide."
18. "Interagency Standards for Fire and Fire Aviation Operations."
19. "USFS/BLM Aviation Risk Management Workbook."

Chapter 15 – Motor Vehicle Safety

A. Introduction.

This chapter establishes the BLM policy to authorize employees, volunteers, and interns (i.e., Pathways) to operate government-owned, government-leased, rental, or privately owned motor vehicles for official purposes. Contracted employees under direct operational control/supervision by the BLM and who have been provided government-owned,

government-leased, or rental motor vehicles for official purposes also fall under this policy. Reference to “vehicle” within this chapter is inclusive of all driven and/or operating apparatus, with the exception of off-highway vehicles (refer to Chapter 17 of this handbook).

B. Purpose.

This chapter establishes minimum requirements for the safe operation of motor vehicle use for official purposes. The requirements for motor vehicle operator programs can be found in 5 CFR 930, which requires federal agencies to establish an efficient and effective system to identify federal employees who are qualified and authorized to operate government motor vehicles. BLM motor vehicle operations require careful supervision to reduce personal injuries and keep property damage to a minimum. All motor vehicle operations must conform to the requirements of this handbook.

C. Program Elements.

1. Responsibilities.
2. Qualifications for Motor Vehicle Operators.
3. Procedures for Obtaining Authorization.
4. Driver Training Requirements.
5. Road Test Requirements.
6. Driving Limitations.
7. Restrictions and Other Authorizations.
8. Revocation of Driving Authorizations and Penalties.
9. Safety Equipment.
10. Vehicle Inspections.
11. Accident Investigations.
12. Records Maintenance.

D. Explanation of Program Elements.**1. Responsibilities.****a. Supervisors.**

- 1) Supervisors are responsible for driver authorization and ensuring employees can satisfactorily operate the vehicle/equipment for which they are authorized.
- 2) Supervisors have the authority to restrict or terminate vehicle use authorization of poor or unsafe drivers.
- 3) Supervisors must determine if the employee is medically qualified to safely operate a motor vehicle, as noted on BLM Form 1112-11, "Motor Vehicle/Specialized Equipment Authorization."
- 4) Supervisors, in coordination with the local safety manager, are responsible for ensuring every vehicle accident is investigated and entered into the DOI Safety Management Information System.
- 5) Supervisors are responsible for documenting vehicle damage (regardless of degree) into the DOI Safety Management Information System.
- 6) Supervisors are responsible for educating employees regarding the contents of this policy and enforcing hereinto.

b. Motor Vehicle Operators.

- 1) Operators must know and observe all state and local traffic regulations and licensing requirements.
- 2) Operators are responsible for maintaining a valid state driver's license and notifying their supervisor if their license is suspended, revoked, canceled, or expired without renewal.
- 3) Operators must inform their supervisor of any physical, mental, or emotional condition that might impair their ability to safely operate a motorized vehicle.
- 4) Operators are responsible for inspecting the vehicle prior to use.
- 5) Operators must drive safely and defensively, operate the vehicle within its mechanical limits, and ensure all passengers, including themselves, have seatbelts fastened before the vehicle is put in motion.
- 6) Operators must report all vehicular damage/accidents, regardless of the degree, to their supervisors.
- 7) Operators are prohibited from using cell phones or global positioning systems and other electronic devices while the vehicle is in motion, except where permitted by state law, these devices may be used in hands-free mode.

- a) **Exception.** This prohibition does not apply to the use of these devices in emergency situations (immediate threat to life) limited to the extent necessary to convey vital information and/or to BLM law enforcement personnel when such usage is necessary to carry out official law enforcement activities.

Government-purchased two-way radios are allowed for use at any time. Some states have imposed further restrictions on the use of these devices while driving. For a complete listing of states that have restrictions on the use of hand-held devices, see: [GHSA Distracted Driving](#)

- 8) Operators are prohibited from text messaging while driving at any time or when using electronic equipment supplied by the government.

2. Qualifications for Motor Vehicle Operators.

a. Motor vehicle operators must meet the following requirements:

- 1) Possess a safe driving record (no current suspensions or habitual infractions),
- 2) Possess a valid state driver's license with the proper endorsements for the size and class of vehicle being driven,
- 3) Must be at least 18 years old,
- 4) Self-certify they are medically qualified to operate a vehicle safely, as identified on BLM Form 1112-11,
- 5) Possess a valid agency identification card (e.g., Personal Identity Verification (PIV) card, building pass, U.S. Government Motor Vehicle Operator Identification Card Optional Form 346) or documentation of current employment or volunteer status in their possession while driving a government-owned or -leased vehicle, and
- 6) Complete initial defensive driving training prior to operating a vehicle and every 3 years thereafter.

b. Additional Requirements.

- 1) 15-Passenger Van Operators. The use of 15-passenger vans is prohibited.
- 2) Heavy Vehicle Operators. Per 49 CFR 383, in addition to the aforementioned qualifications, the **Federal Highway Administration (FHWA)** requires a commercial driver's license for those persons who operate vehicles as depicted in Figure 5 below, based on type, **Gross Combined Weight Rating (GCWR)**, and **Gross Vehicle Weight Rating (GVWR)**. Operators must also:

- a) Possess a valid medical certificate, if required by either their state of domicile or location of employment,
 - b) Be at least 21 years old. Fire personnel operating apparatus that requires the driver to have a commercial driver's license must be at least 18 years of age with 1 year of driving experience and limited to intrastate driving only (driving within the state the license was issued),
 - c) Notify their supervisor if convicted of any traffic violation other than illegal parking, and
 - d) Notify their supervisor if their driver's license is suspended, revoked, or disqualified.
- c. **Trailer Towing.** There may be state-specific commercial driver's license requirements when towing trailers. State safety managers should identify any additional requirements and augment this policy with state-specific policy.
- d. **Specialized Equipment Operation.** For specialized equipment operation (e.g., heavy equipment) use Optional Form 346 to record training, certification, and validation of equipment use. Personally Identifiable Information (PII), such as date of birth, height, weight, age, etc., is not required to be included on Optional Form 346. Specialized equipment is defined as snowmobiles, motorcycles, all-terrain vehicles, utility terrain vehicles, watercraft, and heavy equipment (such as graders, backhoes, dozers, forklifts, and skid steers). Refer to Chapter 18 of this handbook, "Specialized Equipment and Towing."

Figure 5

VEHICLE GROUPS AS ESTABLISHED BY FHWA
(49 CFR 383.91)

[Note: Certain types of vehicles, such as passenger and doubles/triples, will require an endorsement. Please consult text for particulars.]

Group:	*Description:
A	Any combination of vehicles with a GCWR of 26,001 or more pounds provided the GVWR of the vehicle (s) being towed is in excess of 10,000 pounds. (Holders of a Group A license may, with any appropriate endorsements, operate all vehicles within Groups B and C.)

Examples include but are not limited to:



Group:	*Description:
B	Any single vehicle with a GVWR of 26,001 or more pounds, or any such vehicle towing a vehicle not in excess of 10,000 pounds GVWR. (Holders of a Group B license may, with any appropriate endorsements, operate all vehicles within Groups C.)

Examples include but are not limited to:



Group:	*Description:
C	Any single vehicle or combination of vehicles that does not meet the definition of Group A or Group B as contained herein, but that either is designed to transport 16 or more passengers including the driver, or is placarded for hazardous materials.

Examples include but are not limited to:



** The representative vehicle for the skills test must meet the written description for the group. The silhouettes typify, but do not fully cover the types of vehicles falling within each group*

3. Procedures for Obtaining Authorization.

- a. The authorization for an employee to drive on official business must be initiated, reviewed, and documented by the supervisor. BLM Form 1112-11 must be used to document every BLM employee's authorization to operate government-owned or - leased or privately owned motor vehicles for official purposes. BLM Form 1112-11 replaces Optional Form 345, Form DI-131, and any equivalent form that has been created for local- or state-level use. BLM Form 1112-11 is available at:
[BLM Form 1112-11, Motor Vehicle/Specialized Equipment Authorization \(sharepoint.com\)](#)
- b. Medical Evaluation.
 - 1) Employees are required to self-certify their physical ability to operate vehicles for which they are authorized to use. Drivers of vehicles that require a commercial driver's license may be required to have additional driver, medical, and fitness testing, as required by local and/or state laws.
 - 2) Employees must immediately inform their supervisor and update BLM Form 1112-11 if a change in medical condition impedes their driving ability or if a state driving privilege is restricted for any reason. Supervisors must review the updated form and take appropriate action as necessary.
 - 3) Operators with a commercial driver's license must meet state license requirements for medical evaluation and qualification. Documentation of medical qualifications must be maintained by individual employees. Supervisors are responsible for ensuring operators with a commercial driver's license maintain a valid certification.
 - 4) When there is any question as to any driver's ability to safely operate a motor vehicle, the supervisor may request a fit-for-duty medical examination. Supervisors should refer to their employee relations specialist to accomplish this action.
- c. Periodic Review and Renewal of Authorization to Drive.

- 1) BLM Form 1112-11 must be updated by employees:
 - a) Every 3 years coinciding with defensive driving training refresher.
 - b) If there is a change in health or driving record.
- 2) Supervisors have the authority to review or revoke an employee's authorization to drive as they deem necessary.
- d. **Driving Record Validation.** Employees who are professional "motor vehicle operators," as indicated by position title and description, are required to have their driving record validated upon employment and whenever management deems it advisable to review. Since driving is a condition of employment for this category of employee, state human resource offices are responsible for conducting any driver records checks.

4. Driver Training Requirements.

- a. **Driver Improvement Training.** Initial defensive driving training must be completed prior to operating a vehicle for official business; refresher training must be completed every 3 years thereafter, or more frequently as determined by the supervisor. Employees are responsible for notifying their supervisors each time they have completed driver improvement training. Training must be tracked in DOI Talent, the official system of training records. Online driver improvement training is available through [DOI Talent](#). Offices are encouraged to provide classroom instruction for driver improvement training. Training can be provided through a variety of sources. All driver improvement training courses containing the following elements will meet BLM requirements:
 - 1) Core training elements (must be included) – definition/benefits of defensive driving principles (collision avoidance, preventable collisions); benefits of occupant restraint systems; techniques to maintain control during adverse situations (aggressive drivers, traffic); identification of risky driving attitudes/behavior (such as distractions that reduce a driver's reaction time (phone, electronics, food, etc.) and dangers of impaired driving including alcohol, medications and fatigue; techniques to avoid/reduce collisions (speed, safe following distance); skills associated with safe turning, passing, right of way and backing; weather and road conditions that drivers may encounter; and discussion of handling characteristics of various types of vehicles that may be operated and pre-trip inspections.
 - 2) Optional training elements (recommended to be included) – policy on seat belts; discussion of any local issues and/or motor vehicle accident trends; policy on distracted driving; and policy on driving limitations (work/rest).
- b. For off-highway vehicle training requirements, refer to Chapter 17 of this handbook.

- c. For specialized equipment training, refer to Chapter 18 of this handbook.
- d. Employees authorized to drive four-wheel-drive vehicles must receive initial training and demonstrate proficiency based on the vehicles and environments in which they will be operating. Training can be conducted using various methods of delivery (i.e., video, online, field, classroom, etc.). Contact the local safety manager or fleet manager for available training materials.
 - 1) At a minimum, training content should include:
 - a) Vehicle handling characteristics,
 - b) Preventive maintenance checks,
 - c) Cargo security,
 - d) Engaging and disengaging four-wheel-drive systems,
 - e) Tire chain installation, and
 - f) Vehicle recovery,
 - 2) Refresher training is recommended if:
 - a) There is a change in the employee's driving performance,
 - b) There is a change in vehicle characteristics,
 - c) There is a change in environment conditions, or
 - d) There is any other situation the supervisor deems necessary.
 - 3) Training requirements for specialized wildland fire apparatus can be found in "Interagency Standards for Fire and Fire Aviation Operations."

5. Road Test Requirements.

Road testing is required for employees with a position title of "motor vehicle operator," as indicated by their position description, who operate vehicles in excess of 1 ton, passenger buses, vehicles that transport dangerous materials, law enforcement vehicles, or emergency services vehicles. Road testing as part of a commercial driver's license is acceptable.

6. Driving Limitations.

a. Maximum Driving Time Limitations.

- 1) **Solo drivers.** Employees must not exceed 10 hours of solo driving time (behind the wheel), to include use of specialized equipment, during a 16-hour duty period.
- 2) **Multiple drivers.** Multiple employees in a single vehicle may drive up to the duty-day limitation (16 hours) provided no driver exceeds the individual driving time (behind the wheel) of 10 hours.
- 3) Agency administrators or supervisors may allow for exceptions based on a formal risk assessment.
- 4) Employees must take the appropriate steps to reduce fatigue and

consider factors such as physical condition, weather, length of trip, and road conditions to determine reasonable travel times within these driving limitations.

- 5) Supervisors must work with employees to prevent excessive driving on official travel, making every effort to ensure they have discussed and mitigated potential risks in accordance with these driving limitations.
- b. **Rest Requirement.** At least 8 consecutive hours of rest, without duty, are required prior to each duty period requiring driving. Breaks of 15 minutes should occur every 2 hours when driving continuously.
- c. **Other Limitations.** Agency administrators or supervisors may place further limitations on the hours of duty or driving time due to risk factors (e.g., fatigue, weather, poor road conditions, distance, illness, driving hours between 10 p.m. and 5 a.m.). Supervisors should be notified of changes and delays.

7. Restrictions and Other Authorizations.

- a. **Tobacco.** Use of tobacco products is prohibited in agency-owned or -leased vehicles.
- b. **Animals in Vehicles.**
 - 1) Transporting pets in government vehicles generally is not allowed. Transporting pets will be addressed on a case-by-case basis, documented in a risk assessment, and approved by the level of authority as indicated by the risk assessment code.
 - 2) Service animals are allowed in vehicles for official government business.
 - 3) Animals must be protected by a carrier or other restraint while being transported either in the internal or external part of a vehicle.
- c. **Vehicle Domiciling.** Refer to BLM Manual 1525, "Fleet Management."

8. Revocation of Driving Authorizations and Penalties.

- a. **Revocation of Driving Authorizations.** Supervisors, at all levels, are responsible for continuously evaluating the performance of employees in the operation of motor vehicles and motorized equipment. Supervisors must initiate action to revoke or suspend the government driving authorization of employees who fail to meet acceptable standards of health, conduct, or safe driving. Off-the-job offenses may or may not result in denial to operate a government vehicle if the offense does not result in revocation or suspension of the license. Consult with a servicing employee relations specialist for further guidance. Supervisors may deny an employee's authorization to operate a government vehicle and/or be subject to disciplinary action as a result of the following situations:

- 1) Leaving the scene of an accident,
- 2) Operating a vehicle under the influence of alcohol and/or drugs,
- 3) Revocation or suspension of an employee's state license,
- 4) Recurring traffic or safety violations,
- 5) Physical or mental impairments, pursuant to 5 CFR 930.113c,
- 6) Operating a vehicle in a reckless manner,
- 7) Operating a government-owned, government-leased, rental, or privately owned motor vehicles for other than official purposes,
- 8) Transporting unofficial passengers (refer to BLM Guidebook G-1525-1 "Fleet"),
- 9) Driving without a seatbelt or allowing passengers to ride without a seatbelt, or
- 10) A report from the state that issued the driver's license or commercial providers of driver records that reflects situations (1) through (9) or that contains additional information, indicating a review of the authorization to drive (BLM Form 1112-11).

- b. **Penalties.** For potential penalties, see DOI Departmental Manual, part 370, Chapter 752, "Discipline and Adverse Actions." Supervisors, with consultation from the servicing employee-relations specialist, are responsible for determining if an employee has failed to operate a motor vehicle in a safe and lawful manner.

9. Safety Equipment.

- a. **Seatbelts.** Drivers and all passengers on official government business, occupying any seat in a motor vehicle equipped with a seatbelt, must have the seatbelt properly fastened at all times when the vehicle is in motion. Drivers and passengers must not ride in vehicles in which seatbelts are inoperable or have been removed. Refer to 49 CFR 571.201 for an exception for bus passengers.
- b. **Safety Equipment.**
- 1) Every government-owned vehicle must be equipped with:
 - a) First aid kit,
 - b) Spare tire,
 - c) Jack and lug wrench,
 - d) High visibility vest, and
 - e) Additional equipment based on vehicle use, weather conditions, and local needs (e.g., warning reflectors for night use, winter driving, off-road usage).
 - 2) Fire extinguishers are required in buses, wildland fire apparatus, and

heavy equipment and as required by the Department of Transportation when hauling hazardous materials such as gasoline, explosives, and chemicals (49 CFR 393.95). Extinguishers must be securely anchored, maintained, and visually inspected monthly by a qualified person and serviced/retagged annually by a fire protection specialist.

- a) Fire extinguishers are not required in other vehicles, unless required by the agency administrator.
- 3) Tool boxes and other materials should be securely fastened when being transported so they do not shift and strike occupants or otherwise create a hazard in case of a vehicle accident.

10. Vehicle Inspections.

- a. Government-owned or -leased vehicles must not be operated while in poor mechanical condition. Operators are responsible for checking their equipment prior to use, reporting any deficiencies, and initiating corrective action.
- b. Monthly vehicle inspections must be conducted, and inspection results must be documented. Reports must be maintained by the local fleet manager or designated representative. Refer to BLM Guidebook G-1525-1, "Fleet Management and Requisitioning Requirements," for additional information on required service and inspections by qualified mechanics.
- c. For specific guidelines on inspections of specialized equipment, refer to Chapter 18 of this handbook.

11. Accident Investigations.

- a. Managers and supervisors, in coordination with the local safety manager, must initiate an accident investigation and take appropriate actions to prevent future accidents (see Chapter 9, "Accident Investigation and Reporting"). Based on the complexity and severity of the accident, agency administrators and/or supervisors should request the assistance of safety professionals and/or a trained accident investigator to conduct the accident investigation. Copies of accident investigation reports from local law enforcement officials must be obtained and provided to the respective fleet manager who will file the report with vehicle fleet records.
- b. Form DI-134/GSA Form 1627 is a kit containing accident reporting forms and must be stored in every fleet vehicle.
- c. Employees must inform their supervisors immediately when they have been involved in a vehicle accident. Accidents must be reported using:
 - 1) Standard Form 91, "Motor Vehicle Accident" (found in DI-134/GSA Form 1627 kit).
 - 2) Standard Form 94, "Statement of Witness" (found in DI-134/GSA Form 1627 kit).

- 3) DOI Safety Management Information System by the supervisor at the [SMIS website](#).

12. Records Maintenance.

The following types of records pertaining to motor vehicle operations must be maintained by the following program leads or their designees:

- a. Fleet managers must retain vehicle preventive maintenance records in respective vehicle files.
- b. Fleet managers must retain vehicle repair records in respective vehicle files.
- c. Fleet managers must retain records of monthly vehicle inspection checklists in respective vehicle files.
- d. Supervisors must retain BLM Form 1112-11.
- e. Human resource offices must retain commercial driver's license records.
- f. Employee training records must be used to record defensive driving and specialized equipment training. DOI Talent is the employee's official training record. Local training tracking systems may also be used in addition to DOI Talent.
- g. Fleet managers must retain supporting documentation for vehicle accidents/property damage in the respective vehicle file.

E. References.

1. 5 CFR 930, Subpart A, Motor Vehicle Operators.
2. 29 CFR 1926.601, Motor vehicles.
3. 41 CFR 101-39, Interagency Fleet Management Systems.
4. 41 CFR 102-34, Motor Vehicle Management.
5. 49 CFR 383 - 395.
6. 49 CFR 571.210, Seat belt assembly anchorages.
7. Federal Property and Administrative Services Act of 1949, as amended (63 Stat. 377).
8. 31 U.S.C. 1349 and 1344.
9. 40 U.S.C. 491(j).
10. Executive Order 13513, Federal Leadership on Reducing Text Messaging While Driving.
11. Executive Order 13043, Increasing Seat Belt Use in the United States.

12. Department of the Interior, Departmental Manual, part 485, Chapter 16, Motor Vehicle Safety.
13. BLM Manual 1520, "Personal Property Management."
14. BLM Guidebook G-1525-1, "Fleet Management and Requisitioning Requirements."
15. "Interagency Standards for Fire and Fire Aviation Operations."

Chapter 16 – Watercraft Safety

A. Introduction.

Used appropriately, watercraft are an important machine for productivity in the BLM. Watercraft are often used in program areas such as law enforcement, research, and recreation management. Risk associated with watercraft operations can be minimized by strict adherence to guidelines set forth in this chapter. These guidelines are closely associated with U.S. Coast Guard training standards and DOI policies to provide applicable training and reduce inherent risk.

B. Purpose.

This chapter specifies minimum requirements for watercraft operation training, inspection, protective equipment, and equipment use to reduce or eliminate accidents and incidents with potential to cause employee injury or damage to government property.

C. Program Elements.

1. Duties and Responsibilities.
2. Operators.
3. Training.
4. Watercraft Inspection and Equipment Checklist.
5. Requirements and Operating Procedures.
6. Float Plans.
7. Personal Flotation Devices.
8. Cold Weather Personal Protective Equipment.
9. Towing Nongovernmental Watercraft.

D. Explanation of Program Elements.

1. Duties and Responsibilities.
 - a. The BLM National Watercraft Safety Lead is responsible for:
 - 1) Ensuring the BLM has an adequate number of watercraft instructors for each state and requesting additional resources as needed,
 - 2) Maintaining a roster of all BLM state watercraft safety leads and all DOI watercraft instructors,
 - 3) Maintaining copies of appointment orders and requesting states to appoint a state lead when the position is vacated,
 - 4) Assisting state leads and instructors in finding other DOI watercraft

- instructors as needed,
- 5) Serving as the liaison for state leads who identify national-level issues,
 - 6) Assisting with policy development for the BLM watercraft safety program, and
 - 7) Representing the BLM on the DOI Watercraft Safety Board.
- b. Each state watercraft safety lead is appointed in writing by their associate state director with the following duties and responsibilities outlined in their appointment orders:
- 1) Coordinating state or regional compliance with policies and procedures governing the operation, maintenance, and safety of watercraft,
 - 2) Maintaining a list of all employees in their state who have received watercraft safety training and due dates for refresher training,
 - 3) Notifying the BLM National Watercraft Safety Lead of any change in their status,
 - 4) Notifying employees in advance when refresher training is needed,
 - 5) Assisting district/field offices with watercraft safety training scheduling for employees required to complete the training prior to operating watercraft,
 - 6) Serving as the central point of contact for other BLM watercraft instructors in their state to disseminate information from the BLM National Watercraft Safety Lead, and
 - 7) Identifying issues to the BLM National Watercraft Safety Lead for transmittal to the DOI Watercraft Safety Board as needed.
- c. State safety managers will serve as the alternate state watercraft safety lead in their state or as the state watercraft safety lead if one has not been appointed.
- d. Managers are responsible for ensuring that employees who use watercraft for their jobs have the appropriate level of watercraft safety training. Managers should contact the state watercraft safety lead to determine which staff members need this training and to coordinate this training.

2. Operators.

Watercraft operators are responsible for the safety of the watercraft, passengers, crew, equipment, and cargo. Watercraft operators are responsible for knowing all equipment requirements and safety procedures for the craft being operated, including the recommended carrying capacity for people and loaded equipment (e.g., motor, fuel, gear, etc.), lighting, and personal flotation devices in accordance with DOI Departmental Manual, part 485, Chapter 22. The operator must give a safety briefing to crew and passengers before any trip or mission.

3. Training.

Supervisors are responsible for ensuring that every BLM watercraft under their jurisdiction is operated only by personnel who have completed the DOI Motorboat Operator Certification Course or equivalent training. All BLM operators of non-motorized boats (i.e., manually operated watercraft, such as a canoe, raft, rowboat, kayak, etc.) must complete a BLM-approved non-motorized watercraft operator course that relates to the type of craft to be operated and the class of water to be operated on. BLM watercraft instructors have access to these training materials.

- a. Available training courses can be found at the [National Conservation Training Center website](#).
- b. This website is not all-inclusive. Contact a state watercraft safety lead or local safety specialist to determine if other courses are available in your area.
- c. Other watercraft training may be substituted for the DOI Motorboat Operator Certification Course and Motorboat Operator Instructor Certification Course. Requests for substitution must be submitted to the BLM Safety Manager. Substituted training must demonstrate that it will meet the objectives of the Motorboat Operator Certification Course objectives, including on water proficiency. Examples of acceptable training are the U.S. Army Corps of Engineers Boat Operators Training Course and the Federal Law Enforcement Training Center Marine Law Enforcement Training Program.
- d. Every watercraft operator must have an Optional Form 346, "U.S. Government Motor Vehicle Operator's Identification Card," properly endorsed by their supervisor or authorized issuing officer to indicate the class(es) of watercraft the operator is qualified to operate.

4. Watercraft Inspection and Equipment Checklist.

All vessels owned or operated by the BLM (except Class A) must be inspected annually to ensure they are seaworthy and meet all federal and state requirements. This inspection should be conducted by a trained specialist with the Courtesy Motorboat Examination Program. This program is managed by the United States Power Squadrons and the U.S. Coast Guard Auxiliary. If, for logistical reasons, it is not feasible for one of these authorities to carry out the inspection, vessel inspections may be conducted by a qualified mechanic. It is important to maintain documentation of inspections. Federal requirements and other information can be found at the following websites:

- a. [Boating Responsibly](#).
- b. A standard vessel safety checklist can be found at [United States Coast Guard Auxiliary](#).
- c. Many states have specific boating safety regulations and training requirements, which can be learned by contacting the state boating safety office. The National Association of State Boating Law Administrators can provide specific state requirements and contacts at [NASBLA](#)

5. Requirements and Operating Procedures.

BLM employees are not authorized to use any government-owned or -leased watercraft for purposes other than official business or emergencies. All BLM offices that have watercraft must address personal protection measures in all operational procedures of watercraft. In addition, BLM Form 1112-5, "Risk Management Worksheet," must be completed and approved prior to use of watercraft. These protection measures must include, but are not limited to:

- a. Watercraft operator standards,
- b. Passenger standards,
- c. Equipment standards,
- d. Communications standards/radio procedures,
- e. Emergency procedures,
- f. Fire suppression,
- g. Standards for personal flotation devices,
- h. Survival equipment,
- i. Current first aid/cardiopulmonary resuscitation certification,
- j. Navigation and rules of the road,
- k. Watercraft operation procedures (e.g., maneuvering, towing),
- l. Trailering and launching procedures,
- m. Basic seamanship,
- n. Safety briefings, and
- o. Float plan procedures.

6. Float Plans.

Detailed float plans are available at [US Coast Guard Auxiliary Float Plan](#).

Operators may deviate from these requirements if special mission situations prevent float plan information from being conveyed. Prior to using a watercraft, the operator must provide verbal or written notification to a reliable contact with, at least, the following information:

- a. Description of watercraft,
- b. List of occupants,
- c. Emergency equipment on board,
- d. Point of departure,
- e. Planned route,
- f. Estimated time of departure,

- g. Estimated time of return,
- h. Means of contact (e.g., very high frequency radio, satellite/mobile phone) and contact schedule,
- i. Purpose of trip,
- j. Description of vehicle(s) left at launch site(s), and
- k. Recommended plan of action if overdue.

7. Personal Flotation Devices.

- a. All personnel are required to wear a personal flotation device in open areas of watercraft less than 65 feet in length. An operator can require occupants to wear a personal flotation device in any area of the watercraft regardless of the length of the watercraft. A manually inflatable personal flotation device is recommended for use in enclosed areas of watercraft to reduce the risk of entrapment in the event of capsizing.
- b. Personal flotation devices must be U.S. Coast Guard-approved and rated for commercial use. The outer shell of personal flotation devices must be international orange unless a different high-visibility color is required for special uses (e.g., fluorescent yellow-green, which is approved in ANSI107-2004). Deviation from high-visibility color requirements may be permitted if special mission requirements, such as undercover law enforcement missions, cannot be otherwise satisfied. Deviations must be requested in writing by the supervisor of the organizational unit conducting the operation prior to the conduct of the activity. The written request must identify alternate safety measures to be taken. The BLM Safety Manager will authorize deviations from high-visibility color requirements on a case- by-case basis for a period not to exceed 1 year.
- c. In accordance with 46 CFR 25.25-15, each personal flotation device is required to have at least 200 square centimeters (31 square inches) of retroreflective material attached to its front side, at least 200 square centimeters of material on its back side, and, if the item is reversible, at least 200 square centimeters of material on each of its reversible sides. The material attached on each side of the item must be divided equally between the upper quadrants of the side, and the material in each quadrant must be attached as closely as possible to the shoulder area of the item. In accordance with 46 CFR 25.25-13, each personal flotation device is to be equipped with a light securely attached to the front shoulder area when on board watercraft being operated in coastal waters, oceans, or large lakes.
- d. All personal flotation devices must be inspected and maintained in accordance with the manufacturer's instructions. Personal flotation devices should be stored in a cool, dry place out of direct sunlight. A "dry" area is considered any suitable area where water will not condense on a personal flotation device. All personal flotation devices should also be kept away from oil, paint,

and greasy substances.

8. Cold Weather Personal Protective Equipment.

Cold weather personal protective equipment (e.g., U.S. Coast Guard-approved exposure suit) must be worn when the sum of air and water temperatures is less than 100 degrees Fahrenheit. An exception to this requirement may be made if an approved risk assessment indicates that risks associated with donning cold weather personal protective equipment (e.g., crew performance degradation, thermal stress) are offset by the benefits of not donning cold weather personal protective equipment. Prior to use, personnel must be trained in the use of this equipment.

9. Towing Nongovernmental Watercraft.

a. BLM boat operators may only take a nongovernment vessel under tow:

- 1) When a definite threat to life or damage to property exists.
- 2) When a disabled vessel is in a remote location and private/commercial towing/salvage service is not available. The BLM boat operator may tow to the nearest safe moorage, dock, or boat ramp.
- 3) When such action will not place the BLM vessel or crew at risk. The BLM boat operator may tow to the nearest safe moorage location.

b. Appropriate towing procedures and safety precautions, as taught in the DOI Motorboat Operator Certification Course, must be followed. See DOI Departmental Manual, part 485, Chapter 22, appendices 1 and 2.

E. References.

1. Department of the Interior, Departmental Manual, part 485, Chapter 22, Watercraft Safety.
2. Department of the Interior, Departmental Manual, part 485, Chapter 22, appendix 1, Motorboat Operator Instructor Certification Course.
3. Department of the Interior, Departmental Manual, part 485, Chapter 22, appendix 2, Motorboat Operator Certification Course.
4. American National Standards Institute 107-2004.
5. 46 CFR 25.25-15, Retroreflective material for personal flotation devices.
6. 46 CFR 25.25-13, Personal flotation device lights.

Chapter 17 – Off-Highway Vehicle Safety

A. Introduction.

This chapter addresses the use of **off-highway vehicles (OHVs)**. The term OHV is used for both **all-terrain vehicles (ATVs)** and **utility terrain vehicles (UTVs)**. The use of the term ATV alone or UTV alone means that specific type of vehicle. This chapter does not apply to construction or excavating equipment, such as graders, bulldozers, or skid steer loaders, or to specialized off-road equipment, such as sand rails or amphibious vehicles. It does not apply to agricultural equipment such as tractors and mowers. For information on off-road motorcycles or snowmobiles, please see Chapter 18, Specialized Equipment and Towing.

B. Purpose.

All BLM managers, supervisors, employees, and volunteers must be trained, certified, and authorized prior to operating an OHV. The use of BLM OHVs must be carefully supervised to reduce personal injuries and keep property damage to a minimum. All OHV operations must conform to the requirements of this chapter. OHVs are categorized as specialized equipment; authority for the purchase and use of specialized equipment is found in 49 CFR 172 and 49 CFR 383-397.

C. Program Elements.

1. Important Terms
2. OHV Supervisory Responsibilities.
3. OHV Maintenance.
4. OHV Training.
5. OHV Equipment Requirements.
6. OHV Loading and Transport Procedures.
7. Miscellaneous OHV Operational Requirements.

D. Explanation of Program Elements.

1. Important Terms.
 - a. **Administrative-Use UTV Operation.** UTV operation solely for the purpose of short-distance, localized transportation within a defined, developed facility, such as a ware yard, campground, or field office complex, at speeds not exceeding 15 miles per hour on flat or nearly flat surfaces of smooth asphalt, concrete, or compacted dirt or gravel, such as road or parking lot surfaces. See Appendix 2 of this handbook for a summary of the streamlined requirements associated with administrative use of UTVs. Golf carts can be used for administrative use only.

- b. **Agricultural Use.** Defined as use of agricultural implements. Specific examples of agricultural implements include, but are not limited to seed drills, disk hoes, and harrows.
- c. **All-Terrain Vehicle.** A motorized OHV 50 inches or less in width, designed for off-road use and capable of maneuvering over uneven terrain, traveling on four or more low-pressure tires, having a seat to be straddled by the operator and handlebar for steering control. All ATVs used for BLM activities must be operated by a single rider with no passengers. Active riding (weight shifting) is required for safest operation.
- d. **ATV Instructor.** An individual who has completed the ATV Safety Institute's ATV Rider Course Instructor Certification training and BLM instructor training for BLM ATV operator field training, and technical modules. ATV instructors may also teach BLM UTV training.
- e. **Industrial-Use OHV Operation.** An industrial process in which an ATV or UTV is used as an integral part of, including, but not limited to, the following: pesticide or fuel firing device application or transportation of greater than 15 gallons of liquid cargo. Industrial use of ATVs is not allowed in BLM. Industrial use does not include the following:
 - 1) Transporting the operator plus solid cargo.
 - 2) Transporting the operator plus liquid cargo up to 15 gallons. Note: Cargo weight must not exceed the manufacturer's maximum cargo rack or cargo bed weight limitations.
 - 3) The use of a utility trailer attached to an OHV to transport cargo.
- f. **Maximum Manufacturer's Cargo Rack Weight Limitation.** Specified by the manufacturer in the ATV or UTV operator's manual for front and rear cargo racks or cargo bed. May also be marked on decals attached to rack tubes or surfaces. Listed weight limitations must not be exceeded.
- g. **Maximum Manufacturer's Towing Capacity.** Specified by the manufacturer in the ATV or UTV operator's manual. This weight limitation must not be exceeded.
- h. **Off-Highway Vehicles (OHV).** In the BLM, the term OHV includes ATVs and UTVs.
- i. **OHV Chief Instructor (CI).** An OHV instructor who oversees their state's OHV training program and qualifies trainers to teach the BLM ATV operator training, and technical field modules and BLM UTV training.
- j. **Personal Protective Equipment (PPE).** Equipment worn on the body to protect it from injury, such as helmets, goggles, and gloves. Refer to paragraph D5e for specific information on required PPE.
- k. **Risk Assessment.** A formal process for systematically examining the risk associated with an activity to develop effective strategies to reduce the level of risk. Risk assessments must be completed and approved in accordance with

Chapter 2 of this handbook, “Operational Risk Management.” The “Risk Management Worksheet,” BLM Form 1112-5, is used to facilitate the completion of a risk assessment.

1. **Rollover Protective Structure (ROPS).** An open steel framework enclosing a UTV that is strength rated to one or more of the following industry standards to resist collapse during a vehicle rollover.

Note: Cab enclosures or brush cages are not always rated as a rollover protective structure:

- 1) **International Organization of Standardization (ISO) 3471:2008** and Society of Automotive Engineers (SAE) J2194.
 - 2) SAE J2258, dated December 2010, addresses occupant protective structures. This standard is for light utility vehicles 72 inches or less in overall width, operable on three or more wheels, intended to transport material loads or people, with a gross vehicle weight of 5,500 pounds or less, and a maximum design speed of less than 25 mph.
 - 3) SAE J1194 standard is no longer acceptable as certification of rollover protective structures for OHVs due to OSHA Standard Interpretation dated October 25, 1991 – Differences between the various standards for Rollover Protective Structures used on agricultural wheeled tractors, that indicates this standard of design is less protective than the subsequent SAE J2194. UTVs purchased prior to March 31, 2010, with rollover protective structures that comply with the SAE J1194 may continue to be used until retired from service, but must be limited to administrative use.
 - 4) OSHA 29 CFR 1928.53, Protective enclosures for wheel-type agricultural tractors – test procedures and performance requirements.
 - 5) Additional national consensus standards specifically for UTVs are under development and, upon release, will supersede the previously listed standards. UTVs meeting the previously listed standards and purchased prior to the issuance of the new industry standards may continue to be used.
- m. Utility Terrain Vehicle. A motorized vehicle designed for off-highway use and capable of maneuvering over uneven terrain, usually designed with side-by-side seats, seatbelts/restraint system for each occupant, a steering wheel, four or more low pressure tires, and a rollover protective structure compliant with the requirements of this chapter. It may have doors attached. Vehicles are generally not rider active.

2. OHV Supervisory Responsibilities.

- a. Supervisors must ensure that only qualified and authorized employees operate OHVs. In addition to training requirements, qualifications include being

familiar with this handbook chapter and the OHV operating manual specific to the model, available from the dealer or manufacturer.

- b. Each operator must be authorized in writing by their supervisor to operate an OHV. Optional Form 346, "U.S. Government Motor Vehicle Operator's Identification Card," or equivalent, may be used for this purpose.
- c. Supervisors must ensure that a specific risk assessment is prepared for all projects or activities using OHVs and for each type of OHV being utilized. The risk assessment must address the following areas:
 - 1) Appropriateness of the OHV for the work project or activity,.
 - 2) Operator tasks,
 - 3) Personal protective equipment,
 - 4) Operator experience/training level,
 - 5) Vehicle cargo rack weight limitations,
 - 6) OHV capabilities/limitations,
 - 7) Loading, unloading, and transportation of the vehicle,
 - 8) Terrain (i.e., obstacles, trail smoothness and composition, slope angle),
 - 9) Weather and work environment,
 - 10) Maintaining reliable communications,
 - 11) Check-out/check-in procedures, and
 - 12) An evacuation plan that includes the location of work, nearest medical evacuation site, and routes to the worksite for responding ground search and rescue/emergency medical service personnel. Plans should reference locations in terms of latitude and longitude whenever possible.
- d. Supervisors must ensure that hazards identified in the risk assessment for the project or trip are reviewed by all participants prior to commencing operations and that changes in field operating conditions result in the reevaluation of the risk and a review of any new hazards.

3. OHV Maintenance.

- a. **Manufacturer's Recommended Maintenance Schedule.** BLM-owned motor vehicle/equipment units must have inspections and service, including tune-ups, performed in accordance with the manufacturer's recommended schedules or more frequently if operating conditions require.
- b. **Annual Maintenance/Safety Inspection.** BLM vehicles must receive a thorough mechanical and safety inspection at least annually using applicable sections of BLM Form 1520-35, "Annual Motor Vehicle Maintenance/Safety Checklist," or an equivalent dealership form as a record of the inspection. For units on a manufacturer's regular maintenance schedule, the annual inspection

should be accomplished at the same time that regular scheduled maintenance is performed. For units not on a manufacturer's maintenance schedule, the annual inspection must be accomplished before the beginning of the field season. These maintenance/safety inspections must be performed by a qualified mechanic (e.g., small engine mechanic, dealership mechanic). Copies of the completed inspection forms must be retained in the appropriate vehicle/equipment file.

4. OHV Training.

- a. Instructor Preparation Course and BLM instructor training for BLM ATV operator field training, and technical modules. Instructors who only teach UTV courses may complete either the Recreational Off-Highway Vehicle Association (ROHVA) Driver Coach Preparation instructor certification or the ASI ATV Instructor Preparation Course. UTV instructors must complete BLM instructor training for BLM UTV. Only ATV Instructors must maintain their ASI instructor certification. Instructors have primary responsibility to:
 - 1) Organize and conduct training,
 - 2) Provide supervisors and safety personnel with training documentation indicating who is qualified to operate an ATV or UTV, and
 - 3) Coordinate entry of training documentation into DOI Talent with their DOI Talent administrator.
- b. **Chief Instructors (CI).** Each state must designate in writing one OHV chief instructor to oversee their state OHV training program. The CI will be appointed by the Associate State Director. Chief instructors must maintain a current roster of their state's OHV trainers, disseminate important information to them and train ATV Safety Institute-accredited trainers to teach the BLM ATV/UTV modules. To become an OHV CI, the candidate must be (1) certified as an ATV instructor by the ATV Safety Institute and (2) trained in the use of BLM ATV and UTV training materials by a BLM CI. The qualifying chief instructor will notify the state safety manager of the appointment of a new CI in their state.
- c. **Certification.** Due to the inherently dangerous nature of OHV operations, BLM OHV instructors have the discretion not to certify a student if, in their judgment, the student has not mastered the competencies required to safely operate an OHV. An individual whose certification is denied may appeal for another evaluation to the BLM OHV chief instructor of the organization in which they work.
- d. **ATV Operators.** ATV operators must successfully complete the following training:
 - 1) Introduction to Basic ATV Operation – Online course that is a prerequisite to all ATV field training.
 - 2) ATV Safety Institute ATV Rider Course training taught by an ATV

Safety Institute-certified instructor.

- 3) BLM ATV Operator Field Training.
 - 4) Technical modules, as appropriate, for their job (e.g., pesticide application). Technical modules are taught either by qualified ATV trainers who have expertise in the technical specialty or jointly by an ATV trainer and a subject matter expert (e.g., pesticide application) for the specialty. If necessary, training may be given by a UTV trainer that has knowledge and experience of ATV operation or by a UTV trainer in conjunction with an experienced ATV operator.
- e. **Off-Highway and Back-Country UTV Operators.** These operators must successfully complete the following:
- 1) BLM Introduction to Utility Terrain Vehicle Operation.
 - 2) BLM UTV Field Module, to be instructed by a qualified trainer. UTV training may be delivered by an ATV trainer having knowledge and experience of UTV operation or by a certified UTV trainer.
- f. **Administrative-Use UTV Operators.** These operators must be licensed to drive motor vehicles by their state and authorized to operate a motor vehicle on government duty. Operators are required to receive a briefing on the safe operation of the vehicle they will be operating. Documentation is not required. See Appendix 2 for complete details regarding the briefing required for administrative UTV use.
- g. **Re-evaluation.** All OHV operators must be re-evaluated by a BLM OHV instructor every 3 years. The re-evaluation must be documented on the form provided in Appendix 3, "Off- Highway Vehicle Operator Training and Authorization Record." Employees are responsible for maintaining this record of their training.
- 1) Reevaluation consists of the operator demonstrating to an OHV instructor the operator's knowledge and abilities in controls, service, handling, loading/tie-down, unloading, operating over terrain typically encountered, and using on-the-job equipment.
 - 2) The reevaluation may be accomplished during a "check ride" conducted during normal work activities.
 - 3) OHV instructors will determine whether an individual should accomplish a check ride or if retraining on the ATV Safety Institute Rider Course and/or BLM training modules are necessary. Components/tasks constituting a check ride are determined by the OHV instructor based on (g)(1) above and on the instructor's knowledge of the individual being evaluated and previous observations of the individual's skill as an ATV or UTV operator. Check rides will follow the same certification process outlined in paragraph D(4)(c) of this chapter to pass or fail a rider.
 - 4) Supervisors and/or BLM ATV instructors may require an individual

to demonstrate their abilities during a check ride at any time when, in their judgment, an operator's performance is unsatisfactory or unsafe.

- h. **Optional Form 346 or equivalent.** OHV operators must hold a valid Optional Form 346 or equivalent. This form must document supervisor authorization and operator qualifications for ATVs, UTVs, trailer towing limits, and specialized equipment.,
- i. **Operator Responsibilities.** Operators are responsible for tracking their actual ATV/UTV ride time, informing their supervisor(s) when they need a check ride, and contacting their local BLM ATV instructor to schedule check rides. Each office is responsible for maintaining and tracking certifications and reevaluation requirements for their employees.
- j. **Infrequent OHV Operators.** Infrequent OHV operators are individuals who are certified in accordance with this handbook and have ridden less than 16 hours in the past 12 months. Infrequent operators must successfully complete a check ride once every 12 months.
- k. **Dignitary Use of OHVs.** OHV use by dignitaries is exempt from compliance with the training provisions in this handbook if a written BLM risk assessment identifying the hazards and control measures to protect the dignitary and BLM employees is completed prior to OHV operation. Appropriate hazard control measures must be used. An orientation on the operation of the OHV must be provided by a BLM OHV instructor. The state director or associate state director has the responsibility and authority to deny use of BLM OHVs to any dignitary or member of a dignitary's entourage when it can be reasonably determined that the dignitary or other individual will be unable to safely operate the OHV.

5. OHV Equipment Requirements.

- a. **ATVs.** Stability testing has clearly demonstrated that UTVs are 10 percent more stable than ATVs when crossing slopes and 50 percent more stable traveling up slopes. Unless a waiver is granted per paragraph 5(a)(3) below, procurement and use of ATVs will cease as of October 1, 2019. After this date, BLM personnel will not utilize ATVs for any activities. The **BLM Office of Law Enforcement and Security (OLES)** and the **BLM Fire and Aviation (FA)** Directorates have established counterpart policies governing the utilization of ATVs for law enforcement and wildland fire activities.
 - 1) Employees of cooperating agencies/entities may utilize ATVs on BLM projects if allowed by their individual agency/entity policy.
 - 2) This policy does not affect transition time frames for the BLM Fire and Aviation program, as described in FA IM 2016-022. This policy does not apply to ATV use by BLM law enforcement personnel (e.g., Law Enforcement Rangers, Special Agents) while performing law enforcement functions.

- 3) State Directors, Assistant Directors, and the Director, National Operations Center have the authority to approve exceptions to this policy on a case-by-case basis. Cost is not a basis for approval of an exception, and no exceptions may be made to the existing ban on industrial use of ATVs. All requests for exceptions must be in writing and will include:
 - a) A description of how the ATV is essential for the performance of official duties,
 - b) Analysis of the alternatives that were considered,
 - c) Justification for an ATV being the only viable option, and
 - d) Concurrence by the applicable Field Manager, District Manager, District Safety Manager, and the State Safety Manager.
- b. **Purchase of UTVs.** A risk assessment (BLM Form 1112-5) that considers the predominant mission will determine the type and model of UTV to be purchased. UTVs purchased on or after March 11, 2008, must be equipped with a certified **rollover protective structure (ROPS)** designed and installed by the original equipment manufacturer as standard equipment. UTVs purchased without a ROPS prior to March 11, 2008, must either have a ROPS fabricated and installed per the applicable ROPS design standards contained in paragraph D(1)(k)(1)-(4) in this chapter or be retired from service.
- c. **Modifications.** Modifications to any OHV that change the manufacturer's design of the vehicle's frame, electrical system, or mechanical configuration are not permitted, with the following exceptions:
 - 1) Installation of off-the-shelf aftermarket equipment designed for specific OHV applications, such as ROPS, carry-all boxes, equipment bags, approved extended range fuel tanks, equipment racks, winches, or other attachments, such as law enforcement equipment or integrated pest management equipment, that complies with this chapter.
 - 2) Installation of a fuel-firing device for fuel-firing device operations using a UTV. The fuel-firing device itself must comply with the requirements in Appendix 4 of this handbook.
- d. **Field Equipment.**
 - 1) The following equipment must be carried when operating an OHV in the field:

- a) First aid kit. In addition to a standard first aid kit, a blood borne pathogen protection kit is recommended. Operators should enclose the first aid kit in a sealable plastic bag or other dust and water resistant container.
 - b) Personal communications device, charger or spare batteries. This equipment may include a two-way radio, cellular phone, satellite phone, GPS tracker, or other BLM-approved equipment.
 - c) Manufacturer's tool kit, including a manual and low pressure tire gauge.
- 2) The following equipment is strongly recommended for back country travel:
- a) Map and compass.
 - b) Water for 1 to 3 days or a 1-micron water filter with disinfection.
 - c) Food for 1 to 3 days.
 - d) Flashlight with extra batteries and bulb (or LED-type).
 - e) Sunscreen.
 - f) Lightweight shelter and appropriate clothing for climatic conditions.
 - g) Global positioning system receiver.
 - h) Multipurpose belt tool.
 - i) Matches or fire starter in weatherproof container.
 - j) Fire extinguisher.
 - k) Whistle and signal mirror.
 - l) Tire repair kit.
 - m) Air pump.
- e. **Personal Protective Equipment.** At a minimum, the following personal protective equipment and field equipment is required to be used by all ATV/UTV operators and UTV passengers.

1) Helmets.

- a) **ATV Operators.** ATV operators must wear a full or three-quarter face motorcycle helmet with a chin strap properly secured. Motorcycle helmets must meet Department of Transportation requirements, ANSI standard Z90.1, or Snell Memorial Foundation standards. In order to mitigate exposures to hot temperatures, half shell "racing pit crew" helmets may be worn by wildland firefighters while operating ATVs on fireline duty, provided they meet the following requirements:
 - The helmets must be lined with fire resistant Nomex brand/aramid fiber material,
 - The ATV must only be operated within ¼ mile of the fireline,

- Speed must be 15 miles per hour or less, and
 - Terrain must not constitute a “serious” or “critical” rollover hazard.
- b) **UTV Operators.** UTV operators must wear a motorcycle helmet as described in the previous paragraphs (a). However, if a comprehensive and properly prepared risk assessment demonstrates no more than a moderate residual risk level, the following exceptions are permitted:
- (1) **Wildland Fire Use.** When using UTVs in the event of wildfires, hardhats that meet requirements of the National Fire Protection Association’s NFPA 1977, “Standard on Protective Clothing and Equipment for Wildland Fire Fighting.”
 - (2) **All Other Use.** When a UTV is operated on moderate terrain at moderate speeds, operators may wear Type II hardhats in lieu of motorcycle helmets. Type II hardhats must be worn with a chin strap securely in place under the chin and must meet the American National Standards Institute standard Z89.1.
 - (3) **Half-Shell Helmets.** UTV operators may wear half-shell helmets that meet the requirements of the previous paragraphs (a), (b), and (c) when the National Oceanic and Atmospheric Association’s heat index chart indicates a condition in the “extreme caution” zone or higher. See appendix 5 for the chart. The heat index provides a number in degrees Fahrenheit (F) that is a combination of the percentage of relative humidity and air temperature, which more accurately identifies the effects of heat on the human body rather than temperature alone. Using the heat index chart may prevent heat stress conditions (heat exhaustion or heat stroke). In addition, a comprehensive and properly prepared risk assessment must demonstrate that terrain does not constitute a “serious” or “critical” hazard.

- c) In order to facilitate facial communication and full situational awareness, law enforcement rangers and special agents are not required to wear head protection when performing high-density crowd control operations on smooth, level terrain at speeds comparable to walking.
- d) The greatest hazard that may be reasonably encountered provides the basis for the type of head protection required to be worn. In areas not familiar to the operator, “serious” and “critical” hazard levels should be assumed to exist, and helmets that meet the requirements described in the preceding paragraphs must be worn.
- e) Because of the low speeds and smooth travel surfaces, operators using UTVs for administrative use are not required to wear hardhats or helmets.

Note: Some states may have more stringent laws requiring helmet use. Follow the most stringent standard for your location.

- f) Helmets and hardhats must be replaced 5 years from date of manufacture or as recommended by their manufacturer, and they must be removed from use immediately if involved in an impact-related accident or if showing signs of damage or significant wear or deterioration.
- 2) **Gloves.** The type of gloves required is based on the work environment included in the risk assessment (e.g., a brushy environment may warrant padded riding gloves, as opposed to canvas gloves used for trash pickup).
 - 3) **Arm and Leg Protection.** ATV/UTV operators and UTV passengers must wear long pants and a long-sleeved shirt, jersey, or jacket.
 - 4) **Footwear.** Footwear must cover the ankle (6”- 8” uppers) and have non-slip soles and heels. Footwear must also have soles and heels sufficient to keep the operator’s foot from slipping off foot pegs when ATVs with foot pegs are being operated.
 - 5) **Eye Protection.**
 - a) ATVs/UTVs. Operators must wear a Department of Transportation- rated helmet face shield or clear or tinted safety goggles or glasses in accordance with the American National Standards Institute standard Z87.1, depending on the work environment included in the risk assessment (e.g., a brushy environment may warrant full goggles or a face shield instead of safety glasses).

- b) UTVs. Eye protection is not required when using a UTV that has an original equipment manufacturer or equivalent windshield that protects the face from branches, flying debris, etc., unless otherwise required by an associated industrial-use activity or the risk assessment.
- 6) **Additional Gear.** Additional rider protection gear identified in the risk assessment must be worn (e.g., rider pants, knee/shin/elbow guards, or law enforcement protective wear such as a kidney belt or chest protector).
- 7) **Personal Protective Equipment for Pesticide Application.**
- a) Chemical resistant gloves must be worn during spray operations, replacing riding gloves.
 - b) To protect the applicator from chemical exposure and for safe operation of the OHV, impervious boots with fiberglass shank in the sole must be worn, or impervious boots may be worn over leather riding boots.
 - c) Helmets must be equipped with removable, washable liners and meet the following additional requirements:
 - (1) *ATV Pesticide Application.* Operators must wear a helmet as described in E(5)(e)(1)(a) of this handbook chapter, with a chinstrap properly secured, while in transit to and from the pesticide application area. While applying pesticide, the applicator may wear a half-shell style Department of Transportation-approved motorcycle helmet. Helmets must be replaced 5 years from date of manufacture, or sooner if a helmet is involved in an impact-related accident or if showing signs of damage, significant wear, or deterioration from chemical exposure.

(2) *UTV Pesticide Application.* Applicators must wear a helmet as described in E(5)(e)(1)(b) of this handbook chapter, or they may wear a hardhat provided a cab/brush cage is permanently installed on the vehicle and the UTV is being operated only on terrain that does not merit a “serious” or “critical” risk assessment rating of the rollover hazard. Hardhats must meet requirements of the National Fire Protection Association’s NFPA 1977 or the ANSI Z89.1 Type II Hardhat standards for all other uses. Hardhats must be replaced as recommended by their manufacturer, or sooner if involved in an impact-related accident or if showing signs of damage, significant wear, or deterioration from chemical exposure.

d) Follow pesticide label instructions for use of other personal protective equipment, as specified.

6. OHV Loading and Transport Procedures.

This section establishes detailed standard operating procedures to ensure safe loading, unloading, and transport of OHVs in pick-up trucks and on trailers. Only qualified operators are permitted to load or unload OHVs. Great care must be taken to avoid a wide variety of hazards associated with this operation. A risk assessment must be completed prior to any OHV operation, and loading and unloading must be addressed in the risk assessment.

- a. **Personal Protective Equipment (PPE).** Operators must wear helmets described in E(5)(e)(1) of this chapter while loading/unloading an OHV. This also applies to winching operations, even though the rider is dismounted.
- b. **Transport Vehicle and Trailer Requirements.**
 - 1) The transport vehicle must be of adequately rated capacity and capability. Operators must not exceed the transport vehicle’s gross vehicle weight rating and maximum cargo rating when transporting the OHV.
 - 2) When transporting an OHV on a trailer, the trailer must be appropriately rated, ensuring that the load does not exceed trailer load weight and ensuring that the combined weight of the trailer, OHV, and equipment does not exceed the towing vehicle’s rated towing capacity.
 - 3) Trailers are the recommended method for transporting all OHVs due to the decreased level of risk to the OHV driver when using a lower ramp angle for loading/unloading trailers. Offices are highly encouraged to limit transport of small UTVs in pick-up trucks and to use trailers for transport of all OHVs.

c. Loading Ramp Requirements. All portable loading ramps must meet the following criteria:

- 1) Loading ramps for ATVs should be aluminum or steel and of welded construction. Plastic ramps may be used if they are commercially designed and manufactured specifically for ATV loading and if they are rated for the weight of the ATV and all attached equipment. The ramp driving surface must have closely spaced cross members or mesh construction with high-traction surface. Plastic ramps must have traction blocks molded into the ramp driving surface. If not purchased from a vendor, a registered professional engineer must assign a load rating, and the load rating must be posted on the ramp. Wooden ramps may not be used.
- 2) Ramps may be of one- or two-piece design, rigid or folding. Hinges must be factory installed (i.e., no shop-built ramps may be of a folding type).
 - a) One-piece bi-fold or trifold ATV ramps must be a minimum of 46 inches wide when extended for loading. One-piece ramps must be wider than the distance between the ATV tires, as measured from the outside of the left tire to the outside of the right tire.
 - b) For two-piece ATV ramps, each ramp must be a minimum of 10 inches wide. Ramp length must be a minimum of 71 inches long when extended for loading; however, because reducing ramp angle increases the level of safety while loading, 84 inches (7 feet) is the strongly recommended length. 84 inch or longer ramps should always be used to load onto truck beds.
 - c) For UTVs, the ramp must be of sufficient length to reduce the ramp angle to a slope that is safe for the model. Refer to the owner's manual for slope angle guidance specific to the UTV model being loaded.
- 3) Ramps must be adequately rated to support the combined weight of the OHV, the rider, fuel, and any cargo that cannot be removed from the machine during loading.

- a) The minimum ramp loading capacity for ATVs must be 1,200 pounds for a single-piece, full-width ramp or 600 pounds each for two-piece ramps.
 - b) The minimum ramp loading capacity for UTVs must be 1,500 pounds for a single-piece, full-width ramp or 750 pounds each for two-piece ramps.
 - c) Regardless of minimum ramp loading capacities, the operator must ensure that the ramp being used is adequately rated to support the combined weight of the vehicle, rider, fuel, and cargo.
- d. Positioning and Securing the Loading Ramp.
- 1) The ramp angle from the vehicle or trailer to the ground has the largest influence on risk when loading or unloading an OHV. If the ramp angle is reduced, and all other conditions remain the same, risk is reduced. The truck or trailer should be positioned to take advantage of any terrain features that will help reduce the ramp angle. Trucks and trailers must not be positioned across side slopes for loading or unloading operations.
 - 2) Loading ramps should be positioned so the ends in contact with the ground are level or at the same height. Uneven ramps may cause the OHV to tip over sideways during loading/unloading.
 - 3) Operators should consider the following methods to reduce the ramp angle for loading ATVs and small UTVs (less than 50 inches wide) onto pickup trucks:
 - a) The use of a loading wall, if available, or positioning the rear of the truck near an earthen berm or ridge will reduce the ramp angle from truck bed to ground. If the loading wall is the correct height, it may eliminate the need for ramps and allow roll- on/roll-off loading.
 - b) The truck may be positioned with the rear wheels in a depression (e.g., a ditch) to reduce the ramp angle. This lowers the bed of the truck and allows the ramps to be located on higher ground on the far side of the depression.
 - 4) Conversely, the bottom of the ramp should not be set into a depression, because this increases the ramp angle.
 - 5) Use of ramp chains or straps during loading is mandatory to prevent ramps from falling during loading. Loading ramps must be secured to the transport vehicle with a minimum of two restraining straps, chains, steel cables, or mechanical fasteners and capable of supporting the OHV and associated equipment. When in position for loading, the chains or straps must be taut with no slack or sag.

- 6) Two-piece OHV loading ramps must be positioned parallel and spaced so the OHV tires are centered on the ramps. One-piece ramps must be centered on the truck bed and the OHV driven up the center of the ramp.
- e. Requirements for Carrying OHVs in Pickup Trucks.
- 1) The following guidelines apply to the transport of ATVs in pickup trucks:
 - a) Only pickup trucks or larger vehicles that have room for all four wheels of the ATV to rest on the bed of the truck will be used to transport ATVs. Gross vehicle weight rating, suspension weight capacity, and tire load ratings must not be exceeded.
 - b) Pickup trucks may transport only one ATV loaded in the bed, and all four ATV wheels/tires must be in contact with the bed surface.
 - c) Transport vehicles should be equipped with rear window protectors (“headache racks”) if possible.
 - d) All pickups must have a flatbed surface, wide enough between wheel wells so that the ATV may be rolled on the bed without riding over the wheel wells. An ATV must not, under any circumstances, be loaded into a vehicle if the ATV must be driven over the wheel wells.
 - e) Four tie-down straps must be used. Welded or bolted tie-down connection points are recommended.
 - f) Stake pocket tie-down connection points rated at 1,000 pounds or more (available at auto or trailer retail stores) are acceptable if a sturdy header board is installed.
 - g) Padding should be placed at the front of the pickup bed to protect both vehicles and help absorb any accidental impact during loading. A used tire, minus the rim, works well for this purpose.
 - h) It is strongly recommended that the tailgate be completely closed at all times during transport.
 - i) Any materials, equipment, or gear in the bed of the pickup truck must be secured from movement.
 - 2) The following guidelines apply to the transport of small (50 inches wide or less), single or multi-seat UTVs in pick-up trucks:

- a) The pick-up truck must be adequately rated for the capacity and capability to carry the UTV. Gross vehicle weight rating, suspension weight capacity, and tire load ratings for the truck must not be exceeded.
 - b) The truck must be provided with a rack or other device to protect the rear window of the cab from breakage when loading and transporting the UTV.
 - c) The pick-up bed must be wide enough so that the UTV does not ride over the wheel wells during loading/unloading, and does not rest on the wheel wells during transport.
 - d) All four wheels/tires of the UTV must fit inside the bed of the pick-up and not rest on the tailgate. It is strongly recommended that the tailgate be completely closed at all times while the truck is transporting the UTV (an eight foot truck bed would be needed for the UTV to fit inside the bed with the tailgate closed).
 - e) All four wheels/tires must be in contact with the truck bed surface.
 - f) The UTV must be secured with four ratchet type tie-down straps, with minimum 800 pound working load limits each. Tie-down connection points should be welded or bolted to the truck.
 - g) Loading ramps must be a minimum of 72 inches long; ramps must be long enough not to exceed the ramp angle listed by the manufacturer in the owner's manual. Truck lift kits that raise the height of the truck bed must be taken into account when determining the proper length of the loading ramp.
 - h) Loading ramps must be wide enough to accommodate the tires of the UTV.
 - i) Loading ramps must support the weight of the UTV and the rider. Loaded gear must be removed from racks prior to loading/unloading the UTV.
 - j) All PPE, including helmets, must be worn when loading/unloading the UTV in the pickup truck bed.
- f. OHV Loading Procedures and Techniques.
- 1) ATV racks or UTV utility beds should be unloaded before transporting. Any heavy cargo must be removed and/or spray tanks emptied, if possible. If heavy cargo or tanks cannot be removed, sandbags or other heavy objects should be secured to the front to balance the OHV.
 - 2) The front of the OHV should be loaded toward the front of the transport vehicle or trailer whenever possible.
 - 3) In cases in which the OHV must be loaded with a tank or other load

on the OHV rear, it may be safer to use a winch to load the OHV with the rear facing the front of the transport vehicle/trailer, placing the center of gravity further forward and reducing the probability of the OHV tipping backward off the ramp.

- 4) The safest method of loading an OHV that has a full or partially full spray tank or other heavy load on the rear is to winch the riderless OHV into the bed of the pickup. It is recommended that a winch be used for loading/unloading a damaged OHV or an OHV that is heavily or unevenly loaded with equipment which cannot be removed due to an urgent or unavoidable reason. Winch operators must be trained and fully aware that there are serious hazards associated with winching operations.
- 5) The operator should apply throttle smoothly and climb the ramp at low speed. Too much or sudden increases in throttle will cause the OHV to be harder to control and may cause it to over-turn or strike the front of the vehicle bed/trailer.
- 6) As an ATV operator starts up the ramp, they should lean toward the uphill direction (i.e., toward the ramps), to help keep the ATV balanced.

g. Securing OHVs for Transport.

- 1) Tie-down straps are required for securing an OHV for transport. Ropes, chains, cables, and bungee cords are not acceptable. Tie-down straps must be in good condition and free of frays, splices, damage due to sun or chemical exposure, and must be manufacturer rated with the following minimum working load limit:
 - a) 400 pounds for ATVs. Only straps with ratchet action buckles may be used to secure ATVs. Frayed or knotted straps or rope must not be used.
 - b) 800 pounds for UTVs. Only tie-down straps with ratchet action buckles may be used to secure UTVs.
 - c) ATVs weighing more than 800 pounds or UTVs weighing more than 1,600 pounds require tie-down straps with higher working load limits than those stated in the previous paragraphs (a) and (b). Operators must have an accurate knowledge of the weight of their vehicle in order to determine if tie-down straps with higher working load limit ratings are required.
- 2) To prevent forward, backward, or sideways movement, a minimum of four tie-down straps are required to secure the OHV to the vehicle or trailer: two tie-down straps to secure the front of the OHV to the vehicle and two tie-down straps to secure the rear of the OHV to the vehicle. Hooks on the OHV end of the tie-down straps must generally be attached to a rigid structural member of the OHV frame, not the

cargo racks, unless otherwise stated in the owner's manual. Hooks on the other end must be attached to vehicle/trailer cargo anchors.

- 3) If a commercially manufactured restraining device rated for the load to be secured and secured in accordance with the manufacturer's instruction is used, two tie-down straps may be used in lieu of four, provided the use of the device is addressed in the risk assessment.
- 4) Tie-down points must be adequate to secure the OHV to the trailer or to the transport vehicle. Tie-down points provided by the trailer or truck manufacturer should be used. If additional points are necessary, they must be connected directly to the trailer or truck frame; they cannot be secured into the trailer bed. Also, additional tie-down points must be installed with the expertise necessary to ensure the tie-down points are adequate to secure the load that is being transported and connected to those points.
- 5) For transport, OHVs with manual transmissions should be left in the first gear position; those with automatic transmissions should be left in the "park" position. The ignition key should be turned off and removed, the parking brake set, the run/stop switch in the stop (or off) position, and the fuel lever turned to the off position.
- 6) Portable or detachable containers containing hazardous materials, such as pesticide, flammable solids, or flammable liquids:
 - a) Must be secured separately from the OHV inside the bed of the truck or trailer to prevent movement. Tanks that are specifically manufactured to be solidly attached to an ATV or UTV for the purpose of repeated use are not portable containers and do not have to be removed prior to transport.
 - b) Must be in good physical condition, free of leaks and residue on their exteriors, properly labeled, and meet Department of Transportation specifications for over-the-road transportation requirements.
 - c) Must not exceed Department of Transportation minimum transportation regulation for over-the-road transportation, unless placarding or licensing requirements are met.
 - d) Must be accompanied by a **Safety Data Sheet** (SDS) for the container contents.

h. Unloading OHVs from the Transport Vehicle.

- 1) One method of unloading an OHV is to push it down the ramps in neutral and allow it to roll down on its own. This should only be done after carefully assessing the ground slope and potential obstacles that the OHV could encounter when exiting the end of the ramp. If riding down, the ATV operator should lean forward/uphill, apply only enough throttle to start the OHV down the ramps, and then allow the OHV to roll backwards/downhill using light pressure on all the brakes

to control speed; never suddenly apply hard braking when descending a ramp.

- 2) When parking an OHV:
 - a) Engage the brake.
 - b) Shift transmission into low range/low gear or “park,” as applicable.
 - c) Block tires when parking on an incline/decline.
 - d) Turn off and remove keys if appropriate.
 - e) Turn fuel supply line valve to “off,” if applicable, to prevent fuel leakage during transport or storage.
- 3) UTV operators must remain seated with the seatbelt fastened and properly adjusted when loading and unloading UTVs. Injuries are more likely to be serious in an overturned UTV if the operator is thrown from the machine. Operators should not attempt to bail out of an overturning UTV, because of the high risk of being crushed or struck by the UTV or its rollover protective structure/brush frame.

7. Miscellaneous OHV Operational Requirements.

a. Passengers.

- 1) Passengers are prohibited on all ATVs. ATVs may only be ridden by a single person due to the greater difficulty of two individuals successfully bailing out simultaneously during a roll-over event. Additionally, BLM instructors teach the “rider active” technique of ATV operations for greater control and safety, and this style of operation is compromised by a passenger. This policy does not prohibit the purchase or use of an ATV designed for two riders (i.e., driver and passenger), but this type of ATV may only be ridden by a single person with no passenger.
- 2) Carry no more passengers in a UTV than the number of seats installed by the manufacturer. The operator and each passenger must have their own fully functional seatbelt, which must be fastened and properly adjusted at all times when the vehicle is in motion.

b. **Riding Alone.** Riding alone (e.g., a single ATV being operated in the field or one person riding in a UTV) in the backcountry is prohibited, unless authorized by the supervisor and addressed in the risk assessment. A trip plan addressing check-out/check-in procedures, the planned route, and a communications plan must be developed and followed, and a copy must be provided to the supervisor.

c. Cargo.

- 1) When carrying equipment, equalize the load to maintain balance, stability, and center of gravity. Never exceed the manufacturer’s

- maximum carrying capacity for axles or cargo racks as specified in the OHV owner's manual. Follow manufacturer loading instructions.
- 2) All tools or equipment transported on OHVs must be securely attached to the vehicle to prevent loose cargo from falling under the wheels or striking the rider or vehicle, as well as to prevent a sudden shift in the center of gravity.
 - 3) Secure equipment on an ATV as close to the center of the machine as possible to help keep the center of gravity of the combined weight of the machine, rider, and cargo centered within the machine's footprint, but do not attach equipment in a manner that could interfere with an emergency dismount from the ATV.
 - 4) When hazardous materials or pesticides are being transported, ensure that the risk assessment reflects the necessary actions to activate emergency procedures in the event of an accidental discharge, as appropriate for the region and state. The risk assessment must include chemical name, classification, quantity, and precautions to be taken in the event of an accident.
 - 5) All containers used for externally transporting fuel must meet specification requirements stipulated in the "Interagency Transportation Guide for Gasoline, Mixed Gas, Drip Torch Fuel, and Diesel" published by the National Wildfire Coordinating Group.
 - 6) When transporting external fuel containers, each OHV must have, at a minimum, a secured Class 5BC fire extinguisher, as stipulated in the "Interagency Transportation Guide for Gasoline, Mixed Gas, Drip-Torch Fuel, and Diesel" published by the National Wildfire Coordinating Group.
- d. Operators must perform a pre-ride safety and mechanical inspection prior to the start of each shift. Appendix 6 of this handbook provides a pre-ride inspection checklist.
 - e. When using an OHV to tow a trailer and/or equipment, the maximum manufacturer's towing capacity specified in the vehicle owner's manual must not be exceeded. The manufacturer's specified towing capacity varies depending on the grade or slope of the terrain to be traveled. In addition, the trailer's weight rating must not be exceeded.
 - f. Do not drive recklessly or at excessive speed, and do not engage in horseplay.
 - g. A trip plan addressing check-out/check-in procedures, the planned route, and a communications plan must be developed and followed, and a copy must be provided to the supervisor.
 - h. All OHV accidents, including near misses and property damage, must be reported in the Safety Management Information System at the [SMIS website](#).

E. References.

1. 49 CFR 172.
2. 49 CFR 383-397.
3. American National Standards Institute Z87.1, Z89.1, and Z90.1.
4. National Fire Protection Association NFPA 1977, "Standard on Protective Clothing and Equipment for Wildland Fire Fighting."
5. "Interagency Transportation Guide for Gasoline, Mixed Gas, Drip-Torch Fuel, and Diesel," publication number PMS 442, published by the National Wildfire Coordinating Group, dated April 2011.
6. International Organization for Standardization 3471:2008.
7. Society of Automotive Engineers J2194, J2258, and J1194.

Chapter 18 – Specialized Equipment and Towing

A. Introduction.

The BLM uses a variety of specialized equipment, both owned and rented, to complete its mission. This chapter establishes safety requirements for the operation of specialized equipment and for towing trailers.

B. Purpose.

This chapter provides requirements for the establishment of a safety program for those employees that use specialized equipment within the BLM. The purpose of the program is to ensure the practical safeguarding of people and property from hazards resulting from the use of specialized equipment. Facility managers, engineers, and safety personnel must ensure that these requirements are followed at all BLM facilities and activities.

C. Program Elements.

1. General Requirements.
2. Snowmobiles.
3. Motorcycles.
4. Heavy Equipment.
5. Forklifts.
6. Recreational Vehicles.
7. Towing.

D. Explanation of Program Elements.

1. General Requirements.
 - a. Specialized equipment is defined as snowmobiles, motorcycles, ATVs, UTVs, watercraft, and heavy equipment, such as graders, backhoes, dozers, forklifts, and skid steer loaders. All operators of specialized equipment must use Optional Form 346, "Government Motor Vehicle Operator's Identification Card," to annotate completion of training, certification, and validation of their demonstrated proficiency to operate specialized equipment. BLM Form 1112-11, "Motor Vehicle/Special Equipment Authorization," must be used to note supervisory authorization to operate the equipment, pending completion of certification or training. Further guidance on the use of watercraft is located in Chapter 16 of this handbook, and guidance for ATVs and UTVs is located in Chapter 17 of this handbook.
 - b. Unsafe operators must not use government-owned or -leased equipment. Any

operator who has a poor accident record or who operates equipment in a careless manner will have their specialized equipment operating privileges suspended or revoked. Operators who become medically unable to operate equipment without undue risk to themselves or others must notify their supervisor. Operators are responsible for checking their equipment prior to use, reporting any deficiencies, and initiating corrective action.

- c. Supervisors are responsible for ensuring that employees can satisfactorily operate the equipment for which they are authorized. Supervisors at all levels are responsible for continuously evaluating the performance of employees in the operation of specialized equipment. Supervisors must initiate action to revoke or suspend the authorization to use specialized equipment for employees who fail to meet acceptable standards of health, conduct, or safe driving. Supervisors must ensure that a risk assessment is completed during the planning stages for projects or activities that require the use of specialized equipment.
- d. Seatbelts must be maintained and worn when provided. Fire extinguishers must be provided in heavy equipment, and they must always be securely anchored to prevent movement or damage. Extinguishers must be maintained and visually inspected monthly by a qualified person and serviced/retagged annually by a fire protection specialist.
- e. Government-owned or -leased equipment must not be operated if it is in poor mechanical condition. Manufacturer-recommended service inspections must be conducted based on service schedules and operating conditions. Equipment maintenance/safety inspection results must be documented. Refer to BLM Guidebook G-1525-1, "Fleet Management and Requisitioning Requirements," for additional information on required service and annual inspections by qualified mechanics.
- f. Managers, supervisors, and employees must report BLM-related accidents as required in Chapter 9 of this handbook. Employees must inform their supervisors immediately when they have been involved in an accident involving the use of specialized equipment. All damage to equipment must be recorded in the Safety Management Information System at the [SMIS website](#).

2. Snowmobiles.

- a. Training. For snowmobile operation, minimum training includes, but is not limited to:
 - 1) Safety requirements,
 - 2) Snowmobile components and controls,
 - 3) Preoperational checks,
 - 4) Snowmobile operation,
 - 5) Trailer use,

- 6) Environmental considerations,
 - 7) Personal protective equipment, and
 - 8) Cold weather operations.
- b. Safety Gear. Snowmobile operators must wear and/or carry on their body:
- 1) Snowmobile helmet (approved by the Department of Transportation, ANSI, or Snell Foundation),
 - 2) Clothing adequate for winter travel, including goggles (clear and tinted), gloves, and above-the-ankle boots,
 - 3) Flashlight with extra batteries and bulb,
 - 4) Matches and cigarette lighter,
 - 5) Collapsible (sectional) probes and avalanche rescue transceivers,
 - 6) Shovel,
 - 7) Map and compass,
 - 8) Global positioning system receiver (optional but recommended),
 - 9) Personal communications device,
 - 10) First aid kit,
 - 11) Manufacturer's operating manual,
 - 12) Manufacturer's toolkit,
 - 13) Emergency equipment/clothing identified in the risk assessment,
 - 14) Skis or snowshoes (recommended), and
 - 15) Sunscreen.
- c. Operating Requirements.
- 1) Always inspect the machine thoroughly before use by following procedures outlined in the manufacturer's operating manual.
 - 2) Do not drive recklessly or engage in horseplay.
 - 3) Do not leave the engine running when parked. Turn it off, remove the ignition key, and set the parking brake. If the machine does not have a parking brake, secure it against movement.
 - 4) Night riding should be limited to rescue operations only. If travel at night cannot be avoided, travel over familiar ground. Do not blaze a new trail. Maintain a slow speed to avoid overdriving the machine's headlights.
 - 5) Avoid traveling alone.
 - 6) Keep the machine in top mechanical condition.
 - 7) Know what to do when encountering other snowmobilers on a road or

trail.

- 8) Always check the weather conditions before departing.
- 9) Plan travel according to weather and snow conditions. Be flexible with departure dates.
- 10) Information on wind chill calculations can be found in Chapter 26, "Cold Stress Prevention."

- d. **Avalanche Awareness.** The best way to avoid an avalanche is to be informed, travel with the appropriate gear, and avoid high-risk riding areas. Check [Avalanche](#) for more information on avalanche safety, and, if possible, attend an avalanche/beacon safety course.

3. Motorcycles.

Motorcycle operators must possess a valid state motorcycle driver's license. Personal protective equipment, including a Department of Transportation- or Snell-approved helmet, impact-resistant goggles or face shield, long sleeves and long pants, above-the-ankle boots, and leather gloves, must be worn while operating the motorcycle.

4. Heavy Equipment.

- a. Each state must designate qualified trainers/testers for the heavy equipment that they operate. Only qualified, competent heavy equipment operators should be designated as trainers/testers. The designation must be formally documented in a position description amendment or through a formal memorandum. For equipment training needs that are unable to be met in-house, commercial vendors may be used.
- b. Operators must receive training appropriate for the use of the specific equipment and demonstrate their proficiency to the instructor or designated examiner. All operators of heavy equipment must review the operator's manual and understand the general hazards associated with the operation and maintenance of the equipment. Operators must possess a valid commercial driver's license, as required, and satisfactorily pass all written and performance skills tests.
- c. **Rental Equipment.** Periodically, BLM employees rent heavy equipment to perform official duties. This is a cost-effective way to accomplish the mission without a large capital expense for equipment that will only be used on an infrequent basis. However, the use of rental equipment that is unfamiliar to the operator can expose employees and the public to serious hazards during operation and transportation. To minimize these risks, offices must require additional supervisory oversight and follow the following instructions when using rental equipment:
 - 1) Supervisors must not accept rental equipment unless a complete operator's manual is provided.

- 2) Field office managers or state engineers must ensure that the operator is trained and fully qualified to use the specific model and type of equipment being rented.
- 3) Supervisors must take extra measures to monitor the use of rental equipment during unusual or dangerous operations.
- 4) Supervisors must ensure that employees wear seatbelts during the operation of equipment requiring seatbelts.
- 5) Risk assessments must be completed prior to the transport and use of rental equipment.
- 6) Risk assessments must address the specific project where the equipment is to be used and must address height measurements along the entire route.
- 7) Manufacturer's guidance must be followed for the use and transport, including transport configurations.

5. Forklifts.

- a. **Certification.** Forklift drivers must complete a certification course that meets the requirements of 29 CFR 1910.178 prior to operation. Recertification must take place every 3 years.
- b. Minimum operational requirements for forklifts include:
 - 1) Falling Object Protective Structures (FOPS),
 - 2) Back up alarm,
 - 3) Stencil or decal indicating capacity; and
 - 4) Seatbelts or harnesses (stock pickers).
- c. Basic safety rules for operating forklifts
 - 1) No passengers will be carried on forklifts, pallets, or loads. Forks of high-lift trucks will not be used as a personnel elevator, unless a safety platform specifically designed for lifting personnel is attached to the forks.
 - 2) Before operating, check brakes, steering, horn, gas, oil, and water levels. For propane powered forklifts, also check gas lines and connections. Report irregularities to a supervisor. Operate gas-, diesel- or propane-fueled equipment in well-ventilated areas only.
 - 3) Do not exceed the truck's rated capacity or the floor load limits.
 - 4) Do not make modifications to forklifts without the manufacturer's approval.
 - 5) Inspect loads, with consideration for weight and balance, before

lifting.

- 6) Drivers will face the direction the truck is moving and maintain clear vision of the way ahead. Use low gear to descend ramps. Trucks must travel forward to go up ramps and in reverse to go down ramps.
- 7) Arms and legs must remain inside the truck and not placed between the mast's uprights or outside the running lines of the truck.
- 8) Chocks will be provided and used for wheels of highway trucks and trailers at loading docks. Bridge plates into trucks must be wide enough, appropriate for the load and secured.
- 9) Watch out for pedestrians. Before passing a doorway or turning a blind corner, slow down and sound the horn. When entering main aisles, intersections, or roadways, come to a full stop; look and sound the horn.
- 10) Carry the loads of high-lift trucks 6 inches off the floor and tilted backward for better stability. When high-lift trucks are unloaded and in motion, their forks will be kept near the floor to prevent damage or injury.
- 11) Do not block aisles with parked trucks. Turn off engine before leaving a gas or diesel truck. Lock trucks and remove keys from truck when not in service.
- 12) Stop engines when refueling. Industrial trucks will be equipped with a fire extinguisher, and drivers must know how to operate it.

d. Forklift battery maintenance must include the following:

- 1) PPE must be worn when servicing a battery. This includes, at a minimum, heavy-duty rubber gloves and safety goggles. A face shield and rubber apron are also recommended.
- 2) An eyewash or shower station must be in an accessible location that requires no more than 10 seconds to reach. The eyewash unit must be located on the same level as the hazard and the path of travel must be free of obstructions. For a strong acid or strong caustic, the eyewash should be immediately adjacent to the hazard.
- 3) Engines must be shut off and smoking and open flames are not permitted within 50 feet of the battery-changing area. The area must be signed "No Smoking or Open Flames".
- 4) Always add battery acid to water — never add water to battery acid.
- 5) Brakes must be set before changing the battery and battery-lifting devices must be secure prior to lifting the battery. Stand clear when moving the battery.
- 6) If charging the battery on the forklift, ensure that the ventilation system is working properly before charging the battery. Uncover the

battery compartment to prevent the build-up of heat and hydrogen gas. Ensure that the charger is off before connecting it to the battery and ensure that the charger is properly connected to the battery before plugging it into an electrical outlet.

- 7) Ensure that metal objects do not come in contact with the terminals on the battery and that vent caps are not plugged.

6. Recreational Vehicles.

Recreational vehicles (RVs) must meet health and safety standards before they are used by employees and volunteers. Before purchase, RVs should receive an inspection to ensure they are capable of being safely towed and that they can be safely used as offices or sleeping quarters. The trailer safety checklist in Appendix 8 should be used to help determine if a trailer is properly equipped to enter the BLM inventory or if maintenance or modifications are needed. The current fleet of RVs should also receive annual safety inspections using the checklist in Appendix 8 to ensure they are ready for safe operation before being put into service for the season.

7. Towing.

- a. **Tow Vehicles and Trailers.** Tow vehicles and trailers must be compatible with hitching, braking, and wiring systems to ensure safety. Ensure that towing packages for vehicles are adequate for the types of equipment to be towed (e.g., horse trailers, flat bed equipment haulers, RVs, or ATV/UTV trailers). A towing package may include a heavy-duty radiator, battery, flasher system, alternator, suspension, and brakes, as well as an engine-oil cooler, transmission-oil cooler, wiring harness, specific axle ratio, and special wheels and tires.
- b. **Weights.** Towing capacities for any tow vehicles must not be exceeded. Towing capabilities can be found in manufacturer's guides or on data plates.
 - 1) **Gross Vehicle Weight/Gross Trailer Weight.** The total weight including all cargo, passengers, etc.
 - 2) **Gross Vehicle Weight Rating.** The total weight that is allowed for the vehicle when fully loaded. This information is provided in the manufacturer's guide and on the door pillar of the tow vehicle.
 - 3) **Gross Axle Weight Rating.** The weight that a single axle can carry.
 - 4) **Gross Combination Weight Rating.** The permissible combined weight of the tow vehicle, trailer, passengers, equipment, fuel, etc., that the vehicle can handle. Also called the pulling weight.
 - 5) **Hitch Weight.** Ten to 15 percent of the gross trailer weight. Ball hitches can haul 10-15 percent of the gross trailer weight, and gooseneck hitches can haul up to 25 percent of the gross trailer weight.

- a) Class I trailer hitches are rated for a gross trailer weight of up to 2,000 pounds.
 - b) Class II trailer hitches are rated for a gross trailer weight of up to 3,500 pounds.
 - c) Class III trailer hitches are rated for a gross trailer weight of up to 5,000 pounds.
 - d) Class IV trailer hitches are rated for a gross trailer weight of up to 10,000 pounds.
 - e) Class V trailer hitches are rated for a gross trailer weight greater than 10,000 pounds.
- 6) **Tongue Weight.** Nine to 15 percent of the gross trailer weight is the acceptable range to prevent sway and improve handling of the trailer when towing. If the tongue load is too light, adjust the trailer's load by moving more of the load in front of the axle; if the tongue is too heavy, move part of the load behind the trailer's axle. For light trailers, tongue weight can be measured by placing the hitch on a scale that is at the same height as the hitch ball of the tow vehicle. A tongue weight scale is needed for heavier trailers.
- c. **Tires and Chocks.** Trailer tires should be the same type, size, and construction—do not mix bias-belted and radial tires. In selecting tires for a trailer, buy the size, type, and load range found on the trailer's certification label or in the owner's manual. Tires have a load rating that indicates the amount of weight they can carry safely. As with the tow vehicle, always maintain proper tire pressure, and replace worn tires. Tow vehicle tires may require a higher tire pressure for towing, especially for heavy loads. Carry wheel chocks, and use them when the trailer is parked.
 - d. **Reflective Markings.** For trailers more than 10,000 pounds and greater than 80 inches wide, markings for visibility that meet 43 CFR 393.13 are required.
 - e. **Lights.** Trailers must have tail lights, brake lights, side marker lights, turn signals, and side and rear reflectors. To ensure proper operation of signals, the electrical connector of the tow vehicle must match the electrical connector of the trailer. Check the operation of all trailer lights prior to departure.
 - f. **Hitches and Safety Chains.**
 - 1) Hitch types are designated by the amount of weight they are designed to tow based on tongue weight and trailer weight. The three most common types of hitches are the weight-carrying hitch, the weight-distributing (or load equalizer) hitch, and the fifth-wheel hitch (or gooseneck). Weight-carrying hitches are designed to carry all of the trailer's tongue weight. Weight-distributing hitches are used with a receiver hitch and special parts that distribute the tongue weight among all tow vehicle and trailer axles. Fifth-wheel hitches are designed for mounting the trailer connection point in the middle of the truck bed. When selecting a hitch, use the recommendations of the

manufacturer of the tow vehicle and trailer based on the type and weight of the trailer.

- 2) Ensure that safety chains are used as part of the hitch system. When connected properly, safety chains should have some slack to permit sharp turns but should not drag on the road. In addition, they should cross under the trailer tongue to help prevent the tongue from dropping to the road in the event the trailer separates from the tow vehicle. Safety chains must not be twisted to shorten their length. Safety chains with clevis hooks must have a properly functioning latch to prevent the chain from accidentally disconnecting. "S" style chain hooks are acceptable if they were provided by the Original Equipment Manufacturer (OEM). Safety chains must be visually inspected prior to each use to check for the presence of broken or cracked links; gouges; abrasions; or twisted, bent, or stretched links.
- g. **Brakes.** For a trailer with a loaded weight of more than 1,500 pounds, many states require a separate braking system and a breakaway switch, located on the tongue of the trailer, to activate the trailer brakes in the event the trailer separates from the tow vehicle. Tow vehicle operators must know how these braking systems operate, how to make adjustments to brake controller systems, and how to test brakes prior to departure. Tow vehicle operators must receive training on the recommended actions to take in emergency situations, such as a trailer that has begun to sway. There are two basic types of brake systems designed to activate the brakes on a trailer:
- 1) **Electronically Controlled Brakes.** This brake type usually provides automatic and manual control for trailer brakes. They require that the tow vehicle be equipped with a controlling device and additional wiring for electrical power. These brakes typically have a control box installed within reach of the driver and can be manually or automatically applied. The control box may require adjustment or "tuning in" for variations in trailer load. Operators must know how to adjust sensitivity levels for brake controllers prior to using the equipment.
 - 2) **Surge Brakes.** These are independent hydraulic brakes activated by a master cylinder at the junction of the hitch and trailer tongue. These brakes are not controlled by the hydraulic fluid in the brake system of the tow vehicle. Note: The hydraulic system of the tow vehicle should never be directly connected to the hydraulic system of the trailer. These systems are self-compensating and do not require adjustment for variation in trailer load.
- h. **Mirrors.** When towing a trailer that is wider than the tow vehicle, extended side view mirrors must be installed to see rear and side-approaching traffic.
- i. **Backing Trailers.**
- 1) **Ground Guides/Spotters.** Due to blind spots, mirrors cannot provide all visibility when backing vehicles. When backing a trailer, and two

or more passengers are in the tow vehicle, a spotter must be used. Ensure that the spotter stands apart from the path of the trailer, is visible to the driver at all times, and uses signals that are understood by both the guide and the driver. Spotters must remain visible in the driver's mirrors, maintain a clear view of the hazard area behind the vehicle (driver's blind spot), stay clear of the vehicle's path, avoid walking backward, use agreed-upon hand signals to communicate with the driver, and immediately signal the driver to stop if any person or object enters the area behind the vehicle. Spotters must signal the driver to stop if they must change positions when the vehicle is backing; the spotter should then move to the new position and signal the driver to continue. If a spotter is unavailable, the driver must walk around the vehicle and trailer to visually inspect the area for people and hazards on the ground and overhead.

- 2) To safely back a trailer, place your hand at the bottom of the steering wheel. To turn left, move your hand left. To turn right, move your hand right. Back up slowly. Use slight movements of the steering wheel to adjust direction. Exaggerated movements will cause greater movement of the trailer. If you have difficulty, pull forward and realign the tow vehicle and trailer and start again.

E. References.

1. BLM Guidebook G-1525-1, "Fleet Management and Requisitioning Requirements."
2. 43 CFR 393.13, Retroreflective sheeting and reflex reflectors, requirements for semitrailers and trailers manufactured before December 1, 1993.
3. 29 CFR 1910.178, Powered industrial trucks.
4. Department of the Interior, Departmental Manual, Part 485, Chapter 16, Motor Vehicle Safety.

Chapter 19 – Personal Protective Clothing and Equipment.

A. Introduction.

The best means of protecting personnel from exposure to hazards in the workplace is to eliminate the hazards. When this is not possible, engineering or administrative controls are used to eliminate or minimize exposure to hazards in the workplace. When neither of these methods can be employed, a personal protective equipment program should be implemented to reduce or eliminate exposure to hazards.

Personal protective equipment does not reduce or eliminate the hazard itself. The equipment merely establishes a last line of defense, and any personal protective equipment breakdown, failure, or misuse immediately exposes the worker to the hazard. Many protective devices, through misapplication or improper maintenance, can become ineffective without the knowledge of the wearer and can have potentially serious consequences. For this reason eliminating or engineering out the hazard should always be attempted first. If that is not possible, implement a personal protective equipment program with the following key elements: Proper equipment selection; maintenance; employee training (including equipment limitations); and mandatory enforcement of equipment use.

B. Purpose.

Field offices must provide, use, and maintain personal protective equipment when competent authority determines that its use is necessary and that such use will lessen the likelihood of occupational injuries and/or illnesses. Personnel involved in certain activities must be provided necessary protective equipment when there is a reasonable probability that the use of the equipment will prevent or reduce the severity of injuries or illnesses.

C. Program Elements.

1. Risk Assessments.
2. Equipment Specifications and Requirements.
3. Selection and Use.
4. Electrical Protective Devices.
5. Safety Clothing.
6. Purchase of Personal Protective Equipment

D. Explanation of Program Elements.

1. Risk Assessments.

2. Each field office must ensure that risk assessments of all hazardous job tasks and projects are conducted to determine if hazards are present that necessitate the use of personal protective equipment. If such hazards are present, or likely to be present, field office personnel must take the following actions:
 - a. Select, and ensure each affected employee uses, the types of personal protective equipment that should protect the affected employee from the hazards identified in the risk assessment.
 - b. Involve affected employees in selection decisions.
 - c. Using the risk assessment process, document that the required workplace evaluation has occurred including the hazards considered; identify the person performing the evaluation; and date the risk assessment. Field offices must retain this document as proof of hazard recognition and assessment.
3. Equipment Specifications and Requirements.
 - a. All personal protective clothing and equipment must be of safe design and construction for the work that will be performed. Federal agencies and standards organizations have developed standards and specifications for the design and use of personal protective clothing and equipment. Employees participating in certain activities must only use those items that have been recognized and approved. This approval can be met by:
 - 1) Federal specifications.
 - 2) American National Standards Institute (ANSI) specifications.
 - 3) A recognized approval authority, such as Underwriters Laboratories, Factory Mutual, or **ASTM International** (ASTM).
 - b. When personal protective equipment is provided, employees must use and maintain such equipment. It is the supervisor's responsibility to ensure compliance, including taking appropriate disciplinary action, if an employee fails to properly use and maintain personal protective equipment. Personal protective equipment purchased by employees for their personal convenience must also be approved by the state safety manager, or other individuals with delegated approval authority, to ensure that acceptable equipment is being used and that its use does not put the BLM in violation of federal safety regulations.
4. Selection and Use.
 - a. **Eye and Face Protection.** Employees must wear approved eye and/or eye and face protection that meets the requirements of ANSI Z87.1 at all times when there is a reasonable probability that wearing such equipment will prevent injury. Flying particles and chips of material; splashes from liquids such as acids, caustics, and solvents; and operations that generate welding glare, etc., can cause eye and/or face injury. Field offices must provide the required,

approved protective equipment and enforce usage as recommended by the risk assessment.

- b. **Hearing Protection.** See Chapter 27 for hearing protection requirements.
- c. **Respiratory Protection.** See Chapter 22 for respiratory protection requirements.
- d. **Head Protection.** Helmets and hats used for protection from the impact of falling and flying objects and from limited electric shock and burn must meet the specifications of ANSI Z89.1-2009. Employees must wear head protection at all times in designated hardhat areas. Head protection shall be replaced when it becomes dented or damaged.
- e. **Foot Protection.**
 - 1) **Foot Hazard Operations.** Foot and toe hazard operations are those that have a high incidence of, or potential for, foot or toe injuries. Examples of trades generally associated with foot or toe hazards are construction, materials handling, maintenance, transportation, oil or gas rig operations, aircraft operations, and explosives handling. Employees must wear foot and toe protection at all times in a designated foot hazard area.
 - 2) **Foot Protective Devices.**
 - a) Safety shoes, with a built-in protective toe box (composite), primarily provide protection from heavy falling objects. These shoes must conform to the requirements of and be appropriately labeled per ASTM International F2412 and F2413. General-purpose safety shoes are available from commercial sources.
 - b) Employees must wear the following special-purpose safety footwear, furnished for special hazards:
 - (1) Semi-conductive safety shoes are used to dissipate static electricity. To be effective, employees must use the shoes on conductive surfaces, such as wet concrete, metal decks, carbon-impregnated surfaces, wet terrain, conductive linoleum, and conductive tiles.

- (2) Electrical hazard safety shoes, with a built-in protective safety toe (composite and no metal in the shoe/boot), to guard against electrical shock hazards when performing electrical work on live circuits not exceeding 600 volts. Employees should note, however, that these shoes only provide partial protection, and employees should use additional protective measures normally employed in these environments (i.e., all personnel working on energized circuits should insulate themselves from the ground).
- c) Safety boots are general-purpose footwear items offering the same toe protection as the previously mentioned shoes, except a boot is designed to add support. The BLM does not approve safety boots for use in areas where hazardous chemicals are used.
- d) The following procedures should be used to issue protective footwear for all employees who need safety shoes or boots:
 - (1) The primary method of acquiring safety shoes is by identifying the hazards using a written risk assessment and concluding that protective footwear will protect against the hazard(s). Supervisor and safety manager approval must be obtained. Finally, the division cardholder should be contacted for the purchase of the appropriate footwear. Offices must absorb the cost of safety shoes with local operating funds.
 - (2) Field offices must provide personnel with safety shoes when required by their work and risk assessments should be updated and reviewed annually. When safety shoes exhibit wear such that safety protection is no longer afforded, the division must provide replacement safety shoes (e.g., similar to the replacement of coveralls or foul/cold weather gear). When appropriate, the resoling of safety shoes is also an option, for instance with caulk- soled boots.
- f. Hand Protection.
 - 1) Field offices must select, provide, and require appropriate hand protection whenever employees' hands are exposed to, or are likely to be exposed to, hazards such as skin absorption of harmful substances, cuts or lacerations, abrasions, punctures, chemical irritants, thermal burns, and harmful temperature extremes.

- 2) The selection of hand protection must be based on knowledge of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified by a risk assessment and verified by the safety manager.
- g. **Fall Protection.** Employees must use appropriate fall protection required by the task or as determined by the risk assessment.

5. Electrical Protective Devices.

The BLM must provide appropriate rubber protective equipment for electrical workers who perform work on energized or potentially energized electrical systems. Equipment must conform to the following references:

- a. ASTM D120-14a, Specification for Rubber Insulating Gloves.
- b. ASTM D178-19, Specification for Rubber Insulating Matting.
- c. ASTM D1048-14, Specification for Rubber Insulating Blankets.
- d. ASTM D1049-98, Specification for Rubber Insulating Covers.
- e. ASTM D1050-05, Specification for Rubber Insulating Line Hose.
- f. ASTM D1051-19, Specification for Rubber Insulating Sleeves.

6. Safety Clothing.

- a. Special clothing may include, but is not limited to, flame retardant coveralls, disposable coveralls, impervious chemical spill coveralls, personal flotation devices, welding leathers, hazardous materials suits, and chemical resistant aprons. The selection of special protective clothing must be based on a risk assessment of the performance characteristics of the clothing relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified with a written risk assessment and verified by the safety manager.

7. Purchase of Personal Protective Equipment.

Field offices are responsible for procuring personal protective equipment and enforcing its proper use and maintenance. Use the following procedures to document the purchase of PPE:

- a. The employee or the employee's supervisor initiates the request for PPE.
- b. The supervisor and the employee(s) shall work together to develop a risk assessment that identifies job hazards and proper abatement procedures. PPE will sometimes be part of this hazard abatement. The risk assessment will be reviewed by the safety manager or specialist to ensure compliance with OSHA standards, BLM policy, and ensure that PPE meets appropriate standards.

- c. The supervisor is responsible for providing the servicing procurement office with the signed requisition and a copy of the risk assessment for acquisition. Where credit cards are used, the risk assessment will be attached to the monthly statements

E. References.

1. 29 CFR 1910, Subpart I, Appendix B, Non-mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection.
2. American National Standards Institute Z87.1-2010, American National Standard for Occupational and Educational Personal Eye and Face Protection Devices.
3. American National Standards Institute Z89.1-2009, American National Standard for Industrial Head Protection.
4. ASTM D120-14a, D178-19, D1048-14, D1049-98, D1050-05, D1051-14a, F2412-18a, and F2413-18.

Chapter 20 – Occupational Health/Industrial Hygiene

A. Introduction.

Employees in the workplace are exposed to a variety of physical, health, and ergonomic hazards. These include respiratory hazards, toxic and explosive gases, and diseases transmitted by rodents.

B. Purpose.

BLM employees should be aware of the physical, health, and ergonomic hazards present in the workplace. When they encounter these hazards, they should recognize them and understand which actions can be taken to mitigate them.

C. Program Elements.

This chapter contains requirements.

1. Health Hazard Exposure and Control.
2. Hantavirus.
3. Ergonomics.
4. Preventive Inoculations.
5. Toxic and Explosive Gas Protection.

D. Explanation of Program Elements.

1. **Health Hazards and Exposure Control.** Health hazards may exist in a wide spectrum of chemical forms, including mist, liquid, gas, aerosol, vapor, dust and fumes.
2. **Routes of Entry.** Employees may be exposed to health hazards in the following ways: skin absorption, inhalation, injection, and ingestion through poor work practices.
3. **Standards of Exposure.** To safeguard workers against health hazards, there are specific standards and exposure limits for each type of exposure. The limits sometimes have very strict boundaries between what is safe and unsafe. The safety manager or industrial hygienist should be consulted concerning standards of exposure.
4. **Controlling, Reducing or Eliminating Employee Exposure.** Once an industrial hygiene evaluation or risk assessment has been conducted and a hazardous exposure has been identified, immediate action must be taken to reduce the exposure.

There are four basic control methods: substitution/isolation, engineering controls, administrative controls, and personal protective equipment.

- 1) **Substitution/Isolation.** Eliminate or minimize, to the extent possible, hazardous materials, equipment, or processes by replacing all or part of the hazardous elements. Carefully investigate all substitutions to ensure that new uncontrolled hazards are not introduced. Hazardous processes may also be isolated or enclosed to eliminate employee contact.
- 2) **Engineering Controls.** Engineer out the hazard in the design of the workplace. The most effective and inexpensive engineering controls are designed into the facility or process before construction. For existing construction, administrative controls or PPE may be required as an interim measure until engineering controls are implemented.
 - a) **Ventilation Controls.** Ventilation is the classic method, and the most powerful tool used in safety engineering to control environmental airborne hazards. Proper use of ventilation as a control mechanism can assure that workplace air remains free of potentially hazardous levels of airborne contaminants. Ventilation works in two ways, by physically removing the contaminated air from the workplace or by diluting the workplace atmospheric environment to a safe level by the addition of fresh air. Additional considerations include:
 - (1) Local exhaust ventilation, installed in an enclosure, or as close as possible to the point of contaminant generation, is much more effective and provides better protection than general or building ventilation.
 - (2) Ventilation systems frequently are ineffective if adequate make-up air is not provided.
 - b) For information regarding lab safety, refer to Chapter 31: Chemical Hygiene and 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, or consult the safety manager.
 - c) Many well-designed systems fail to protect employees because maintenance is minimal or nonexistent after installation. Regularly scheduled testing and maintenance of environmental control systems must be provided to ensure continued employee health protection.
- 3) **Administrative Controls.** Administrative controls attempt to limit worker exposure to hazards. Time exposure limitation is achieved by rotating jobs or by reducing work periods. Administrative controls can be used for brief periods while engineering controls are implemented.
- 4) **Work Methods as Controls.** Safe work practices, proper equipment, and good housekeeping will minimize unnecessary exposure to hazardous substances. A housekeeping program must be established at each facility to clean up any spills of nontoxic substances promptly,

and for regular cleanup and maintenance.

- 5) **Wet Cleanup.** Wet methods, such as using water and/or other wetting agents to control dust particles may be used to minimize airborne dust. Blowing settled dust particles with an air hose should not be allowed when personnel exposure to the dust is a concern.
- 6) **Liquid Spill Cleanup.** Follow the facility spill prevention plan and contact the Hazardous Materials Program Coordinator in the event of a chemical or toxic spill.
- 7) **Personal Protective Equipment.** PPE is not a substitute for elimination/isolation, engineering, or administrative controls, but should be a last alternative, when these methods are not practical or fail to eliminate or reduce the hazard. PPE may also be used for brief periods during installation or repair of engineering controls. It is essential that PPE be fitted to the individual employee and that the employee is carefully trained in the use, care, and limitations of the equipment. See Chapter 19: Personal Protective Clothing and Equipment for additional requirements.

5. Hantavirus.

Hantavirus is a respiratory disease caused by a virus carried by the deer mouse and other rodents, such as squirrels, rats, and chipmunks. Humans acquire the infection after exposure to rodent excreta, especially after it dries and becomes airborne and is directly introduced into broken skin, eyes, nose, mouth, or possibly ingested with contaminated food or water. Employees who enter gas-metered houses, work in the renovation of old buildings, or clean up existing areas that may have rodent excreta may be at risk of the disease. All rodents should be treated as if they carry the virus.

- a. **General Precautions.** Avoid direct contact with rodents (live or dead), their droppings, urine, saliva, nests, or other items that may be contaminated by them. Do not feed mice, chipmunks, or other rodents. Preventive measures should be taken to eliminate rodents from buildings by reducing the availability of food sources, nesting sites, and access routes into a building.
- b. **Elimination of Rodents Inside Buildings and Reducing Rodent Access.** Rodent infestation can be determined by direct observation of animals, from the presence of feces, and from evidence that rodents have been gnawing at food. If rodent infestation is detected inside a building, rodent-abatement measures should be undertaken.
- c. **Cleanup of Rodent-Contaminated Areas.** Areas with evidence of rodent activity should be thoroughly cleaned to reduce the likelihood of exposure to Hantavirus-infected materials. Cleanup procedures must limit the potential for aerosolization of dirt or dust from potentially contaminated surfaces and household goods. A risk assessment must be completed and approved prior to any cleanup activity.

- d. **Symptoms of Hantavirus.** Early treatment is crucial. Symptoms may appear one to six weeks (usually two to three) after contact and include fever, nausea, headache, muscle aches, cough, and increasingly acute respiratory trouble. Seek prompt medical attention if you suspect you have been exposed to Hantavirus.

6. Ergonomics.

Ergonomics is the study of the relationship between the worker and the work environment. It recognizes that work methods, equipment, facilities, and tool design all influence the worker's fatigue, motivation, productivity, and the likelihood of sustaining an occupational injury or illness.

- a. **Principles of Ergonomics.** The objective of ergonomics is to adapt the job and workplace to the worker by designing tasks, workstations, controls, displays, safety devices, tools, lighting, and equipment to fit the worker. Some jobs expose workers to excessive vibration and noise, eyestrain, heavy lifting, and repetitive motion. In addition, workplace temperature extremes may aggravate or increase ergonomic stress.
- b. **Types of Injuries.** Pulled or strained muscles, ligaments, tendons, and discs are the most common back problems. The majority of workplace back disorders result from chronic or long-term injury to the back rather than from one specific incident. Back disorders are frequently caused by excessive or repetitive twisting, bending, and reaching; carrying, moving, or lifting loads that are too heavy or bulky; staying in one position for too long; poor physical condition; and poor posture.
- c. **Cumulative trauma disorders (CTDs).** CTDs are disorders of the musculoskeletal and nervous systems that are caused or made worse by repetitive motions or prolonged activities. Other risk factors for cumulative trauma and back disorders include:
 - 1) Forceful exertions, usually with the hands,
 - 2) Pinch grips,
 - 3) Prolonged static postures, either sitting or standing,
 - 4) Awkward postures of the upper body, including reaching above the shoulders or behind the back,
 - 5) Excessive bending or twisting of the wrist,
 - 6) Continued elevation of the elbow,
 - 7) Inappropriate or inadequate hand tools,
 - 8) Restrictive workstations and inadequate clearances,
 - 9) Vibration from power tools,
 - 10) Improper seating or support,

- 11) Poor body mechanics, and
 - 12) Lifting heavy or awkward objects.
- d. **Hazard Prevention and Control.** Ergonomic hazards are prevented primarily by the effective design of a job or workplace and the tools or equipment used in that job. Based on information obtained in an analysis of the workplace, procedures can be established to correct or control ergonomic hazards using the following methods:
- 1) **Engineering Controls.** Workstations should be designed to accommodate the full range of required movements of the workers who are actually using them to perform the job. Attention should be given to prolonged or sustained exertion of a body part, proper work activity height, how far the worker is required to reach, and the force requirements. Other factors to look at include hard or sharp edges, contact with thermally conducting work surfaces, proper seating, work-piece orientation, lighting, and layout of the workstation.
 - 2) **Administrative Controls.** Key elements include instruction in proper work techniques, employee training and conditioning, regular monitoring, feedback, adjustments, modification, and maintenance. For example, after employees are trained in a particular work activity, such as proper lifting, workers should be monitored to ensure that they continue to use proper techniques. Improper practices should be corrected to prevent injury.

7. Preventive Inoculations.

- a. Preventive inoculations may be obtained for certain insect stings, poison oak, poison ivy, Hepatitis A and B, and other diseases. Hepatitis A Virus is excreted or shed in feces. Direct contact with an infected person's feces or indirect fecal contamination of food, the water supply, raw shellfish, hands, and utensils may result in sufficient amounts of virus entering the mouth to cause infection. Hepatitis B Virus is spread through sexual contact, blood transfusions, contaminated needles, or contact with body fluids. Preventive inoculations may be obtained at BLM expense when determined necessary by local policy. Inoculations may be administered if it can be shown that potential conditions warrant preventive inoculations, and are necessary for the protection of employee health. Employees whose official duties categorize them at high risk should be offered preventive inoculations. Employees declining inoculation should fill out a waiver, which should be placed in their personnel file. Employees should refer to their local exposure control plan for further information.

8. Toxic and Explosive Gas Protection.

- a. **General Guidance.** Toxic gases may be found in abandoned mines, caves, and confined spaces. Employees must not enter abandoned mines, caves, or confined spaces unless they are authorized and have been trained to do so and

all entry procedures required by OSHA, the Abandoned Mine Land Program, and the BLM Cave Safety Standards are in place. See Chapter 28 for additional information.

- b. **Procedures at Oil and Gas Sites.** Hydrogen sulfide gas (H_2S) is invisible, explosive, flammable, and deadly. It initially has the smell of rotten eggs but within minutes of exposure, even at low concentrations, the sense of smell is deadened or lost. H_2S occurs naturally in crude petroleum, natural gas, volcanic gases, and hot springs. It is also produced when organic matter decays. H_2S is often referred to as “sewer gas.” H_2S is a serious, life-threatening concern in many BLM field offices, especially where there is oil and gas activity, underground mines, blasting, or projects involving underground water. Anyone involved in field activities in or near a BLM field office with an oil and gas program must contact the local field manager for an H_2S safety briefing and must be accompanied by a trained BLM employee before entering a potential H_2S area. Employees who work in an H_2S environment must follow standard safety practices to protect themselves against potential H_2S hazards and exposures. Safe work practices include use of H_2S detection devices, such as, multi-gas monitors, carrying escape packs, and annual training.
- c. **Methane.** Methane is a colorless, odorless gas with a wide distribution in nature. It is the principal component of natural gas. Methane is not toxic when inhaled, but it can produce suffocation by reducing the concentration of oxygen inhaled. The “firedamp” of coal mines is chiefly methane. Anaerobic bacterial decomposition of plant and animal matter, such as that which occurs under water, produces marsh gas, which is also methane. Methane, and other toxic gases, may be found in abandoned mines, caves, and confined spaces. Employees must not enter abandoned mines, caves, or confined spaces unless they are authorized and have been trained to do so and all entry procedures required by OSHA, the Abandoned Mine Land Program, and the BLM Cave Safety Standards are in place.
 - 1) **Buddy System Procedure for Oil and Gas Monitoring (Toxic Gases).** Ambient air with a H_2S concentration of 100 ppm or greater is considered **Immediately Dangerous to Life and Health (IDLH)** and requires that buddy system procedures be implemented. The buddy or safety backup must be an individual who understands the hazards associated with toxic gases in the oil and gas environment, how to control worker exposure, how to respond to emergencies, and how to perform a safe rescue. The safety backup is responsible for maintaining contact with the individual during an inspection and ensuring a safe rescue in the event the individual is overcome by gas. The safety backup will:
 - 2) Stay in a safe zone (always upwind or crosswind).
 - 3) Establish radio contact with the field office and advise the field office when an employee is entering IDLH conditions, the expected duration

of the inspection, and will notify the office upon completion of the inspection.

- 4) Maintain visual contact with the employee at all times.
- 5) Wear a working multi-gas monitor.
- 6) Wear a **Self-Contained Breathing Apparatus (SCBA)** and be ready to mask-up immediately if the employee goes down.
- 7) Be physically capable of moving the employee to a safe zone. If rescue is necessary, the safety backup will assess the situation to determine whether it is safe to attempt rescue, inform the field office, mask-up and check SCBA, shut off the source of methane/H₂S, if possible, and proceed with rescue.
- 8) Note: The buddy system is not required in most methane environments.

d. Tank Gauging Inspections

If the H₂S concentration is known to be 10 ppm or greater, the employee will:

- a) Verify that the multi-gas monitor is working prior to entering the environment.
- b) Wear SCBA and mask-up prior to ascending stairs.
- c) Stand upwind from the hatch when opening it, allowing tank vapor pressure to equalize.
- d) If the tank vapor pressure does not equalize within 30 seconds, and if the H₂S concentration at shirt pocket level does not equal or exceed 100 ppm, leave the hatch open, get down from the tank and wait for 10-15 minutes and resume tank gauging procedures to ensure that tank vapor pressure has equalized. If the vapor pressure does not equalize and the H₂S concentration still equals or exceeds 100 ppm, close the hatch and leave the area until the buddy system can be implemented.

e. Meter Calibration Inspections

When witnessing a gas meter calibration inside a meter house, and the H₂S concentration is known to be 10 ppm or greater, the employee will:

- 1) Verify that the multi-gas monitor is working prior to entering the environment.
- 2) Open the meter house door and ventilate the area for 3-5 minutes.
- 3) Wear SCBA and mask-up prior to entering the meter house. The SCBA or work unit respirator must be used when performing inspections inside meter houses. If the ambient air H₂S concentration is less than 10 ppm, the mask can be taken off for as long as the concentration remains below 10 ppm. The employee must mask up

prior to witnessing the orifice plate inspection. If the ambient air H₂S levels equal or exceed 100 ppm at any time, the employee is to leave area immediately and initiate the buddy system before re-entering the building.

- 4) Evacuate the work area immediately if the concentration of explosive/flammable gases equals or exceeds 10% of the **Lower Explosive Level (LEL)**.
- f. **Entering Buildings and Enclosed Structures at oil and gas sites.** The employee must follow the safety procedures described for meter calibration inspections when entering a building where flammable/ explosive gas is present or when H₂S concentrations are 10 ppm or greater.
- g. **Drilling Operations.** The employee must have a multi-gas monitor and escape pack ready for immediate use when performing drilling inspections.
- h. **Plugging, Abandonment, and Other Oil and Gas Operations.** The employee must use a multi-gas monitor, and if the concentration of H₂S is equal to or greater than 10 ppm, the employee must leave the area immediately, put on an SCBA, and mask-up prior to continuing work. Evacuate the work area immediately if the concentration of explosive/flammable gases equals or exceeds 10% of the LEL. Do not return to the work area until the concentration of explosive/flammable gases is less than 10% of the LEL.
- a. **Surface Compliance Inspections. Surface Compliance Specialists (SCS)** working in an environment with a flammable/explosive gas concentration that equals or exceeds 10% of the LEL or an H₂S concentration of 10 ppm or greater must follow the safety guidelines outlined in Sections D(5)a and D(5)b of this chapter.
- j. **All Other Field Activities or Inspections.** No person shall work at an oil and gas site with known toxic/explosive gas concentrations without authorization, appropriate training, and PPE. Visiting personnel must carry an escape pack and understand its proper use. Visitors must also be accompanied by a BLM employee who has completed appropriate toxic/explosive gas training.
- k. **Procedures in Explosive Gas Areas (Methane).** The immediate health hazard with an explosive gas such as methane is thermal burn. Methane is flammable and when it is combined with air, can be highly explosive.

Examples of locations where methane can be present:

- a) **Drilling site/Well head.** At the drilling site, make sure the inspector is familiar with the various components of a drilling rig to recognize any hazard in the area. The inspector must be trained in **Blowout Preventer (BOP)** equipment testing procedures if an emergency takes place. Employee must be wearing the proper PPE (e.g., air monitor, safety-toed footwear, hard hat, safety glasses, fire resistant clothing). The employee must be familiar with rig safety, potential escape routes, and safe locations. The employee must be aware that methane concentrates in and around the wellhead and when combined with air it will explode at low concentration levels.
 - b) **Point of Delivery (POD) buildings.** At the POD building, employees must ensure that their multi-gas monitor is powered up, and used in accordance with manufacturer recommendations, including bump testing and calibration as detailed in Section C.1 below. The employee must ensure that the POD building is in operational status by verifying that gas venting is in progress; that operations observed are normal; there is no noticeable vapor; and that no leaks can be heard. Employees must wear anti-static fire resistant clothing and be grounded in order to discharge any static electricity. The employee must be familiar with the piping arrangements and not move any valve settings. If the POD building is equipped with its own air monitoring system, the employee must visually inspect the reading on the outside monitor before entering the building. If the POD building is not equipped with an air monitoring system, the employee must be grounded to the outside of the building before opening the door. Most POD buildings have a small hole in the door to insert a tube to connect to a gas monitor so the employee can test the inside air before opening the door.
1. **Multi-Gas Monitors.** Multi-gas monitors are used to monitor levels in the air in parts-per-million (ppm) and to alert employees when concentrations of toxic, flammable, and/or poisonous gases reach hazardous levels. Batteries must be checked before each use. All monitors must be bump tested, before each use. If the instrument does not pass the bump test, a full instrument calibration must be performed. Perform routine full instrument calibrations in accordance with manufacturer recommendations. The bump tests and calibrations must be conducted before entering hazardous areas, ideally before leaving the office. Each field office must maintain a means (log, tag, computer program, etc.) of documenting inspections, calibrations, and maintenance schedules individually for each monitor
 - m. **Self-Contained Breathing Apparatus.** All SCBA tanks must be hydro-tested at least every 5 years or in accordance with manufacturer's instructions. The mask and other related equipment associated with the SCBA must be

inspected before each use and cleaned at least every quarter. There must be some means of documenting each test, inspection, and cleaning. See also Chapter 22: Respiratory Protection.

a) SCBA Types and Uses include:

- (1) **Rescue Pack.** The rescue pack must be rated and approved by **National Institute for Occupational Safety and Health (NIOSH) / Mine Safety and Health Administration (MSHA)** as a 30-minute SCBA for use with a pressure demand Type C supplied-air respirator. It is used for rescue and for tasks of short duration.
- (2) **Work Unit.** The work unit respirator is to be rated and approved by NIOSH/MSHA as a combination 5-minute SCBA for escape and pressure demand Type C supplied-air respirator for work. This unit is designed to be attached to a breathing air supply hose from a large tank for longer periods of work.
- (3) **Escape Pack.** The escape pack is a 5-minute lightweight, self-contained air supply pack with a bag-type cover to enclose the head area. This is a one-piece unit designed to be used for escape only and is not to be used for any other purpose. Each individual must maintain a log or similar means to document inspections and testing.

b) Maintenance

- (1) All equipment must be inspected to ensure equipment is in good working order before and after use and at least monthly. Equipment must also be cleaned after use
- (2) Any equipment that does not pass a fit check will be replaced or repaired.
- (3) On an annual basis, supervisors will inspect all breathing air equipment and report to management on the condition of this equipment.

E. References.

1. 485 DM 17, Occupational Health (Industrial Hygiene) Program.
2. 29 CFR 1910.1000, Air Contaminants.
3. 29 CFR 1960, Subpart C, Standards.
4. 29 CFR 1910.134 Respiratory Protection.
5. BLM Manual Handbook 1112-1, Chapter 19: Personal Protective Clothing and Equipment; Chapter 22: Respiratory Protection.

6. Latest Version of ANSI Z390.1, Accepted Practices for Hydrogen Sulfide (H₂S) Safety Training Programs.
7. [Centers for Disease Control Hantavirus website.](#)

Chapter 21 – Hazard Communication Program

A. Introduction.

Employee exposure to hazardous materials can cause a wide range of health effects. Some of the health effects of chemical exposure include irritation to skin and mucus membranes, skin sensitization, and carcinogenicity. In addition, physical hazards due to chemicals, such as flammability, corrosion, and reactivity, pose a physical threat to employees.

B. Purpose.

The purpose of the BLM hazard communication program (Right to Know) is to ensure that BLM employees who have been identified as being exposed to hazardous materials are informed of the hazardous materials they may encounter in the workplace and the physical and health hazards associated with the use of these materials. The program also ensures all hazardous chemicals at BLM facilities are properly identified and controlled to provide a safe and healthful workplace for employees, visitors, and contractors.

C. Program Elements.

Each BLM operating unit must develop a specific written hazard communication program that contains the following elements and procedures:

1. Program Administration.
2. Hazardous Chemical Identification.
3. Written Program.
4. Labels.
5. Pictograms.
6. Safety Data Sheets.
7. Employee Information and Training.
8. Program Review and Evaluation.

D. Explanation of Program Elements.

1. Program Administration.

A **“Right to Know” Administrator (RTKA)** must be appointed to implement and oversee the operation of each site-specific hazard communication program. The RTKA must be qualified to run the program based on training, education, and experience. In addition, each RTKA must work to ensure that each BLM worksite in the workplace, to lower hazardous waste disposal costs, and to promote recycling.

2. Hazardous Chemical Identification.

- a. Chemical classes are determined by chemical manufacturers and importers. The BLM must not classify chemicals. An inventory of all chemicals located within the workplace (offices and field stations) must be conducted annually. At a minimum, the following information must be gathered and maintained on the chemical inventory list:
 - 1) Chemical identity or product label name,
 - 2) Location and/or area used,
 - 3) Date of the inventory (indicates timeframe the chemical was in use), and
 - 4) Vendor or supplier of the product.
- b. Chemical inventory lists should be maintained in the Hazard Communication-Employee Right to Know Station in a binder with all **Safety Data Sheets** (SDS). When new chemicals are received at the location, the inventory must be updated at the time the new chemicals are introduced. Offices must provide a specific set of procedures that each location will follow when introducing a new chemical. The RTKA is responsible for maintaining this inventory. Employees who add chemicals to the inventory must notify the RTKA, update the chemical inventory sheet maintained at each Right to Know Station, and provide the SDS for the binder. SDS and chemical inventory records concerning the identity of a substance or agent need to be retained for 30 years as a record of employee exposures in accordance with OSHA standard 1910.1020. It is recommended that the chemical inventory sheet (see Illustration 1 at the end of this handbook for a sample) is formatted to reflect the chemical name, where the chemical was used, and the date the chemical was added to the inventory. The sheet should also contain a statement noting to retain the sheet as a record for 30 years.
- c. According to the OSHA Hazard Communication Standard, 29 CFR 1910.1200, consumer products that are used in the workplace in a manner comparable to normal conditions of consumer use are not required to be included in a hazard communication program. If an employee is using a consumer product in a manner that results in a duration and frequency of exposure greater than that of normal consumer use, the product must be covered in the hazard communication program.

3. Written Program.

Each BLM operating unit must develop a specific written plan that contains the following elements and procedures: labels, safety data sheets, and employee training. The written plan must be made available to all employees, to include volunteers and contract staff, and it must address methods to be used to inform them of any hazardous chemicals in which they might be exposed. Employees must be informed of the policy, location of the chemical inventory and SDS, the labeling system, and any precautionary measures to be taken. A sample written hazard communication program is provided at the [Occupational Safety and Health Administration](#)

[website](#). Written plans should be reviewed annually to provide any updated information. Annual review must be documented with the date the plan was reviewed and the signature of the person who conducted the plan review.




4. Labels.

- a. According to 29 CFR 1910.1200, manufacturers, importers, and distributors are required to label each container of hazardous chemicals. At a minimum, the labels must contain:
 - 1) Product identifier,
 - 2) Signal word,
 - 3) Hazard statement(s),
 - 4) Pictogram(s),
 - 5) Precautionary statement(s), and
 - 6) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.
- b. The hazard warning label must consist of words, pictures, symbols, or a combination thereof that provides at least general information regarding the hazards of the chemical(s) in the container. In combination with the label information, other information such as SDS must also be provided in the work area to ensure that employees are provided with the specific information regarding the physical and health hazards of the product. Labels must be legible, in English (and can be in other languages if the workplace has employees who speak other languages), and prominently displayed. Container labels must not be defaced or removed.
- c. If the hazardous chemicals are transferred into unmarked containers, the BLM is responsible for labeling these containers. The written plan must identify who is responsible for labeling containers when materials are transferred into unmarked containers. Labels must include the product identifier, signal word, hazard statement, pictogram, and precautionary statement, which provide information regarding the physical and health hazards of the chemical. If the container into which the chemical is transferred is intended for the immediate use of the employee who performed the transfer, the label is not required.
- d. The RTKA must verify that all chemicals used in the work area are consistently labeled, tagged, or marked—correctly identifying the materials and illustrating the appropriate hazard warning. All hazardous chemicals brought into the work area inventory after December 1, 2015, must conform to labeling requirements of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals.

5. Pictograms.

In accordance with 29 CFR 1910.1200, chemical manufacturers and importers must provide the pictograms in Figure 5 below on product labels by June 2015, to identify distinct hazards to which users will be exposed. Pictograms are determined by the chemical hazard classification

Figure 5 - Pictograms and Associated Hazards

<p style="text-align: center;">Health Hazard</p>  <ul style="list-style-type: none"> ▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity 	<p style="text-align: center;">Flame</p>  <ul style="list-style-type: none"> ▪ Flammables ▪ Pyrophoric ▪ Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactive ▪ Organic Peroxides 	<p style="text-align: center;">Exclamation Mark</p>  <ul style="list-style-type: none"> ▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Acute Toxicity (harmful) ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer (Non-Mandatory)
<p style="text-align: center;">Gas Cylinder</p>  <ul style="list-style-type: none"> ▪ Gases Under Pressure 	<p style="text-align: center;">Corrosion</p>  <ul style="list-style-type: none"> ▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals 	<p style="text-align: center;">Exploding Bomb</p>  <ul style="list-style-type: none"> ▪ Explosives ▪ Self-Reactive ▪ Organic Peroxides
<p style="text-align: center;">Flame Over Circle</p>  <ul style="list-style-type: none"> ▪ Oxidizers 	<p style="text-align: center;">Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> ▪ Aquatic Toxicity 	<p style="text-align: center;">Skull and Crossbones</p>  <ul style="list-style-type: none"> ▪ Acute Toxicity (fatal or toxic)

6. Safety Data Sheets.

- a. Employees should assume that all chemicals are hazardous. A hazard classification must be made for each chemical prior to use. The manufacturer is responsible for evaluating each product produced and provides this information to the purchaser via the SDS.
- b. Safety data sheets must be obtained and maintained for all hazardous chemicals present at the work area. The supervisor of each unit is responsible for ensuring that a SDS is obtained for each hazardous chemical used by their employees.

- c. Safety data sheets obtained after June 1, 2015, must comply with the safety data sheet format established by the United Nations Globally Harmonized System of Classification and Labeling of Chemicals. SDS must provide the following information:
- 1) Section 1 – Identification.
 - 2) Section 2 – Hazard(s) identification.
 - 3) Section 3 – Composition/information on ingredients.
 - 4) Section 4 – First-aid measures.
 - 5) Section 5 – Fire-fighting measures.
 - 6) Section 6 – Accidental release measures.
 - 7) Section 7 – Handling and storage.
 - 8) Section 8 – Exposure controls/personal protection.
 - 9) Section 9 – Physical and chemical properties.
 - 10) Section 10 – Stability and reactivity.
 - 11) Section 11 – Toxicological information.
 - 12) Section 12 – Ecological information.
 - 13) Section 13 – Disposal considerations.
 - 14) Section 14 – Transport information.
 - 15) Section 15 – Regulatory information.
 - 16) Section 16 – Other information, including date of preparation or last revision.
- d. Each work area must maintain a binder of current SDS in a visible and readily accessible area. This area is usually referred to as the Hazard Communication-Employee Right to Know Station. Locations of these stations must be identified in the written hazard communication program, and employees must be informed of their locations. Each station must consist of:
- 1) An inventory list of all hazardous chemicals located at the work areas covered by the station. This inventory list must be updated any time new chemicals are brought to the site in accordance with section D2 of this Chapter, Hazardous Chemical Identification,
 - 2) A binder containing the SDS of each hazardous chemical in the work area,
 - 3) A copy of the written hazard communication program,
 - 4) Reference materials to assist workers in understanding SDS, and
 - 5) The contact information of the RTKA.
- e. Safety data sheets must be available for view during each work shift. If

employees are required to work at a remote site and will not otherwise have an opportunity to review safety data sheets at hazard communication stations, a portable hazard communication station containing SDS of materials that will be used at the remote site must be assembled and available at the remote work site. SDS must also be available, upon request, to designated representatives of the Assistant Secretary of Labor.

- f. Employees who have questions about a product or material or who require assistance in understanding a safety data sheet should contact their supervisor. Additional assistance may be obtained from the RTKA. When new hazardous materials are being considered for purchase, a product safety data sheet must be obtained by the requesting supervisor and reviewed with the RTKA for risk and suitability prior to purchase. SDS must be maintained as a part of the employee's exposure record, and chemical inventory records must be maintained for 30 years.

7. Employee Information and Training.

- a. Training is an essential component of the hazard communication program. Training objectives must include:
 - 1) Details of the written hazard communication program, a summary of the OSHA Hazard Communication Standard (29 CFR 1910.1200), and a review of the specific workplace written hazard communication program to which the employee must adhere,
 - 2) An explanation of where to obtain a copy of the written program,
 - 3) How to read and interpret information on labels and safety data sheets, how employees can obtain and use the appropriate hazard information, and an explanation of labels and requirements for labeling any unmarked containers,
 - 4) Types and locations of hazardous chemicals used in the workplace,
 - 5) The hazards of the chemicals used in the work area,
 - 6) Methods to detect the presence or release of a hazardous chemical,
 - 7) Hazardous materials spill and leak procedures, emergency procedures, and the location of the nearest health facility that can provide medical or other occupational health services, and
 - 8) Appropriate measures employees must take to protect themselves from hazards (e.g., engineering controls, work practices, and the use of personal protective equipment) and methods that the work unit must use to inform employees of the hazards of non-routine tasks and the hazards associated with chemicals contained in unlabeled pipes (e.g., helium gas pipes, oil pipes, oil tanks) in their work areas.
- b. Employees who use chemical products in their workplace must be provided information and training prior to initial assignment of work with a hazardous

chemical. Employees must be offered refresher training when the identified hazard changes (e.g., a new product is purchased for use or the chemical makeup of a product has changed). Examples of products commonly used in the workplace that may contain various chemical compounds include solvent cleaners, toners for printers, and glass cleaners. Consumer products, such as household detergents and cleansers, purchased in normal consumer quantities are not required to be included in the hazard communication program when used in a manner reasonably experienced by consumers. When possible, nontoxic products should be purchased.

- c. Information regarding hazards and protective measures must be provided to employees through written labels, pictograms, and SDS. Information and training may be conducted to cover either individual chemicals or categories of hazards, such as flammability or carcinogenicity. If there are only a few chemicals in the workplace, then offices may want to discuss each chemical individually. If there are many chemicals or the chemicals change frequently, offices may want to train employees based on hazard categories.
 - d. Employee training records must be maintained for the duration of employment, plus 1 year. A sample hazard communication training checklist and attendance sheet is provided in Illustration 2 at the end of this handbook.
8. Program Review and Evaluation. The RTKA should periodically review the hazard communication program to evaluate its effectiveness and to ensure it is current. Program elements, such as labeling, maintenance of the hazardous chemical inventory and SDS, and employee training, must be reviewed at least annually.

E. References.

1. 29 CFR 1910.1200, Hazard Communication.
2. 29 CFR 1910.1020, Access to employee exposure and medical records.
3. OSHA, "Guidance for Hazard Determination for Compliance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)."
4. [OSHA Occupational Chemical Database](#).
5. American National Standards Institute, "Hazardous Workplace Chemicals - Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation," ANSI Z400.1/Z129.1 - 2010.
6. United Nations, "Globally Harmonized System of Classification and Labeling of Chemicals (GHS)" ("Purple Book").

Chapter 22 – Respiratory Protection

A. Introduction.

BLM employees may encounter situations in which engineering and administrative controls are not enough to protect them from a respiratory hazard. When this occurs, the BLM may be required to provide respirators to employees during normal work operations and during some non-routine or emergency operations. However, all respirators have limitations and are not a substitute for elimination/substitution, or engineering and administrative controls. While most work environments preclude the use of a respirator, various work procedures necessitate the use of some type of respiratory protection.

B. Purpose.

The purpose of a respiratory protection program is to provide respirators to employees when (1) they are exposed to a hazardous level of an airborne contaminant; (2) required by the BLM to wear respirators; or (3) permitted to wear respirators. The use of a respirator may be required when employees work in environments with insufficient oxygen or where exposure to airborne contaminants is greater than permissible exposure limits set by OSHA or occupational exposure limits set by consensus groups (e.g., the American Conference of Governmental Industrial Hygienists and the National Institute for Occupational Safety and Health). Hazardous environments that may need to be evaluated for respiratory protection include, but are not limited to, harmful dusts, fogs, smoke, mists, fumes, gases, vapors, or sprays. These hazards may cause both acute and long-term health effects.

C. Program Elements.

1. Respiratory Protection Program Minimum Elements and Procedures.
2. Program Administration.
3. Exposure Assessment.
4. Respirator Selection.
5. Safe Use of Respirators.
6. Medical Evaluation/Determination.
7. Respirator Fit Testing.
8. Employee Training.
9. Voluntary Respirator Use.
10. Filtering Face pieces.
11. Respirator Care and Maintenance.
12. Respirator Inspections.

13. Respirators Used for Emergencies.
14. Recordkeeping.
15. Program Evaluation.

D. Explanation of Program Elements.

1. Respiratory Protection Program Minimum Elements and Procedures.

If a respiratory protection program is found to be required, each BLM operating unit must develop a specific written respiratory protection program that contains the following elements and procedures:

- a. Program Administration,
- b. Exposure Assessment,
- c. Engineering and Administrative Controls,
- d. Respirator Selection,
- e. Medical Evaluation,
- f. Respirator Fit Testing,
- g. Safe Use of Respirators,
- h. Employee Training,
- i. Voluntary Respirator Use,
- j. Recordkeeping, and
- k. Program Evaluation.

2. Program Administration.

A Respiratory Protection Program Administrator (RPPA) must be appointed to each site to implement and oversee the operation of the site-specific respiratory protection program. The RPPA must be qualified to run the program based on training, education, and experience. Personnel in charge of operating activities must route all requests for the requisition of respirators through the safety manager or RPPA for approval to ensure that the proper equipment is properly matched to the level of hazard and that the employee is included in a respiratory protection program. Acquisition of the equipment is the responsibility of the operating activity.

3. Exposure Assessment.

Each district/field office must assess exposures in the workplace (by way of personal air sampling, mathematical modeling, or some other objective means) to determine if hazardous exposures exist, the level of exposure, if atmospheres are immediately dangerous to life and health, and if a necessary level of respiratory protection is required. Hazardous exposures are those determined to be greater than the permissible exposure limits set by OSHA or the Threshold Limit Values published by the American Conference of Governmental Industrial

Hygienists for work shift and short-term exposures.

4. Respirator Selection.

Respirators must be selected based on the identified hazards (determined by the workplace hazard assessment) to which employees are exposed during work tasks. A hazard evaluation must be conducted for each work area where airborne contaminants may be present. The evaluation must include the identification and listing of hazardous substances used in the workplace, a review of work processes to determine where potential exposure may occur, and exposure monitoring to quantify potential hazardous exposures to the employee. Respirators must be approved by the **National Institute for Occupational Safety and Health (NIOSH)**.

When selecting respirators, it is important to consider the chemical, biological, and physical properties of the contaminant, as well as the toxicity and concentration of the hazardous materials and the amount of oxygen present. Other selection factors include the nature and extent of the hazard, the work rate, size of the work area, mobility, work requirements and conditions, and the limitations and characteristics of available respirators. Respirators must not impair an employee's ability to see, hear, communicate, and move as necessary to perform the job.

Respiratory protective devices generally fall into these categories:

- a. Air-filtering face pieces (dust masks) are usually voluntarily worn by employees and not required for respiratory protection. Employees who voluntarily use dust masks must be given a copy of Appendix D to the respiratory standard. Dust masks must have an N-95 rating.
- b. Air-purifying respirators remove contaminants from the atmosphere. This type of respirator cannot be used in oxygen-deficient atmospheres. Half-mask respiratory devices cover the nose, mouth, and chin, and do not afford protection against eye irritation from exposure to airborne contaminants. Full face piece devices cover a larger facial area, including the eyes.
- c. Air-supplying devices, such as airline respirators and SCBA, provide the user with breathing air and may be used in oxygen-deficient atmospheres, defined as less than 19.5 percent oxygen

5. Safe Use of Respirators.

Each written respiratory protection program must describe actions that will be taken to use respirators safely. These practices may include the following:

- a. Respiratory protection equipment must be approved by the NIOSH.
- b. Respirator parts, filters, cartridges, or tanks from one manufacturer cannot be mixed with those of another manufacturer.
- c. The expiration dates or designated pressure limits of the equipment must not be exceeded.
- d. BLM employees must not be allowed or required to use respiratory protection equipment without adequate training, a medical evaluation, and a required fit test for tight-fitting respirator face pieces. Either the RPPA or the safety

- manager must evaluate and approve the adequacy of the training, medical evaluation, and fit testing conducted for employees by other organizations.
- e. If required respiratory protection equipment is not available, entry into the area or work on the task requiring the respirator is not permitted.
 - f. Tight-fitting face piece respirators must not be used when conditions prevent a proper seal between the respirator and the face of the wearer. This includes, but is not limited to, the presence of stubble or facial hair, jewelry, glasses, goggles, etc.
 - g. Each time after donning the respirator and before entering a hazardous atmosphere, the wearer must perform a user's seal check (fit check) to ensure that an adequate seal is obtained.
 - h. An employee must immediately leave a hazardous atmosphere, without waiting for supervisory permission, if any problems occur with the respirator, its fit or effectiveness, or the wearer's ability to use it.
 - i. Employees must not wear eyeglasses that interfere with the fit and seal of a full-face respirator. When corrective lenses are necessary, the RPPA must recommend approved spectacle kits. State/district/field offices must provide such equipment for employees requiring a vision aid.
 - j. Atmospheres that are immediately dangerous to life and health may only be entered on an emergency basis with specific permission from the RPPA, safety manager, or qualified incident commander. Entering these atmospheres requires a full face piece pressure demand SCBA with a minimum service life of 30 minutes or a combination full face piece pressure demand supplied-air respirator with an auxiliary air supply. All other OSHA requirements must be met before entry is allowed.
 - k. Antifogging solutions and/or nose cups may be used in all low temperature or high humidity environments.
 - l. Maintenance and other employees involved in lead or asbestos operations must follow the guidance concerning respirator selection per the specific OSHA standards for lead or asbestos.
 - m. The maximum length of hose that may be used with an air mover is 50 feet.
 - n. The maximum length of hose that may be used with a supplied-air respirator is 300 feet.
 - o. Compressed gas cylinders used for supplied air respirators must be maintained, stored, and tested in accordance with Department of Transportation requirements. This includes requirements for hydrostatic testing.
 - p. Only air compressors approved for use as part of a respiratory protection system may be used to supply breathing air. Note: Use of other types of compressors can expose employees to lethal amounts of carbon monoxide or harmful oil mists.

- q. Compressed breathing air used in airline and SCBA units must be tested quarterly to ensure it meets the specifications for Grade D breathing air, as defined in the latest version of ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1. Characteristics of Grade D air include:
- 1) Oxygen content between 19.5-23.5 percent,
 - 2) Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less,
 - 3) Carbon monoxide content of 10 parts per million or less,
 - 4) Carbon dioxide content of 1,000 parts per million or less, and
 - 5) Lack of noticeable odor.

6. Medical Evaluation/Determination.

Employees assigned to tasks that require respiratory protection must be physically able to perform the work while using the respirator. Employees are not permitted to wear respirators until a physician or licensed healthcare professional has determined that they are medically able to do so. The physician or licensed healthcare professional must conduct the medical evaluation using the “OSHA Respirator Medical Evaluation Questionnaire (Mandatory),” which can be found in Appendix C of 29 CFR 1910.134. The medical evaluations for respirator users must be reviewed on an annual basis by a medical provider. Additional medical evaluations shall be completed when:

- a. Employee reports shortness of breath, dizziness, chest pains, or wheezing.
- b. Medical provider, supervisor, or respirator program administrator informs the employer that the employee needs to be re-evaluated.
- c. Observations during fit test indicate need for re-evaluation.
- d. Change occurs in workplace that could cause increase in physiological burden on employee.

The physician or licensed healthcare professional may also conduct an initial medical exam as long as it contains the same information as OSHA’s medical questionnaire. Following the evaluation, a written medical determination must be provided by the physician or licensed healthcare professional to both the agency and the employee.

7. Respirator Fit Testing.

- a. Different types of respirators and even different brands of the same type of respirator have different fit characteristics for individuals. No one respirator will correctly fit each employee. Special mountings are available to hold corrective lenses inside full face pieces. A qualified person must fit the face piece and lenses to provide good vision comfort and proper sealing. Employees must be fit tested with the make, model, and size of respirator that will actually be worn on the job. All tests must be conducted following the OSHA-accepted fit test protocols explained in “Fit Testing Procedures (Mandatory),” which can be found in Appendix A of 29 CFR 1910.134. This

appendix details procedures for qualitative and quantitative fit testing of respirators. To ensure a proper seal is obtained, facial hair must not be present when fit testing or wearing a respirator.

8. Each respirator wearer must receive fitting instructions, including demonstrations and practice on how the respirator is to be worn, how to adjust it, and how to determine whether it fits properly, including the following:
 - a. Before initial use, each respirator must be properly fitted, and the face piece seal tested.
 - b. Good face piece-to-face seals cannot normally be obtained when the wearer has a beard, long sideburns, or a skull cap that projects under the face piece. Facial deformities, such as scars, deep skin creases, prominent cheekbones, severe acne, and the lack of teeth or dentures can prevent a respirator from sealing properly. Individuals with any of these conditions should be precluded from using any respiratory protection devices.
 - c. Fit checks for routine donning of respirators, which consist of both positive and negative pressure tests, must be performed each time the respirator is worn.
 - d. Warning properties. Odor, as well as eye and respiratory irritation, should alert the wearer that the respiratory protection is malfunctioning or inadequate. This may be the result of improper face piece fitting, old/inappropriate cartridges or canisters, etc. The worker should leave the hazardous area and rectify the problem. The worker must notify the supervisor if the condition persists.
9. Employee Training.
 - a. Training is essential to ensure that correct respirator use, care, and maintenance procedures are followed by each employee. All employees required to use respiratory protective equipment must receive instruction in the proper use of the equipment and associated limitations. This training must be provided before use, when changes occur in the workplace, or when there are changes regarding the type of respirator required for the job.
 - b. The BLM must institute a training program in respiratory protection for all workers who are required to wear respirators. Employee training must be provided prior to allowing the employee to use a respirator and must include, at a minimum, the following topics:
 - 1) The chemical(s) of concern, and the nature of the hazards (acute, chronic, or both), in the workplace;
 - 2) How improper fit, usage, or maintenance can compromise the protective effect of the respirator;
 - 3) A discussion of the respirators' capabilities and limitations including recognition of the end of the service life indicators for cartridges, canisters and filters (e.g. tasting or smelling the contaminants), manufacturer's expiration date, or increased breathing resistance;

- 4) Some chemicals and substances have no warning properties. Exposed employees must ensure they understand the risks associated with the chemicals they are working with;
 - 5) Using the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
 - 6) Inspection, donning, use, and removal of the respirator and on testing for proper sealing of the respirator;
 - 7) Respirator maintenance and storage procedures;
 - 8) Recognizing medical signs and symptoms that may limit or prevent the effective use of a respirator; and
 - 9) The requirements of the specific district/field office respiratory protection program.
- c. At the conclusion of the training, workers must demonstrate knowledge and skills.
 - d. Training must be repeated annually to provide reinforcement and any updated information or whenever a situation arises in which it appears retraining is necessary to ensure safe respirator use. Such situations may include changes in workplace conditions or equipment or when it becomes apparent that an employee has not retained the required understanding or skill to ensure safe respirator use.

10. Voluntary Respirator Use.

- a. Respirators, including air filtering face pieces (disposable dust masks), can be used in situations where sampling and/or worksite observations have been conducted and no exposure hazards exist. Employees may want to wear a respirator when conducting job activities that generate dust below those that can cause harm, for instance. Before an employee can use a respirator voluntarily, the BLM must ensure the respirator itself will not create a hazard for the employee wearing it and ensure that a full respiratory protection program is not needed due to overexposures. Reasons a respirator might not be required include:
 - 1) An exposure assessment has been conducted and occupational exposure limits are not exceeded.
 - 2) There is no OSHA regulation for the specific exposure scenario that requires respirators to be provided by the BLM (e.g., 29 CFR 1910.1025 requires employers to provide respirators upon request to employees exposed to lead at any concentration).
 - 3) The BLM does not believe it is necessary to reduce exposures below their current levels (i.e., there is no perceived hazard).
- b. Written documentation must be provided as to why a respirator is not required. This documentation must provide a critical/scientific analysis,

exposure assessment, or risk assessment of the decision process. Any employee who voluntarily chooses to wear a respirator must be provided a copy of "Information for Employees Using Respirators When Not Required Under the Standard," which can be found in Appendix D of 29 CFR 1910.134 and details the requirements for voluntary use of respirators. The employee must sign Appendix D, and a copy of must be kept on file. The district/field office must implement the necessary elements of the written respiratory protection program to ensure that any employee voluntarily using a respirator is medically able to use that respirator and to ensure that the respirator is cleaned, stored, and maintained so its use does not present a health hazard to the user. In all cases, the use of respiratory protection must not jeopardize the health or safety of the employee.

- c. Voluntary use respirators shall not be used for emergency response or escape, unless approved by the RPPA or safety manager.

11. Filtering Face pieces.

Air filtering face pieces, also known as dust masks, can be provided to employees after determining that potential exposures and/or job tasks do not require the use of a respirator. (Note that this does NOT include so-called comfort masks, such as the 3M model 8500. Comfort masks usually have only a single strap and do not protect employees' lungs from any particles. Supervisors and employees should check the label on the box and purchase and use only NIOSH -approved filtering face piece respirators [e.g., dust masks with ratings, such as N, R, P, 95, and 100].) A respiratory protection plan is not required for the use of dust masks. The determination for using a dust mask must be documented with an exposure assessment or risk assessment. District/field office representatives are also responsible for ensuring employees know how to wear and properly care for, store, and maintain dust masks and must provide Appendix D of 29 CFR 1910.134 to the employee. The employee must sign Appendix D, and a copy must be kept on file.

12. Respirator Care and Maintenance.

Respirators must be properly maintained and cleaned, in accordance with the manufacturer's specifications, in order to ensure adequate protection for employees. Proper maintenance involves a thorough visual inspection for cleanliness and defects each time the respirator is worn. Employees are responsible for maintaining, cleaning and disinfecting respirators regularly to ensure they are in sanitary condition. Respirator cleaning procedures can be found in 29 CFR 1910.134, Appendix B-2.

- a. Defective respirators must be tagged and removed from service immediately. When replacement or repair of respirator components is necessary, only individuals who have been trained in such a repair can perform that repair. Replacement parts must be those designed for the specific respirator. Substitution of parts from a different model or manufacturer is not permitted.
- b. Users must clean respirators daily after each use with approved disposable cleaning pads. Respirators used for fit testing must also be cleaned and disinfected with a disposable cleaning pad after each use. Respirators must be

dried before they are stored.

- c. Periodically, based on a schedule set by the RPPA, respirators must be taken apart and thoroughly cleaned.
- d. Employees and supervisors must ensure that respirators are stored in a manner that protects the equipment from dust, harmful chemicals, sunlight, excessive heat or cold, and moisture. Reusable Ziploc® storage bags should be used to secure the respirator after each use, and respirators must be stored so as to prevent deformation of the face piece or valves.
- e. Respirators must not be stored with used filters, cartridges, or canisters. These items must be stored in a separate storage bag, and the clean side of the filter or cartridge must be covered with duct tape to prevent migration of contaminants into the clean side. Respirator filters and cartridges must be changed according to manufacturer recommendations or as needed or determined by the change-out schedule while using.
- f. Repairs or adjustments to respirators must be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.

13. Respirator Inspections.

14. All respirators used in routine situations must be inspected before each use and during cleaning by the assigned user. See Illustration 3 at the end of this handbook for a sample respirator inspection checklist.

15. Respirators used for emergency operations must be inspected monthly, in accordance with manufacturer recommendations, and they must be checked for proper function before and after each use. Supervisors with employees assigned an emergency-use SCBA are responsible for conducting monthly inspections. Inspections must be documented.

16. For continued use of the SCBA, it must be determined in every inspection that the regulator and warning devices function properly.

17. Respirators Used for Emergencies or Emergency Response. These respirators must:

18. Be kept in an accessible work area.

19. Be stored in compartments or in containers that are clearly marked as containing "Emergency Respirators."

20. Be stored in accordance with applicable manufacturer instructions.

21. Be inspected monthly and immediately before carrying into the workplace for use.

22. Recordkeeping.

Copies of all training and fit testing records must be kept current. Records of respirator training, including fit testing, must be kept until the next training session and/or fit test. The completed medical questionnaire and the physician's documented findings are confidential and must remain

at the medical office. A copy of the physician's written recommendation regarding each employee's ability to wear a respirator must be provided to the employee and the BLM. These records must be retained at a location designated by the RPPA. All exposure (personal monitoring) records must be kept for the duration of employment, plus 30 years.

23. Program Evaluation.

Evaluation procedures used to determine the effectiveness of the program and the effectiveness of the dissemination of updates must be conducted annually with input from employees, managers, and safety professionals.

E. References.

1. 29 CFR 1910.134, Respiratory Protection.
2. 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances.
3. ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989.
4. Additional information on respiratory protection, visit the [Occupational Safety and Health Administration website](#).
5. American Conference of Governmental Industrial Hygienists, "2013 Threshold Limit Values and Biological Exposure Indices."

Chapter 23 – Automated External Defibrillators

A. Introduction.

As part of providing a safe and healthful work environment for the BLM, program managers may be interested in developing a **public access defibrillation (PAD)** program. The Public Health Improvement Act, Public Law 106-505, encourages the placement of **automated external defibrillators (AEDs)** in federal buildings and provides civil immunity for authorized users. If a “Good Samaritan,” building owner, or renter acts in good faith to purchase or use an AED to save a life, this law will provide protection from unfair lawsuits. The law does not require the placement of AEDs in federal buildings but directs the Secretary of the Department of Health and Human Services to provide guidelines for the placement of AEDs in federal buildings. The federal bill does not preempt state laws on immunity. Many of the 50 states with existing laws cover additional issues not addressed in this bill.

B. Purpose.

On May 23, 2001, the Department of Health and Human Services and the General Services Administration jointly issued “Guidelines for Public Access Defibrillation Programs in Federal Facilities.” These guidelines provide a general framework for initiating a design process for PAD programs in federal facilities and provide basic information to familiarize facility leadership with the essential elements of a PAD program. Before establishing a program in a federal facility, the BLM should enlist the assistance of not only the personnel at that location, but also local training, medical, and emergency response resources.

In the term “public access defibrillation,” “public access” refers to the accessibility of the AED device itself. Public access does not mean that any member of the public who witnesses a person in cardiac arrest or ventricular fibrillation should use an AED to treat them. While AEDs are reasonably uncomplicated to use, they should be used only by those who have received proper AED training and education and who have been certified to use an AED by a competent authority.

C. Program Elements.

1. Public Access Defibrillation Program Minimum Elements and Procedures.
2. Program Coordinator.
3. Training.
4. Medical Oversight.
5. Understanding Legal Aspects.
6. Review of the PAD Program and Development of Standard Operating Procedures.
7. Emergency Response Plans, Protocol, and Notification.
8. Integration of Facility and Local Emergency Management System.

9. Maintenance of Hardware and Support Equipment.
10. Educating All Employees Regarding the Existence and Activation of the PAD Program.
11. Quality Assurance and Data/Information Management Plans.
12. Review of New Technologies.

D. Explanation of Program Elements.

1. Public Access Defibrillation Program Minimum Elements and Procedures.

Each BLM operating unit that has a PAD program must develop a specific written plan that contains the following minimum elements and procedures:

- a. Training and retraining personnel in cardiopulmonary resuscitation (CPR) and the use of AEDs and accessories.
- b. Obtaining medical direction and medical oversight from nationally recognized institutions or agencies (e.g., medical oversight can be obtained through existing federal resources such as Federal Occupational Health).
- c. Understanding legal aspects.
- d. Development and regular review of the PAD program and standard operating procedures.
- e. Development of an emergency response plan and protocols, including a notification system to activate responders.
- f. Integration with facility security and emergency management systems.
- g. Maintaining hardware and support equipment on a regular basis and after each use.
- h. Educating all employees regarding the existence and activation of the PAD program.
- i. Development of quality assurance and data/information management plans.
- j. Development of measurable performance criteria, documentation, and periodic program review.
- k. Review of new technologies.

2. Program Coordinator.

A **PAD Coordinator** (PADC) must be appointed to each site to implement and oversee the operation of the specific PAD program. Each PADC must work to ensure that the day-to-day routines and activities of the program (i.e., equipment maintenance, inspections, and checks) are accomplished. The PADC's most important responsibility is communicating with managers, selected program responders, and employees concerning program issues.

3. Training.

- a. Training requirements for AED responders may be found at the American Heart Association website. Program managers should review state and local requirements for AED programs to determine how to train responders. These requirements will outline acceptable curriculums, training organizations, and renewal intervals. From there, program managers can plot a training program schedule.
- b. Initial training should teach responders:
 - 1) How to recognize the warning signs of a heart attack,
 - 2) How to respond to an emergency,
 - 3) Why and how to activate local emergency management systems,
 - 4) How to increase the patient's chance of survival by performing 1-rescuer CPR until the AED arrives,
 - 5) How to assess the patient and determine if an AED should be used,
 - 6) How to attach AED pads and ensure that the device is used properly,
 - 7) How to follow safety protocols to protect the user and bystanders,
 - 8) How to deal with unusual situations, such as a patient with an implanted defibrillator or a patient lying in water, and
 - 9) How to use all emergency response skills in an emergency.

4. Medical Oversight.

Federal regulations promulgated by the Food and Drug Administration indicate AEDs are classified as Class III medical devices and can only be sold to or on the order of a physician. Use of an AED, therefore, requires medical oversight by a licensed physician. Additionally, medical oversight must be provided to help get the program started and for ongoing guidance and support. The program's medical professional may also approve the initial AED training. They may have direct involvement with training and written protocol, or they simply may provide guidance to the program coordinator.

5. Understanding Legal Aspects.

Any PAD program should be reviewed by legal counsel to ensure that the program, as designed, conforms with all applicable federal, state, and local authorities. Many states have enacted legislation to provide some degree of immunity to individuals who provide assistance to people in distress. The laws are called "Good Samaritan" laws. Because these laws vary from state to state, managers of individual facilities should be aware of the laws that apply to users of AEDs. Congress provided additional protection from civil liability for AED use in the Public Health Improvement Act, Public Law 106-505 (November 13, 2000). Title IV, Subtitle A of Public Law 106-505, known as the "Cardiac

Arrest Survival Act of 2000,” provides persons who use or attempt to use an AED on a victim of a perceived medical emergency, and the person(s) who acquired the AED, immunity from civil liability for harms resulting from the use or attempted use of the AED, subject to a number of important exceptions.

6. Review of the PAD Program and Development of Standard Operating Procedures.

Each BLM unit must develop a written standard operating procedure specific to the area where the AED(s) will be located. The document must include specific elements listed in this guidance document. Annual review of the program must be conducted by the PADC and medical provider.

7. Emergency Response Plans, Protocol, and Notification.

Each site must develop a specific emergency response plan, including activation of trained onsite responders and procedures to call for emergency medical assistance (911). Occupants of buildings where AEDs are located must be provided with awareness training.

8. Integration of Facility and Local Emergency Management System.

Many states require the coordination of AED programs with the state, county, or local emergency management system. In addition, it is usually required for local emergency medical services to receive follow-up data after any use of an AED. The medical oversight provider can help provide this information to the emergency medical services. In some states, the medical professional or the program coordinator completes this process. Regardless of state requirements, the local emergency medical services should be viewed as a partner in placing AEDs and in developing internal procedures for quality improvement and incident review. Emergency medical services should be notified of the locations of AEDs on the property. Identifying these locations could save critical minutes during a cardiac emergency. Depending on the capabilities of the emergency management system, dispatchers may be able to tell 911 callers where an AED is located, if callers do not already know.

9. Maintenance of Hardware and Support Equipment.

- a. Maintenance checks must be regularly scheduled and conducted according to manufacturer recommendations. The program coordinator or another designated person can perform the maintenance checks. A written checklist should be developed to assess the readiness of AEDs and their supplies. This checklist supplement regularly scheduled, more detailed maintenance checks recommended by the manufacturer. At a minimum, the checklist should include the following:

- 1) Verify location/placement of AEDs.
- 2) Verify battery installation and expiration.

- 3) Check the status/service indicator light.
 - 4) Inspect exterior components and sockets for cracks or other damage.
 - 5) Check supplies (e.g., razor, towel, barrier device, scissors, extra battery, disposable gloves, and an extra set of electrode pads).
- b. AEDs are not building equipment and, as such, are not inventoried or maintained by the General Services Administration or property management personnel.

10. Educating All Employees Regarding the Existence and Activation of the PAD Program.

Employees located in buildings where a PAD program exists must be educated in the existence and operating procedures of the program. Employees should be made aware of the location of each AED, AED notification procedures, and who the members of the response team are. Specific information regarding the written program should be conveyed to employees.

11. Quality Assurance and Data/Information Management Plans.

PAD programs are not one-time isolated events. These programs must be reviewed and checked before and after an event and improved when possible. Information gathered after each incident should be logged, and outcomes should be documented. Standard operating procedures must be written and understood by the program administrator and the response team.

12. Review of New Technologies.

Any development of new technologies in AEDs or CPR procedures should be reviewed and applied, if feasible.

E. References.

1. Public Law 106-505, Public Health Improvement Act.
2. General Services Administration, FMR Bulletin 2009-B2, "Guidelines for Public Access Defibrillation Programs in Federal Facilities."
3. [Federal Occupational Health, Automated External Defibrillator Program.](#)
4. American Heart Association, "Automated External Defibrillator: Implementing an AED Program."

Chapter 24 – Bloodborne Pathogens

A. Introduction.

Occupational exposure to blood or “other potentially infectious materials” places workers at risk of infection from bloodborne pathogens. OSHA defines blood to mean human blood, human blood components, or products made from human blood. The term other potentially infectious materials means: (1) human body fluids, including semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, anybody fluid that is visibly contaminated with blood, and all body fluids in situations in which it is difficult or impossible to differentiate between body fluids; (2) any unfixed tissue or organ (other than intact skin) from a human (living or dead); (3) human immunodeficiency virus (HIV)-containing cell, tissue, or organ cultures and HIV- or hepatitis B or C virus (HBV or HCV)-containing culture medium or other solutions; and (4) blood, organs, or other tissues from experimental animals infected with HIV, HBV, or HCV.

B. Purpose.

The purpose of a bloodborne pathogens program is to protect BLM employees from exposure to a bloodborne pathogen when there is reasonably anticipated contact with blood during the course of work activities. The program requires the BLM to (1) identify those employees whose activities place them in a situation in which potential exposure to a bloodborne pathogen exists, (2) take the necessary steps to prevent transmission of a disease, and (3) prepare for and take post-exposure actions if an employee exposure has occurred.

C. Program Elements.

1. Exposure Control Plan.
2. Employee Exposure Determination.
3. Methods of Compliance.
4. Hepatitis B Vaccination.
5. Communication of Hazards.
6. Recordkeeping.
7. Evaluating an Exposure Incident.
8. Program Evaluation.

D. Explanation of Program Elements.

1. Exposure Control Plan.

Each BLM operating unit must develop a specific written plan that eliminates or minimizes exposure to bloodborne pathogens. The minimum requirements of the plan

must cover:

- a. Exposure determination,
- b. Methods of compliance,
- c. Hepatitis B vaccination and post-exposure evaluation and follow-up,
- d. Communication of hazards to employees,
- e. Recordkeeping, and
- f. Procedures for the evaluation of circumstances surrounding exposure incidents.

2. Employee Exposure Determination.

BLM supervisors are responsible for determining if employees are conducting activities that put them at risk of exposure to bloodborne pathogens. An exposure assessment documenting this determination must be conducted on employees who have been identified as being at risk of exposure, regardless of the use of personal protective equipment. This exposure determination must contain the following two categories:

- a. **Category 1.** Develop a list of all job classifications in which all employees in those job classifications have a potential occupational exposure as a result of job activities in which reasonably anticipated exposure to blood or other potentially infectious materials could occur (e.g., employees who provide first aid response or other medical care as an official duty).
- b. **Category 2.** Develop a list of employee classifications in which some employees have been identified as having an occupational exposure to blood or other potentially infectious materials, and specify those tasks and procedures in which occupational exposure occurs (e.g., recreation and maintenance personnel who perform custodial duties, such as trash collection and disposal in public areas where syringes have been encountered).

In addition, a list must be developed of all tasks and procedures or groups of closely related tasks and procedures in which occupational exposure occurs and that are performed by employees in category 2 above.

3. Methods of Compliance.

- a. **Universal Precautions.** Universal precautions must be observed to prevent contact with blood or other potentially infectious materials. Universal precautions, recommended by the Centers for Disease Control and Prevention, are bloodborne disease controls that require all human blood and certain human body fluids to be treated as if they are infectious for HIV, HBV, and other bloodborne pathogens. Since medical history and examination cannot reliably identify all individuals infected with HIV or other bloodborne pathogens, employees must consistently use blood and body fluid precautions with all individuals, including those in emergency settings in which the risk of blood exposure is greater and the individual's infectious status usually is unknown.

- b. **Engineering Controls.** Engineering controls reduce employee exposure in the workplace by either removing or isolating a hazard or isolating a worker from an exposure. One example of an engineering control is the use of puncture-resistant disposal containers for contaminated sharp instruments. Placing needles and other sharp instruments in such a container reduces the chance of an employee getting injured once the needle is in the container. Sharps disposal containers are classified as a medical device, and must be labeled or color coded, puncture resistant, leak proof, and closable. They must have a well-marked fill line, be translucent, or have a translucent lid. These containers must never be overfilled because doing so puts employees at significant risk of exposure to the sharp instruments. Another example of an engineering control is the use of mechanical trash pickers to collect discarded syringes and needles and place them in a sharps container. Mechanical garbage collection is another type of engineering control. This involves using waste containers that can, for example, be picked up and dumped completely without having to manually pull out trash bags that may contain sharp instruments or syringes.
- c. **Work Practice and Other Controls.** These types of controls change how a task is performed. Potential exposure can be decreased by requiring employees to perform tasks in certain ways. Standard work practice controls include:
- 1) Universal precautions;
 - 2) Prohibiting recapping, removing, or bending needles;
 - 3) Restricting eating, drinking, smoking, applying cosmetics/lip balm, or inserting contact lenses to avoid contact with mucous membranes;
 - 4) Hand washing;
 - 5) Housekeeping; and
 - 6) Decontaminating equipment and work surfaces.
- d. **Personal Protective Equipment.** Personal protective equipment provides a barrier against blood exposure when used correctly.
- 1) **Gloves.** Gloves, preferably latex or nitrile, must be worn whenever employees anticipate hand contact with potentially infectious materials. Disposable gloves are preferred and should always be followed by good hand washing techniques after removal. Gloves must be replaced when there is any sign of deterioration or puncture. Hypoallergenic gloves, glove liners, or similar alternatives must be provided to employees who have latex skin contact allergies. The use of puncture-resistant gloves should be considered when handling discarded sharps. Each of these products has a different degree of dexterity, and selection should be made with input from the employees who will be wearing the personal protective equipment.
 - 2) **Resuscitator Devices.** Resuscitator devices must be readily available

and accessible to employees who reasonably can be expected to perform resuscitation procedures. Emergency ventilation devices must be provided at no cost to employees (e.g., masks, mouthpieces, resuscitation bags, shields/barriers). Employees must be trained in the proper use of each issued resuscitation device.

- 3) **Face Masks, Eye Protection, and Face Shields.** Appropriate face and eye protection, such as a mask with glasses and solid side shields or a chin-length face shield, must be provided when splashes, spatters, or blood droplets/infectious materials pose a hazard to the eyes, nose, mouth, and mucous membranes.
- 4) **Protective Clothing.** Gowns, disposable coveralls, or puncture-proof aprons must be worn whenever potential occupational exposure to blood or body fluids is anticipated. Any contaminated garments must be removed immediately, identified as biohazardous, and labeled to ensure proper laundering. Supervisors are responsible for providing personal protective equipment and ensuring that it is properly cleaned and maintained. Home laundering is prohibited because supervisors cannot ensure that proper handling and cleaning procedures are followed.

e. Waste Management.

- 1) OSHA defines regulated waste as liquid or semiliquid blood or other potentially infectious materials; contaminated items that could release blood or other potentially infectious materials in a liquid or semiliquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials. Some specific examples include, but are not limited to:
 - a) Used needles,
 - b) Soiled scalpels,
 - c) Disposable resuscitators,
 - d) Intubation equipment,
 - e) Used bandages, and
 - f) Disposed personal protective equipment.
- 2) Regulated waste must be placed in containers that are:
 - a) Closable;
 - b) Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping; and
 - c) Labeled or color-coded.
- 3) Materials containing small amounts of blood, saliva, or other secretions, such as tainted gauze pads, sanitary napkins, or facial

tissues, are not considered infectious waste. Disposal must be in accordance with applicable local and state regulations. This may require the use of a licensed medical waste hauler. Supervisors should check the requirements of local and state health departments.

4. Hepatitis B Vaccination.

One of the most critical administrative controls is the pre-exposure administration of the HBV vaccine. 29 CFR 1910.1030 mandates that the hepatitis B vaccine and vaccination series be made available to all employees who have occupational exposure to blood and other potentially infectious materials.

- a. The HBV vaccine series must be offered within 10 working days of assignment, at a reasonable time and place, and at no cost to the employee (including travel expenses).
- b. The vaccine must be performed by or under the supervision of a licensed physician or other licensed healthcare professional whose scope of practice allows them to independently perform those activities (e.g., nurse practitioner). All vaccinations must be administered according to the recommendations of the U.S. Public Health Service.
- c. The only exceptions to offering the HBV vaccine and vaccination series is:
 - 1) If the employee has previously received the complete hepatitis B vaccination series.
 - 2) If antibody testing reveals that the employee is immune.
 - 3) Medical reasons prohibit the employee from taking the vaccine.
- d. Any employee who chooses not to receive the hepatitis B vaccination series must complete and sign the "Hepatitis B Vaccine Declination," which can be found in Appendix A of 29 CFR 1910.1030. However, if the individual changes their mind at a later date, they will still be able to receive the HBV vaccination series.
- e. If the vaccination series is interrupted after the first dose, the second dose should be administered as soon as possible. The second and third doses should be separated by at least 2 months. If only the third dose is delayed, it should be administered when convenient.

5. Communication of Hazards.

- a. **Labeling.** All containers of regulated waste or any container used to transport or store blood or other potentially infectious materials must be labeled with the biohazard symbol shown in Figure 6. Regulated waste containers include refrigerators containing blood or other potentially infectious materials. Contaminated equipment must also be properly labeled. Red bags or containers may be used instead of labeling. All first aid responders must ensure that their first aid kits contain red bags or biohazard labels.

Figure 6 – Biohazard Symbol

- b. **Employee Training.** All employees with occupational exposure to bloodborne pathogens or other potentially infectious materials must participate in a bloodborne pathogens training program. Initial training must be provided at the time of assignment. Annual refresher training must be provided as long as occupational exposure potential exists. Training must be conducted by someone knowledgeable in the subject matter, must provide employees with an opportunity for interactive questions and answers, and must include the following material:
- 1) A copy of 29 CFR 1910.1030;
 - 2) A description of tasks that may cause exposure to blood or other potentially infectious materials;
 - 3) Methods of transmission, epidemiology, and symptoms of bloodborne diseases.
 - 4) Information on the hepatitis B vaccine and vaccination series;
 - 5) The site's bloodborne pathogen exposure control plan and information on obtaining a copy;
 - 6) Biohazard warning labels and their use;
 - 7) Use, selection, and limitations of personal protective equipment and protective measures;
 - 8) Emergency actions to be taken during an exposure incident;
 - 9) Universal precautions;
 - 10) The site's vaccination program specifics;
 - 11) Post-exposure incident procedures and medical examination and follow-up; and
 - 12) Regulated waste disposal procedures.

6. Recordkeeping.

- a. **Medical Records.** Medical records must include: liability declarations, immunization records, and exposure records including exposure evaluations. Medical records must be made available for employee review during normal work hours. Disclosure of this information without the employee's written consent is a violation of the Privacy Act. All employee records must be secured at all times and labeled "Confidential." Medical records must be kept for the duration of employment, plus 30 years.
- b. **Training Records.** Training records must include the employee's name and job title, topics covered, date, and the name and qualifications of the trainer. Training records must be maintained for a period of 3 years from the date of the training.
- c. **Sharps Injury Log.** A sharps injury log must be maintained for 5 years beyond the end of the calendar year reported by the log.

7. Evaluating an Exposure Incident.

- a. Each BLM site must develop site-specific exposure incident procedures. An exposure incident is a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral (accidental injection, for instance) contact with blood or other potentially infectious materials that results from the performance of an employee's duties. Site employee exposure incidents may include the following:
 - 1) Injury from contaminated needles or other sharp instruments,
 - 2) Injury sustained from a human bite,
 - 3) Mucous membrane contact with blood or other potentially infectious materials, or
 - 4) Exposed skin contact with an injured patient's blood or bodily fluids during first aid treatment.
- b. **Employee Responsibilities.** Employees must:
 - 1) Initiate appropriate cleaning and/or first aid at the exposure site,
 - 2) Identify the source of exposure, and
 - 3) Report the incident to their immediate supervisor.
- c. **Supervisor Responsibilities.** Supervisors must provide for a confidential medical examination and follow-up consultation immediately available to an employee that has been involved in an exposure incident.
- d. **Source Individual Testing.** Supervisors must identify and document the source of exposure, if known, unless identification is not feasible or is prohibited by state or local law. The source individual's blood must be tested as soon as feasible, after consent is obtained, in order to determine HIV and HBV infectivity. The information of the source individual's HIV and HBV testing must be provided to the evaluating healthcare professional. The results

of the testing must be provided to the employee. The employee must be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

- e. **Counseling.** The supervisor must give the healthcare provider the following documents and information:
 - 1) A copy of 29 CFR 1910.1030,
 - 2) A description of the employee's duties as they relate to the exposure incident,
 - 3) Documentation of the route(s) and circumstances of the exposure,
 - 4) Results of the source individual's blood testing if available, and
 - 5) All medical records relevant to the appropriate treatment of the employee, including vaccination status, which the employer is responsible for maintaining.
- f. **Program Evaluation.**
 - 1) Following an exposure incident, BLM will evaluate the incident to determine route(s) of exposure and the circumstances under which the exposure incident occurred.
 - 2) This evaluation and follow-up shall be available to employees who have had an exposure incident at no cost and at a reasonable time and place.
 - 3) An annual evaluation shall be conducted, with input from employees, managers, and safety professionals, to determine the effectiveness of the bloodborne pathogen program and the effectiveness of the dissemination of updates.

E. References.

1. 29 CFR 1910.1030, Bloodborne pathogens.
2. 29 CFR 1904.8, Reporting criteria for needlestick and sharps injuries.
3. Centers for Disease Control and Prevention. 2005. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Post exposure Prophylaxis. Morbidity and Mortality Weekly Report (MMWR),54(RR09): 1-17.
4. [OSHA Bloodborne Pathogens and Needlestick Prevention.](#)
5. [National Institute for Occupational Safety and Health, Bloodborne Infectious Diseases: HIV/AIDS, Hepatitis B, Hepatitis C.](#)

Chapter 25 – Heat Stress Prevention

A. Introduction.

BLM employees may encounter hot environments while conducting work activities. A combination of warm temperature and high relative humidity causes heat stress and creates dangerous conditions for employees. These adverse effects may arise from exposure in multiple types of environments. Whenever temperatures rise significantly above normal, heat stress injuries can arise and can have mild or profound signs and symptoms. Individuals who may be susceptible to heat stress emergencies include those who are not acclimated, outdoor workers, those who work long shifts, and those who work in areas with very little shade.

B. Purpose.

BLM employees should be aware of the signs and symptoms of heat stress. When BLM personnel work in high temperatures and humidity, their individual behavior, location, methods of communication, and hydration must be closely monitored. The effects of heat exposure are insidious and can creep up on a person without them knowing that it is even happening. Nobody is exempt from the effects of heat stress temperatures, and specific measures must be taken to limit the chances of exposure. If exposed, BLM employees should understand which actions can be taken to mitigate heat stress injuries.

C. Program Elements.

1. Heat Injuries.

D. Explanation of Program Elements.

1. **Heat Injuries.** Heat injuries are not restricted to elevated ambient temperatures. Heat is generated as a result of the constant chemical processes within the body. A certain amount of this heat is required to maintain normal body temperature. Any heat that is not needed for temperature maintenance must be lost from the body or hyperthermia, an abnormally high body temperature, will ensue. If allowed to go unchecked, hyperthermia can lead to death. Types of heat injuries include:
 - a. **Heat Cramps.** Symptoms include severe muscle cramps, usually in the legs or abdomen, brought about by dehydration and exhaustion, and sometimes accompanied by dizziness and periods of faintness.
 - 1) Treatment. Move the individual to a nearby cool place. Give the individual water or half-strength commercial electrolyte fluids to drink. Massage the cramped muscle(s) to help ease discomfort.
 - b. **Heat Exhaustion.** Symptoms include rapid and shallow breathing, weak pulse, cold and clammy skin, heavy perspiration, total body weakness, and dizziness that sometimes leads to unconsciousness.
 - 1) Treatment: Move the individual to a cool place nearby. Keep the

individual at rest and fan their skin. Remove enough clothing to cool the person without causing chills (watch for shivering). Give the individual salted water or half-strength commercial electrolyte fluids to drink. Do not try to give fluids to an unconscious person. At this stage, treatment at a medical facility is essential.

- c. **Heat Stroke.** Heat stroke is a life-threatening, heat-related emergency that may require CPR. Prevention: Immediately reduce activity levels and seek a cooler environment. Stay in the shade. Keep food intake, especially intake of protein, to a minimum if sufficient water is not available, since protein increases metabolic heat production and water loss.

- 1) Individuals who may be suffering from heat stroke should:
 - a) Keep clothing on, including shirt and hat. Clothing slows the evaporation rate of perspiration and prolongs the cooling effect in addition to providing protection from the sun.
 - b) Drink water to prevent dehydration.
 - c) Do not sit or lie on hot ground. It can be up to 30 degrees hotter on the ground than it is just one foot above the ground. To avoid skin burns, avoid sitting on metal surfaces unless material is placed between skin and place of contact.
- 2) Symptoms: deep breaths followed by shallow breathing, then a rapid, strong pulse, followed by rapid, weak pulse. The skin becomes hot and dry. The individual may lose consciousness and seizures or muscular twitching may occur.
- 3) Treatment: Cool the individual rapidly in any manner. Move the individual out of the sun or away from the heat source. Remove the individual's clothing and wrap them in wet towels and sheets. Pour cold water over these wrappings. Body heat must be lowered rapidly or brain cells will die.
 - a) If cold packs or ice bags are available, wrap them and place them in the person's armpits, behind each knee, on the groin, on each wrist and ankle, and on each side of the person's neck.
 - b) Transport the individual to a hospital as soon as possible. Should transport be delayed, immerse the individual up to the face in a tub or container of cool (not cold) water. Constantly watch the individual so that they do not drown.

Chapter 26 – Cold Stress Prevention

A. Introduction.

BLM employees may encounter cold environments while conducting work activities. A combination of wind and freezing temperature induces wind chill and creates dangerous conditions for employees. These adverse effects may occur under wet or dry conditions (e.g., cold water, extreme weather conditions, and cold spaces such as caves) and may arise from exposure in multiple types of environments. Whenever temperatures drop decidedly below normal, cold stress injuries can arise and can have mild or profound signs and symptoms. Individuals who may be susceptible to cold stress emergencies include those without shelter, outdoor workers, and those who work in an area that is poorly insulated or without heat.

B. Purpose.

BLM employees should be aware of the signs and symptoms of cold stress. When BLM personnel are exposed to cold weather conditions, their individual behavior, location, methods of communication, and wearing of appropriate personal protective equipment must be closely monitored. The effects of cold exposure are insidious and can creep up on a person without them knowing that it is even happening. Nobody is exempt from the effects of freezing temperatures, and specific measures must be taken to limit the chances of exposure. If exposed, BLM employees should understand which actions can be taken to mitigate cold stress injuries.

C. Program Elements.

1. Cold Weather Injuries.
2. Evaluate Cold Stress.
3. Control Exposures to the Cold.
4. Preventive Measures for Cold Stress Injuries.
5. Supervisory Responsibilities.
6. Implement Warming Cycles.
7. Training.

D. Explanation of Program Elements.

1. Cold Weather Injuries.

Nonfreezing injuries can occur above 32° F and may include nonfreezing injuries by accelerating heat loss and can lead to severe injuries like frostbite and trench foot, both of which can cause permanent physical impairments.

Discomfort or pain in the extremities, such as fingers and toes, are early signs of exposure to dangerously cold conditions. Additional warning signs may include violent shivering, fatigue,

and stubbornness. As body temperature continues to decrease, rational decision making and alertness decrease, with loss of consciousness as a possible result. Exposure to the cold may also negatively influence manual dexterity. When hand skin temperature is 55° F or lower, manual performance is impaired. Finger dexterity in knot tying, for example, is decreased as skin temperature falls further to 45° F. Manual performance is also decreased during slow rates of cooling, which is generally associated with the fingers being exposed for longer times to less-severe cold.

- a. **Hypothermia.** When the whole body or significant portions of the body are exposed to cold, heat loss can exceed heat production resulting in reduced core temperature or hypothermia, defined as the unintentional lowering of the body's core temperature to less than 95° F. Prolonged exposure to cold eventually uses up the body's stored energy. While hypothermia is associated with freezing temperatures, it may occur in any climate when the body's temperature falls below normal. When body temperature is too low, the brain is affected, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and may be unable to take precautionary measures. See Figure 7 for hypothermia symptoms and first aid procedures.

Figure 7 – Hypothermia Symptoms and First Aid Procedures

Symptoms	First Aid
<p>Early Symptoms:</p> <ul style="list-style-type: none"> • Shivering • Fatigue • Loss of coordination • Confusion and disorientation <p>Late Symptoms</p> <ul style="list-style-type: none"> • No Shivering • Blue Skin • Dilated pupils • Slowed pulse and breathing 	<ul style="list-style-type: none"> • Alert the supervisor, and request medical assistance. • Move the victim into a warm room or shelter. • Remove any wet clothing. • Warm the center of the body first— chest, neck, head, and groin—using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets. • Warm beverages may help increase body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person. • After body temperature has increased, keep the victim dry and wrapped in a warm blanket, making sure to include the head and neck. • If victim has no pulse, begin cardiopulmonary resuscitation (CPR).

- b. **Chilblains.** Chilblains are caused by the repeated exposure of skin to temperatures just above freezing to as high as 60° F. The exposure to cold causes damage to the capillary beds in the skin. This damage is permanent, and the redness and itching return with additional exposure to cold. The redness and itching typically occur on cheeks, ears, fingers, and toes. See Figure 8 for chilblain symptoms and first aid procedures.

Figure 8 – Chilblain Symptoms and First Aid Procedures

Symptoms	First Aid
<ul style="list-style-type: none"> • Redness • Itching • Possible blistering • Inflammation • Possible ulceration in severe cases 	<ul style="list-style-type: none"> • Avoid scratching. • Slowly warm the skin. • Use corticosteroid creams to relieve itching and swelling. • Keep blisters and ulcers clean and covered.

- c. **Trench Foot.** Also known as immersion foot, trench foot is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60° F if the feet are constantly wet. Injury occurs because wet feet lose heat 25 times faster than dry feet. To prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products. See Figure 9 for trench foot symptoms and first aid procedures

Figure 9 – Trench Foot Symptoms and First Aid Procedures

Symptoms	First Aid
<ul style="list-style-type: none"> • Reddening of the skin • Numbness • Leg cramps • Swelling • Tingling pain • Blisters or ulcers • Bleeding under the skin • Gangrene (the food may turn dark purple, blue, or gray) 	<ul style="list-style-type: none"> • Remove shoes/boots and wet socks. • Dry the feet. • Avoid walking, as this may cause tissue damage.

d. **Frostbite and Frostnip.** Frostbite and frostnip are conditions that are caused by the freezing of cellular fluids, resulting in the formation of ice crystals that disrupt cell membranes.

- 1) **Frostnip.** Frostnip is the mildest freezing injury of the skin and involves the freezing of water on the skin surface. The skin reddens and may become swollen. Recovery is complete (similar to a mild sunburn) with removal from cold exposure.
- 2) **Frostbite.** Frostbite is an injury to the body that is caused by the freezing of multiple layers of skin and underlying tissues. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly. See Figure 10 for frostnip and frostbite symptoms and first aid procedures.

Figure 10 – Frostbit and Frostbite Symptoms and First Aid Procedures

Symptoms	First Aid
<ul style="list-style-type: none"> • Reduced Blood Flow to hands and feet (fingers or toes can freeze) • Numbness • Tingling or stinging • Aching • Bluish or pale, waxy skin 	<ul style="list-style-type: none"> • Get into a warm room as soon as possible. • Unless absolutely necessary, do not walk on frostbitten feet or toes – this can increase the damage. • Immerse the affected area in warm (not hot) water. The temperature should feel comfortable to the touch on unaffected parts of the body. • Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers. • Do not rub or massage the frostbitten area; doing so may cause more damage. • Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

- e. **Snow blindness.** Snow blindness is caused from the cornea being exposed to ultraviolet radiation, often in snow conditions. Symptoms include eye pain and photophobia (sensitivity to light) and may include tearing, eye redness, swollen eyelids, foreign body sensation (a “gritty” feeling in the eyes), blurred vision, and headache. See Figure 11 for snow blindness symptoms and first aid procedures.

Figure 11 – Snow Blindness Symptoms and First Aid Procedures

Symptoms	First Aid
Eye pain, redness or “gritty” feeling in the eyes	<p>Rest in total darkness; bandage eyes with gauze or other loose, soft wrapping material.</p> <p>Evacuate for medical treatment if there is no improvement within 24 hours.</p>

- f. **Carbon Monoxide Poisoning.** Carbon monoxide poisoning occurs when oxygen is replaced with carbon monoxide in the bloodstream. It is caused by burning fuels without proper ventilation. Carbon monoxide poisoning can be prevented by venting space heaters used in sleeping areas and never sleeping in running vehicles. See Figure 12 for carbon monoxide poisoning symptoms and first aid procedures.

Figure 12 – Carbon Monoxide Poisoning Symptoms and First Aid Procedures

Symptoms	First Aid
<ul style="list-style-type: none"> • Headache, confusion, dizziness, excessive yawning • Cherry red lips and mouth in light-skinned individuals or a grayish tint to lips and mouth in dark-skinned individuals • Loss of consciousness 	<ul style="list-style-type: none"> • Move to fresh air • Perform CPR if needed • Administer oxygen if available • Evacuate for medical treatment

2. Evaluate Cold Stress.

- a. The effects of cold on personnel are dependent on temperature, exposure time, wind velocity, and individual susceptibility. Precautionary measures against cold injury must be planned to ensure optimum personnel safety. Monitor the work and ambient environment to identify cold stress risk factors. Risk factors include various combinations of the following:
- 1) Ambient temperature of 40° F or less;
 - 2) Rain, snow, icy conditions, or high humidity;
 - 3) Wind speeds of 5 miles per hour or greater;
 - 4) High elevation;
 - 5) Inadequate clothing or shelter;
 - 6) Wet clothing; and
 - 7) Poor nutrition and lack of drinking water.
- b. **Predisposing Factors to Cold Injuries.** Individuals may be at greater risk under the following conditions:
- 1) Lack of acclimatization;
 - 2) High activity levels followed by rest (causing sweating followed by chilling);
 - 3) Cold water immersion;
 - 4) Fatigue or lack of sleep;
 - 5) Inadequate cold weather training or experience;

- 6) Previous cold injury or other significant injury;
 - 7) Use of tobacco or consumption of alcohol;
 - 8) Skipped meals or poor nutrition;
 - 9) Low activity level; or
 - 10) Underlying vascular conditions, which may be present from a previous cold- related injury or due to lifestyle or genetics.
- c. Use the National Weather Service wind chill chart to screen for increased risk of cold stress injuries. See Figure 13 for the chart. The National Weather Service uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. As the wind chill factor increases, the risk of frostbite and other cold stress injuries increases.

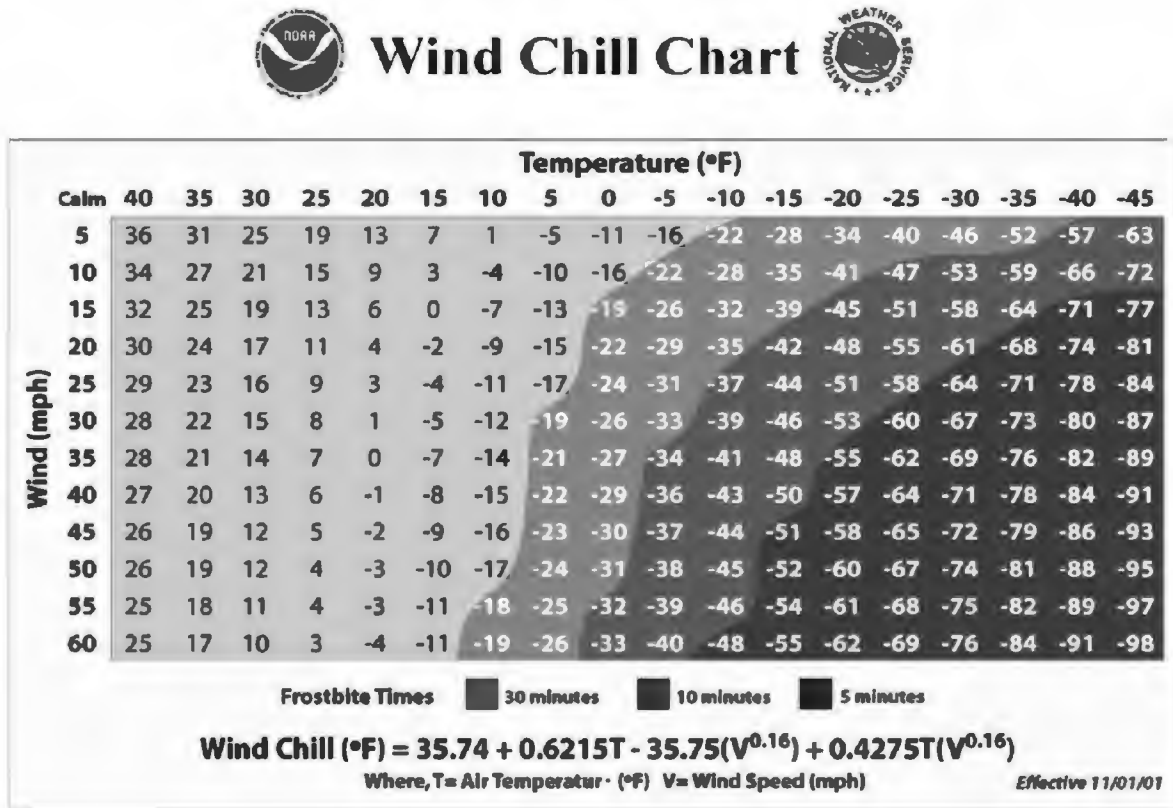


Figure 13 – National Weather Service Wind Chill Chart

3. Control Exposures to the Cold.

- a. Most cold-related health consequences are preventable. Preventive measures include ensuring that adequate shelter and warm, clean clothing are available. Pay special attention to:
 - 1) **Feet.** Keep socks clean and dry, and carry an extra pair. Wear overboots to keep boots dry.
 - 2) **Hands.** Wear gloves or mittens, and avoid skin contact with snow, fuel, or bare metal. Wear proper gloves when handling fuel or bare metal, and wear waterproof gloves when possible.
 - 3) **Face and Ears.** Cover face and ears with a scarf. Wear an insulated cap with flaps over the ears or wear ear muffs. Use sunscreen on exposed skin.
- b. Remember to dress in layers.
- c. Ensure adequate nutrition and hydration.
- d. Limit or avoid drinking alcohol.

- e. Acclimate gradually, if possible, taking a few weeks “to get used to the cold”.
- f. Use equipment that insulates against the cold, such as plastic-coated tools and equipment.
- g. Dehydration, or the loss of body fluids, occurs insidiously in a cold environment and may increase the susceptibility to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups help provide caloric intake and fluid volume. Caffeinated drinks should be limited because of caffeine’s diuretic and circulatory effects.

4. Preventive Measures for Cold Stress Injuries.

- a. Schedule maintenance and repair jobs for warmer months.
- b. If the weather is cold, schedule jobs for a warmer part of the day.
- c. Reduce the physical demands of workers.
- d. Use relief workers, or assign extra workers for long, demanding jobs.
- e. Provide warm liquids to workers.
- f. Wear appropriate clothing. Wear several layers of loose clothing, since layering provides better insulation.
- g. Make sure to protect the ears, face, hands, and feet in extremely cold weather.
- h. Wear sunglasses.
- i. Wear a hat to keep the whole body warmer. Hats reduce the amount of body heat that escapes from the head.
- j. Move into warm locations during work breaks and limit the amount of time outside on extremely cold days.
- k. Carry cold weather gear, such as extra socks, gloves, hats, jackets, blankets, a change of clothes, and a thermos of hot liquid.
- l. Include a thermometer and chemical hot packs in a first aid kit
- m. Avoid touching cold metal surfaces with bare skin.
- n. Individuals should monitor their physical condition and that of co-workers.

5. Supervisory Responsibilities.

- a. The combination of wind and freezing temperatures causes wind chill with dangerous effects to humans. Figure 14 summarizes the effects of cold temperatures and provides recommendations for employees who must be exposed to complete job tasks. It is essential for all personnel, particularly supervisors, to know the extent of the physical hazards related to cold temperatures and exercise prudent judgment.

Figure 14 -Equivalent Temperature Chart and Corresponding Chill Conditions and Descriptions

Wind Speed (MPH)	Actual Thermometer Reading (F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	EQUIVALENT TEMPERATURE (F)											
CALM	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
	Chill Condition I		Chill Condition II		Chill Condition III		Chill Condition IV		Chill Condition V			
Wind speeds greater than 40 MPH have little additional effect.	Little Danger For properly clothed person.				Increasing Danger Danger from freezing of exposed skin.				Great Danger			

- 1) Chill Condition I -Comfortable with adequate clothing. Lowest equivalent temperature is 10° F.
- 2) Chill Condition II –Cold. Heavy clothing required. Frostbite possible. Equivalent temperature between 10° and -20° F.
- 3) Chill Condition III -Extremely cold. Exposure should be allowed only when necessary. Equivalent temperatures between -20° and -40° F.
- 4) Chill Condition IV -Increasing danger to exposed flesh. Exposure must be held to an absolute minimum. Equivalent temperature between -40° and -60° F.
- 5) Chill Condition V-Severe-Extreme danger. Severe frostbite and hypothermia are likely. Exposure other than the most critical rescue work should be avoided. Equivalent temperature below -60° F.

- a) Each employee must be authorized in writing to perform work in cold weather at a chill condition level determined by the individual office (see Figure 14). Because of continually changing weather conditions, this authorization may not be continued for more than one work shift.
- b) Each field office/unit must make a determination as to the type and level of personal protective equipment required in order to enable personnel to be exposed to specific levels of cold conditions. Due to extreme variations in temperature, humidity, and chill factor found throughout the nation, individual field offices must determine exposure levels requiring administrative controls. The chill factor conditions presented in Figure 14 provide basic guidelines.
- c) Supervisors should monitor the work and ambient environment to identify cold stress risk factors listed under section D.2. in this Chapter, "Evaluate Cold Stress".
- d) Risk Assessment. Supervisors must ensure that a risk assessment is prepared for all projects or activities requiring work in extreme cold conditions. A risk assessment is a formal process for systematically examining the risk associated with an activity and developing effective strategies to reduce the severity of the identified risks. Risk assessments must be completed and approved in accordance with Chapter 2 of this handbook, "Operational Risk Management." BLM Form 1112-5, "Risk Management Worksheet," is used to facilitate the completion of a risk assessment.

6. Implement Warming Cycles.

If work is performed continuously in the cold at wind chill temperatures of 20° F or below, heated warming shelters such as tents, cabins, and restrooms should be made available nearby. Workers should be encouraged to use these shelters at regular intervals, with the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or a feeling of euphoria are indications for immediate return to the shelter. When entering the heated shelter, the outer layer of clothing should be removed and the remainder of the clothing should be loosened to permit sweat evaporation. A change of dry work clothing should be provided, as necessary, to prevent workers from returning to work with wet clothing.

7. Training.

Cold weather training must be provided to employees who work in cold weather conditions. The training must cover the following topics:

- a. Worker risk,
- b. Prevention,
- c. Symptoms,

- d. The importance of individuals monitoring themselves and coworkers for symptoms,
- e. Treatment, and
- f. Personal protective equipment.

E. References.

1. [Occupational Safety and Health Administration, Cold Stress Guide.](#)
2. [Occupational Safety and Health Administration, Tips to Protect Workers in Cold Environments.](#)
3. [Centers for Disease Control and Prevention, Cold Stress.](#)
4. Navy Environmental Health Center. 2007. Prevention and Treatment of Heat and Cold Stress Injuries. Technical Manual NEHC-TM-OEM 6260.6A.

Chapter 27 – Hearing Loss Prevention

A. Introduction.

Employees who are exposed to excessive noise in the work environment can suffer hearing loss. The effects can be short- or long-term and temporary or permanent. It is essential to identify and monitor noise exposure hazards for all employees. Programs should be developed to prevent exposure to hazardous noise that may be generated in the work environment. Work activities that typically expose employees to excessive noise, and therefore should be a priority for monitoring, include using power tools, running heavy construction or road maintenance equipment, riding in a helicopter or conducting aviation ground activities, shooting firearms, driving a fire engine and operating fire engine-related equipment. All activities in the workplace that expose employees to excessive noise must be evaluated.

B. Purpose.

The purpose of this Chapter is to describe the development and implementation of a program that helps prevent work-related hearing loss. If feasible administrative or engineering controls cannot first be used to eliminate excessive noise, a hearing conservation program must be instituted. Noise exposures at or above 85 decibels (measured on the A scale – dBA) are considered hazardous and pose an excessive and unacceptable risk of hearing loss. Precautions must be taken to prevent exposures greater than 85 dBA. All employees exposed to noise exceeding 85 dBA must be provided with training, annual hearing tests, and hearing protection devices.

C. Program Elements.

1. Program Administration.
2. Identification of Hazardous Noise.
3. Noise Hazard Control.
4. Provision and Use of Hearing Protection Devices.
5. Audiometric Testing.
6. Noise Hazard Information.
7. Training.
8. Recordkeeping.

D. Explanation of Program Elements.

1. Program Administration.

A hearing conservation program administrator must be appointed to implement and oversee the operation of each hearing conservation program. The hearing conservation administrator must be qualified to run the program based on training, education, and experience. In addition, each

hearing conservation administrator must ensure that the worksite conforms to the requirements outlined in this chapter. A roster of employees at risk of exposure to hazardous noise situations will be maintained at the local level and revised as necessary.

2. Hazardous Noise Identification.

In order to reduce occupational hearing loss, the BLM must use the OSHA action level of an 85 dBA **time-weighted average** (TWA) for an 8-hour work shift with a 5-decibel exchange rate. When workers are exposed to an occupational exposure limit of 85 dBA or more during an 8-hour work shift, changes must be made to tools, equipment, or schedules so workers are exposed to less noise or a hearing conservation program must be instituted. A hearing conservation program requires office representatives or qualified contractors to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protection in use.

3. In order to determine if exposures are at or above 85 dBA, it may be necessary to measure or monitor the actual noise levels in the workplace and to estimate the noise exposure (dose) received by employees during the workday. Initial area sampling of equipment and personnel sampling of employees must be conducted to determine and characterize the exposure to noise.
4. A sound level meter is the basic instrument used to investigate noise levels. It can be used to evaluate area noise levels, identify noise sources, estimate employee exposures, and aid in determining solutions for noise control. The sound level meter consists of a microphone, a preamplifier, an amplifier with an adjustable and calibrated gain, frequency weighting filters, meter response circuits, and an analog meter or digital readout. The American National Standards Institute has classified levels of precision for sound level meters as Type 0 (laboratory standard), Type I (precision measurements in the field), and Type II (general purpose measurements). The Type II meter is most frequently used in the field for employee exposure and noise evaluation purposes.
5. Most sound level meters allow options for linear, A, and C frequency weighting. In addition, either slow or fast meter response can be selected. With fast response, the meter closely follows the sound level as it changes. A slow response is more sluggish but allows the user to obtain a better average of the changing sound level. OSHA noise standards require exposure measurements to be made with a slow meter response on the A scale.
6. A noise dosimeter is essentially a sound level meter that integrates noise levels throughout the sampling period and calculates the noise dose to an individual employee. It is the primary instrument used for compliance measurements. The noise dosimeter is worn by the employee during sampling to calculate personal noise dose, or it can be placed in a specific location to measure the sound level in that area. Specific instrument settings can be selected on a noise dosimeter, including exchange rate, frequency weighting, fast or slow response, criterion level, and threshold.

7. Periodic follow-up monitoring must be conducted when there is a change in equipment, work processes, or maintenance routines or if workers are developing standard threshold shifts as determined by an audiogram.
8. For more information on exposure levels and duration, see Illustration 4 at the end of this handbook.
9. Noise Hazard Control.

Engineering controls and administrative controls must be used to abate worker exposure to noise. When considering engineering controls, noise hazards should, as much as possible, be controlled at the source. The noise level may also be reduced along the transmission path to the worker's hearing zone. Equipment design should be considered when investigating the purchase of new or similar equipment; some machinery may not be well-suited for noise reduction retrofitting. Additional engineering factors to consider are choosing low noise tools and machinery; providing consistent preventive maintenance of equipment (i.e., lubricating machinery and equipment, oiling bearings); placing a barrier between the noise source and the employee (e.g., sound walls, dampening panels, curtains); and enclosing or isolating the noise source. Relocating noisy machinery to a different part of the work area should also be considered (i.e., moving compressors outdoors). If engineering and administrative controls alone do not reduce noise levels to an acceptable level, then a hearing conservation program, including issuing hearing protection devices, must be instituted.

10. Provision and Use of Hearing Protection Devices.

If noise in the employee work area cannot be reduced to 85 dBA through engineering and administrative controls, then hearing protection devices must be provided to employees and replaced as necessary. Several types of protectors must be made available to employees from which to select. Hearing protectors must be evaluated for their ability to adequately reduce the noise exposures in the workplace to an 85 dBA TWA or less.

11. Hearing protectors must be required and provided to and worn by all employees with noise exposure greater than an 85 dBA TWA equal to or greater than one 8 hour shift per year. Re-usable insert type hearing protection devices should be disposed of or cleaned after each use and stored in a sanitary location.
12. Each hearing protection device has a designated **noise reduction rating (NRR)** or noise attenuation. The NRR is defined as the maximum number of decibels the hearing protection device will reduce the sound level when worn.
13. "Methods for estimating the adequacy of hearing protector attenuation," 29 CFR 1910.95 Appendix B, provides information on determining the adequacy of hearing protector attenuation using the NRR of a given hearing protector. See Illustration 5 at the end of this handbook for formulas to estimate the attenuation afforded to a noise-exposed employee using ear muffs, ear plugs, or both simultaneously.

14. Audiometric Testing.

The BLM must make continuous audiometric testing available, free of charge, to all employees whose noise exposure equals or exceeds 85 dBA. Audiometric tests must be performed by a licensed or certified audiologist, otolaryngologist, or other physician or by a technician who is certified by the Council for Accreditation in Occupational Hearing Conservation. Audiogram results will be provided to tested employees.

15. **Baseline Audiogram.** A baseline audiogram (i.e., hearing test) must be obtained for all employees with noise exposures equal to or greater than an 85 dBA TWA. The baseline audiogram must be obtained within 6 months of an employee's first exposure to noise above the action level. Both a pre-employment and termination audiogram must be obtained for all employees. Employees are required to be informed that baseline audiometric testing must be preceded by at least 14 hours without exposure to noise levels above 80 dBA. Workers may use hearing protection to meet this requirement.
16. **Annual Audiogram.** Annual audiograms are required for all workers with noise exposures equal to or greater than an 85 dBA TWA. When an audiogram detects a change in the hearing threshold level in either ear that equals or exceeds an average of 10 dB or more at 2000, 3000, and 4000 Hertz in either ear, this is referred to as a standard threshold shift. An optional audiogram retest may be conducted to determine whether the standard threshold shift remains. The retest may show that the worker does not have a persistent threshold shift, thereby eliminating the need for a confirmation audiogram and follow-up action. If a persistent threshold shift has occurred, the worker must be informed that their hearing may have worsened, and additional hearing tests are necessary.
17. **Confirmation Audiogram.** When an employee's monitoring audiogram detects a standard threshold shift, they must receive a confirmation audiogram within 30 days. This confirmation test must be conducted under the same conditions as the baseline audiometric test. If the confirmation audiogram shows the persistence of a threshold shift, the audiograms and other appropriate records must be reviewed by an audiologist or physician. The BLM must notify an employee within 21 days after a determination that their audiometric test results show a standard threshold shift. Employees must receive counseling, which may include an explanation of the effects of hearing loss, re-instruction and refitting of hearing protectors, additional training in hearing loss prevention, and reassignment of the worker to a quieter work area.
 - 1) If this review validates the threshold shift, the shift must be recorded both in the [Safety Management Information System](#) as a recordable incident and in the employee's medical record. The confirmation audiogram must serve as the new baseline. This new baseline must be used to calculate any subsequent standard threshold shift.
 - 2) The BLM must fit or refit any employee showing a standard threshold shift with adequate hearing protectors, show the employee how to use them, and require the employee to wear them.
 - 3) When the reviewing audiologist or physician suspects a hearing change is due to a non-occupational cause such as either off-the-job or

age-related, the worker must receive appropriate counseling, which may include a referral to their physician.

18. Noise Hazard Information.

Areas in which there is an identified noise hazard (levels greater than 85 dBA) or areas where noise-hazard equipment is operated must be posted to notify workers of the identified hazards and of the requirements for hearing protection devices. BLM employees who are exposed to noise at or above 85 dBA during an 8-hour TWA must be informed of their exposure, the risks associated with the exposure, and the protective measures in place to reduce an exposure. Employees must be informed within 30 days when initial noise measurements confirm the presence of hazardous noise or when follow-up noise measurements identify additional noise hazards. New workers must be notified about the presence of hazardous noise before they are exposed.

19. Training. Training must include, at a minimum:

- The physical and psychological effects of noise and hearing loss;
- Information regarding the advantages and disadvantages of various types of hearing protectors;
- The selection, fit, and care of hearing protectors;
- Procedures for audiometric testing; and
- The roles and responsibilities of the BLM and employees in preventing noise-induced hearing loss.

20. Recordkeeping.

Noise exposure monitoring records must be retained for 2 years. Records of audiometric test results must be kept for the duration of employment. Training records must be kept for the duration of employment, plus 1 year.

E. References.

1. [Centers for Disease Control and Prevention, Noise and Hearing Loss prevention](#)
2. [OSHA, Occupational Noise Exposure](#)
3. "Hearing Conservation," OSHA 3074, 2002 (Revised).
4. 29 CFR 1910.95, Occupational noise exposure.
5. 29 CFR 1910.95 Appendix B, Methods for estimating the adequacy of hearing protector attenuation.

Chapter 28 – Confined Spaces, Caves, and Mines

A. Introduction.

This program establishes the required procedures to identify confined spaces, prohibit unauthorized entry, and establish procedures for authorized entry and safe performance of work within confined spaces. Confined spaces include, but are not limited to sewers, pipelines, septic tanks, vessels, bins, ventilation and exhaust ducts, underground utility vaults and maintenance holes, tunnels, excavations and trenches more than 4 feet in depth, water towers and some **Controlled Equipment Vaults (CEVs)** depending on configuration. Prior to commencing confined space work, associated hazards need to be identified and eliminated.

B. Purpose.

To provide a safe work environment and prevent employees from accidentally entering a confined space, the following should be used to inform employees of the existence, location, and danger posed by confined spaces.

1. Warning signs to inform employees of the existence of a confined space.
2. Risk Assessment to plan and communicate the hazards and control measures to take while working in a confined space.
3. A completed and approved confined space entry permit prior to entering a permit required confined space.
4. Training and toolbox talks on site to inform and train employees on the dangers and procedures associated with a confined space.

C. Program Elements.

1. Responsibilities.
2. Roles.
3. Identification of Confined Spaces.
4. Marking of Confined Spaces.
5. Hazard Identification and Evaluation.
6. Reclassification of “Permit-Required” Spaces to “Non-Permit.”
7. Entry Permit System.
8. General Entry Safeguards & Preparation.
9. Entry into Confined Spaces.
10. BLM Contractors.
11. Equipment and Tools for Working in Confined Spaces.

12. Sewer System Entry.
13. High Voltage Confined Space Entries.
14. Rescue Requirements.
15. Process Flowchart.
16. Training Requirements.
17. Inspection and Program Review.
18. Definitions.
19. Caving.
20. Active Mines – Mineral Examination and Mine Safety Practices.
21. Inactive/Abandoned Mines.

D. Explanation of Program Elements.

1. Responsibilities.

a. Supervisor:

- 1) Know and understand confined space entry requirements.
- 2) Understand, where applicable, local regulatory, site confined space entry
- 3) Ensure correct use of local regulatory and/or site confined space entry process by BLM employees and/or contractors where appropriate.
- 4) Identify, or have access to site information identifying, on-site confined spaces, including those of both permanent and temporary nature.
- 5) Recognize the need for additional, documented, safety precautions such as isolation of equipment (lock-out / tag-out) when preparing a confined space entry form.
- 6) Ensure applicable employees are trained (documented) and familiar with the BLM confined space entry program.
- 7) Maintains a site listing of employees authorized to enter confined spaces (Authorized Entrants).
- 8) Ensure employees are aware they can locate this program through their site EHS Representative or on the [BLM Safety, Health & Emergency Management Policy & Regulations Page](#).
- 9) Issue, monitor, close, and file confined space entry forms. These forms are records.
- 10) Review correct application of confined space entry requirements at

regular intervals.

b. Employees and contractors:

- 1) Possess necessary job qualifications to act as authorized entrant, attendant, rescuer, as applicable.
- 2) Know and understand confined space entry requirements applicable to the site.
- 3) Recognize (remaining) workplace hazards, requiring (additional) preventive measures to be put in place.
- 4) Ensure all preventive measures are in place before commencing work.
- 5) Ensure that they have the appropriate permit and work within its requirements.
- 6) Monitor safe working conditions while working inside the confined space.
- 7) Inform supervisor when task is completed and confined space is evacuated.

2. Roles.

- a. **Authorized Entrants:** Authorized by the employer to enter a confined space. Will review the permit and sign prior to entry, follow the requirements of the entry permit including ventilation etc., and evacuate the confined space when conditions warrant or when directed by the Attendant. Note: Work activity is assumed to start as soon as any part of a person's body breaks the plane of an opening into a confined space.
- b. **Entry Supervisor:** Is responsible for conducting an assessment in the field of the space to be entered, completing the Entry Permit and obtaining approval. The supervisor is also responsible for ensuring that the requirements of the entry permit are in place before approving the permit as well as ensuring the Risk Assessment has been completed and discussed with the Authorized Entrant(s), verifying the air monitor is calibrated and ensuring pre-entry air monitoring is being performed. The supervisor must also remain on site while any work is being performed in a confined space.
- c. **Attendant:** Responsible for standing by the entrance and ensuring communication with the authorized entrant(s) while the space is occupied. **The attendant shall never enter the confined space even during an emergency. During an emergency, the attendant shall help activate the rescue plan and must stay outside the space.**
- d. **Testing and Monitoring Personnel:** Operate the atmospheric testing and monitoring equipment.
- e. **Rescue Personnel:** Trained in and authorized to conduct rescue activities in permit-required confined spaces.

3. Identification of Confined Spaces.

- a. At BLM workplaces, all confined spaces must be identified and signed in accordance with section 4 below. At each location, a documented Confined Space inventory is to be maintained identifying both non-permit and permit required spaces.
- b. The inventory is to be reviewed at least annually to identify any changes in confined space designation. If during preparation for a confined space entry it is discovered that the confined space designation has changed, the inventory must be updated prior to the annual review.
- c. All employees who may be required to work in confined spaces should be aware of the difference between confined spaces and permit-required confined spaces.
- d. **Confined Space.** A confined space meets ALL THREE of the following conditions:
 - 1) Has limited or restricted means of entry or exit,
 - 2) Is large enough for an employee to enter and perform assigned work, and
 - 3) Is not designed for continuous occupancy by the employee.
- e. **Permit-required confined space.** A *permit-required* confined space is one that meets the definition of a confined space and has one or more of these characteristics:
 - 1) Contains or has the potential to contain a hazardous atmosphere,
 - 2) Contains a material that has the potential for engulfing the entrant,
 - 3) Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section, and/or
 - 4) Contains any other recognized serious safety or health hazards.

4. Marking of Confined Spaces.

- a. At BLM workplaces, entrances to confined spaces must be marked with a sign identifying them as a confined space.
- b. At workplaces, not owned or controlled by the BLM, confined spaces should be marked as such by the person in control of the site. When there is no local requirement for marking confined spaces, the inventory list of confined spaces is used to locate confined spaces.

Employees will be informed of the permit-required confined spaces by warning signs posted at the entrance to these spaces or by other equally effective means. Some examples:



5. Hazard Identification and Evaluation.

- a. Confined spaces become unsafe either as a result of their inherent design and/or contents or from the introduction of hazards from exterior sources or during a work process. Examples of hazards that would turn a non-permit space into a permit space include, but are not limited to, the following:
 - 1) Actual or potential atmospheric contamination by toxic or flammable vapors, or oxygen deficiency or enrichment. Examples include welding fumes, use of solvents and cleaners, and introduction of glues or paint.
 - 2) Physical hazards such as electrical wiring, especially high voltage lines.
 - 3) The possibility of, liquids, gases or solids being admitted during occupancy. Examples include gas lines that could be ruptured during work, pits where a failed valve could cause flooding, etc.
 - 4) Isolation of occupants from rescue personnel. For example, work in a tank which contains baffles that would prevent tag lines from being used to pull an employee free during an emergency.
 - 5) Factors that must be considered when conducting a hazard evaluation of a confined space include, but are not limited to, the following:

- a) The past and present use of the space that may have an adverse effect on the atmosphere including protective coatings or residues that could trap materials or decompose or deteriorate during the work or otherwise react with the work process.
 - b) Operation of engine-powered equipment in, or near, the confined space.
 - c) Hazards located in adjacent spaces that may be introduced into the confined space either through the work process or from an exterior source such as wind currents or equipment failure.
 - d) The means of entry and exit and the difficulty in rescue.
 - e) Biological hazards including insects and vermin such as snakes.
 - f) Mechanical hazards such as augers and similar moving components.
- b. At BLM sites, a written hazard assessment shall be performed on each confined space likely to be entered into by a BLM employee or subcontractor. The assessment shall be conducted by the Entry Supervisor with the assistance of the Safety Manager. Hazard assessments are to be reviewed annually along with the confined space inventory for the site.
6. Reclassification of “Permit-Required” Spaces to “Non-Permit.”
7. A qualified confined space entry supervisor may reclassify a permit-required confined space to a non-permit required space for entry without the requirement to follow permit-required procedures so long as ALL of the following conditions are met:
- 1) All hazards such as entrapment or engulfment have been eliminated,
 - 2) No potential atmospheric hazards exist,
 - 3) All other safety or health hazards have been eliminated without physically entering the space, and
 - 4) Work to be performed will not introduce any hazard into the space.
- b. Prior to reclassification, the written hazard assessment shall be reviewed and changes to the confined space recorded to demonstrate that the space is free of hazards that would require an entry permit. Once the written hazard assessment is completed, the confined space inventory must be updated and signage on the confined space changed to reflect its revised status.
8. Entry Permit System.

Entry permits (Appendix B) will be prepared by the entry supervisor who will identify the potential hazards of the space and the necessary precautions, procedures, and tests to establish acceptable entry conditions in line with the written hazard assessment. Employees involved in the entry, or their authorized representative, shall have the opportunity to observe pre-entry and subsequent testing or monitoring of the space. The completed permit shall be posted at the entrance to the confined space and remain posted throughout the entry. A permit is valid for the

conditions noted on the permit. The entry supervisor's signature on the permit authorizes entry. The entry supervisor is responsible for maintaining acceptable entry conditions. When permit space entry is complete, the entry supervisor will cancel the entry permit.

9. General Entry Safeguards and Preparation.

STAY ALERT! Remember, conditions and hazards may vary and may not always be completely outlined in a written procedure. It is the responsibility of the entry supervisor, and everyone involved in the entry process, to continually evaluate the hazards associated with both the confined space and the work being performed and apply protection measures necessary to protect each employee from these hazards.

a. Safety Equipment.

The entry permit shall define the minimum necessary equipment required for working in a particular confined space. This equipment includes some or all of the following:

- 1) Eye and Face Protection,
- 2) Foot Protection,
- 3) Head Protection,
- 4) Body Protection,
- 5) Hearing Protection,
- 6) Safety Nets,
- 7) Respiratory Protection,
- 8) Life Jackets,
- 9) Hand Protection,
- 10) Insulated Floor Mats, and/or
- 11) Safety Harness and Retrieval Line.

The conditions that necessitate the use of the various types of equipment listed above shall be determined by the hazard evaluation and atmospheric testing performed prior to entry.

b. General Safeguards.

General safeguards for entering any confined space include:

- 1) Before entering a confined space, potential hazards must be identified and eliminated. Always assume a hazard exists. Never enter a confined space unless atmospheric testing has been performed.
- 2) Atmospheric testing shall be performed utilizing a direct reading air sampler prior to entry. At a minimum, tests for oxygen, carbon monoxide, and explosive/flammable gas, are required. The testing of the space shall always be performed from outside the confined space. On vertical entries, the testing shall be done at various levels. Always perform the initial testing when the ventilation system is not running. If the space has an odd shape or remote areas, the testing

shall be performed in a progressive manner by taking the equipment into the confined space and clearing areas as the inspector moves forward. The inspector shall wear protective equipment appropriate to the conditions that may be encountered. In addition to the atmospheric test, the inspector shall also inspect for the presence of a particularly dusty environment. Acceptable atmospheric conditions are:

- a) Oxygen Content: 19.5% to 23.5%,
 - b) Explosive/Flammable Gases Content: Less than 10% of lower explosion limit/lower flammability limit (see Material Safety Data Sheet), and
 - c) Carbon Monoxide: Less than 35 parts per million.
- 3) The continued isolation of the confined space must be ensured by an adequate lock-out / tag-out process. Uncontrolled re-activation of plant or equipment, or re-opening of closed-off pipeline connections must be prevented to protect the workers inside the confined space. Removal from isolation must be made physically impossible by the use of locks, chains, etc.(lockout). Where lockout of potential hazards is not feasible, the isolation must be guaranteed by an administrative process, e.g. danger tags on valves, switchboards, etc.(tagout).
 - 4) Always have an attendant at the entrance to the confined space. The attendant should never enter the space. The attendant should maintain communication with the entrant such as a two-way radio, visual contact, or a noise maker, (i.e., air horn).
 - 5) Entrants shall wear a harness during entry to facilitate rescue unless the entry supervisor determines its use would be hazardous to the entrant.
 - 6) The space shall be isolated completely from potential vapor leaks, flashbacks, and similar hazards. When implementing this isolation, always physically disconnect piping supplying a confined space. In the case of blanked pipes supplying flammable liquids or gases, the disconnect point must be tested for leaks.
 - 7) Entry and Exit Point Job Hazard Analysis: When assessing and addressing the hazards associated with a particular confined space entry/exit point, the following information should be considered:
 - a) Type of confined space,
 - b) Access to the entrance,
 - c) Number and size of the openings,
 - d) Barriers within the space,

- e) The number of employees working in the space,
 - f) Time requirements for exiting the space in the event of a fire, and
 - g) Time required to perform a rescue of an injured worker in the space.
- 8) Safety of adjacent workers and/or other persons in the vicinity must be considered when preparing a confined space for entry. Where necessary, use fall protection or install barricades to prevent unauthorized or accidental access to the confined space.
- 9) Some physical hazards cannot be eliminated because of the nature of the work or the nature of the confined space. They can have a significant effect on the entry activities and must be considered as part of the risk assessment. These hazards include:
- a) Temperature,
 - b) Noise,
 - c) Vibration,
 - d) Scaffolding or ladders,
 - e) Presence of surface residues, and
 - f) Structural hazards.
 - g) Time required to perform a rescue of an injured worker in the space.

10. Entry into Confined Spaces.

- a. Only “authorized entrants” can enter confined spaces. For BLM employees, these are personnel trained and listed on a site register as authorized to enter both permit and non-permit confined spaces. See section 10 below for information regarding contractors.
- b. Persons entering a confined space must ensure that all preventive measures, as documented on the confined space entry form, have been correctly applied. Entrants must wear a safety harness with a safety line, which is free end is held by a person in a safe position at all times (attendant).
- c. At any indication of changed conditions, through monitoring, observation, or when experiencing changes in physical condition (dizziness, nausea) the confined space must be evacuated immediately and the supervisor informed of what happened. The confined space must not be re-entered until the cause of the problem has been identified and safe conditions have been re-established.
- d. Safety attendants observe the activities within the confined space from a safe distance at all times. Attendants are trained not to enter the confined space in case of problems, unless they are relieved and replaced by another attendant. At that point, the relieved attendant may enter a permit space to attempt a rescue when the employer's permit space program allows attendant entry for rescue and the attendant has been trained and equipped for rescue operations as required by OSHA 29 CFR 1926.1211(a).

- e. As determined by the risk assessment or the entry supervisor, , rescue equipment, such as a self-contained breathing apparatus, can be placed at the entrance of the confined space to facilitate a possible rescue operation.
- f. Where airborne hazardous chemicals may be present, respiratory protection must be worn when entering the confined space to assess the level of exposure present. Personal monitoring equipment may be used to compare exposure levels with established exposure limits (threshold limit values, TLV), which can be found in the safety data sheet of the products in question.
- g. Continuous ventilation is applied to confined spaces where hazardous airborne chemicals are expected to be present. These chemicals may be generated by remaining hazards of the confined space or by the tasks performed inside the confined space.

11. BLM Contractors.

- a. BLM Contractors are responsible for the permit space entry of their own personnel. Contractors must be told about site permit spaces and associated hazards by the BLM. In addition, Contractors will be informed of BLM site safety requirements. Contractors will not be permitted to enter permit space(s) until BLM has validated that they have a qualified permit space entry program and training records for authorized entrants.
- b. When Contractors and BLM personnel perform permit space entry operations in the same permit space at the same time, both the Contractor and BLM will provide entry supervisors and attendants. The entry supervisors will coordinate the work, so neither crew endangers the other. Entrants will be instructed to comply with each other's evacuation orders and evacuation alarms. Attendants must immediately inform all other attendants if an evacuation order is issued or an evacuation alarm is activated. This means the entrants of all employers will evacuate the permit space if any attendant, any entry supervisor, or any entrant issues an evacuation order. If there is a dispute over the necessity to evacuate, all entrants will evacuate and will remain outside of the permit space until the dispute is settled.

12. Equipment and Tools for Working in Confined Spaces.

Tools shall be carefully inspected prior to confined space entry. Tools must meet the following requirements before they are used in a confined space:

- a. Hand tools shall be clean and in good repair.
- b. Portable electric tools, equipment, and lighting, shall be grounded or double insulated and plugged into ground fault circuit interrupters.
- c. Heavy-duty electrical cords, tools, and equipment shall be used and shall be free of nicks and defects.
- d. Use air-driven power tools when flammable liquids are present. This reduces the risk of explosion. Explosion hazards are still present from overheating (drilling) sparks from striking (percussion), grinding or discharge of

- accumulated electrostatic charges developed from the flow of compressed air.
- e. Ensure that lights used in confined spaces are explosion-proof in design and equipped with guards. Lighting shall not be hung by the cord unless it is designed for this use. Under no circumstances shall matches or open flames be used for illumination in a confined space.
 - f. Never take cylinders of compressed gas into a confined space. Turn off the cylinder valve whenever the cylinder is not in use. Use only hoses designed for the pressure associated with the particular system, and ensure that the pressure relief valve is located outside the confined space. As an exception, cylinders used by self-contained breathing apparatus or resuscitation equipment are allowed in confined spaces.
 - g. Secure and place ladders at an angle so that the distance that the bottom of the ladder is from the wall is approximately one-fourth the distance that the top of the ladder is from the floor. Built in ladders in maintenance holes and vaults should not be used unless they have been carefully inspected to ensure they have not rusted or deteriorated to the point that they will not support required weight.
 - h. Ensure that scaffolding meets applicable regulatory standards.
 - i. Ensure that equipment used in a flammable atmosphere is approved as either explosion-proof or intrinsically safe.
 - j. Barricades shall be placed around maintenance holes before the cover is removed.
 - k. Barricades shall remain in-place until the cover is replaced.

13. Sewer System Entry.

Sewer system entry differs in two vital respects from other permit entries. First, there rarely exists any way to completely isolate the space (a section of a continuous system) to be entered. Second, because isolation is not complete, the atmosphere may suddenly and unpredictably become lethally hazardous (toxic, flammable or explosive) from causes beyond the control of the entrant or employer. Due to these unique hazards, personnel involved with sewer system entries must be employees who are routinely involved in sewer system operations. Employees and contractors new to sewer operations will be required to work with an experienced person until deemed competent for sewer operations.

Sewer lines are continually at risk from flooding due to rain or fire suppression activities. To minimize hazards associated with these surge flows and flooding, liaison should be developed and maintained to the extent possible with local agencies such as weather and fire and emergency services.

14. High Voltage Confined Space Entries.

Entering a confined area with energized high voltage (over 600 volts) is extremely dangerous and shall be avoided if possible unless the cables or equipment containing the high voltage have been de-energized (locked and tagged out). Hazards associated with potential flash are extreme. In a confined area, if the high voltage lines are shorted, temperatures will exceed 25,000°F. The result will likely be death to anyone in the space.

15. Rescue Requirements.

16. Tasks involving permit required entry require specific procedures for summoning rescue and emergency services, for rescuing entrants, and for providing necessary emergency services to rescued employees BEFORE entering a permit required confined space. Personnel involved in the entry must also clearly understand that **unauthorized personnel are not to attempt a rescue.**

17. Rescue systems shall be in place at the confined space site and shall be used during entry unless the confined space entry supervisor determines they would present a greater hazard to entrants.

- a. Rescue personnel must either be present during entry or be available to perform rescue if required. Rescue personnel may be internal to BLM or from external sources such as local fire/rescue services. Local availability of fire/rescue services, the size of the project, the frequency of confined space entries, and the hazards involved shall be considered when deciding whether to make arrangements with a local service or train and equip employees.
- b. If rescue personnel are not present during entry, the confined space entry supervisor must ensure the rescue personnel are available, that they know they may be required to respond in an emergency, and that there is a method for determining if they become unavailable (unavailability requires termination of the entry).
- e. **Rescue System Requirements.** To facilitate non-entry rescue, retrieval systems or methods shall be used during entry for each entrant, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue (the confined space entry supervisor shall make this determination). Retrieval systems shall meet the following requirements:
 - 1) Each entrant shall use a full body harness, with a retrieval line attached at the center of their back near shoulder level, above their head, or at another point that ensures a profile small enough for the successful removal. Wristlets may be used in lieu of the harness if the harness is infeasible or creates a greater hazard (confined space entry supervisor shall make this determination).
 - 2) The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep (available means at the permit site).
 - 3) If entrants may be potentially exposed to chemical substances during entry, a copy of the SDS must be posted at the site with the entry permit and be made available to rescue personnel as necessary.
- f. **Use of External Rescue and Emergency Services (Non BLM Employees).** Before an external rescue and emergency service is designated to provide

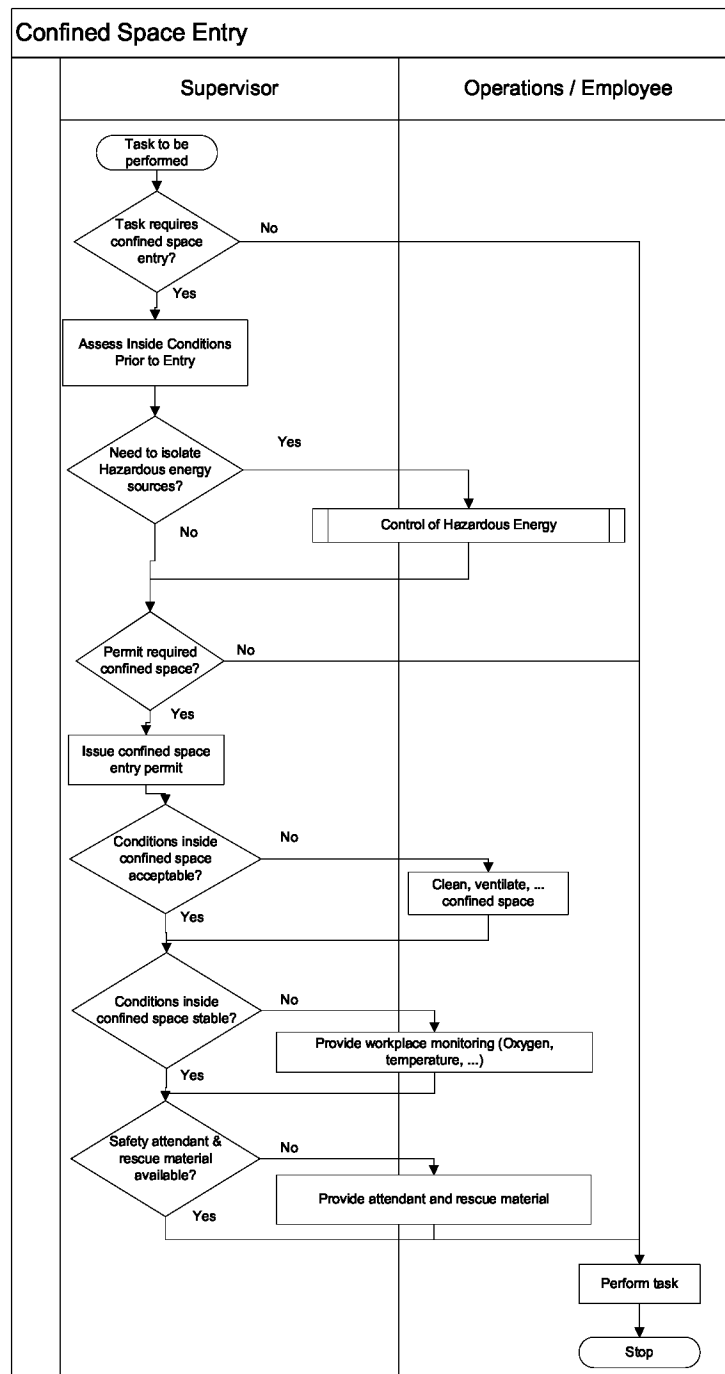
emergency rescue and emergency services for a confined space entry, the Site Safety Manager, or other employer designee, shall:

- 1) Evaluate the prospective rescuer's ability to respond to a rescue summons in a timely manner considering the hazards present in the confined spaces and in the work to be performed in these spaces. Timeliness will vary according to the specific hazards involved in the entries, including those generated by the work performed.
- 2) Evaluate the prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from types of permit spaces that may be entered.
- 3) Ensure the rescue team or service has the capability to reach the victim(s) within a period that is appropriate for permit spaces being entered.
- 4) Ensure the rescue team or service is equipped for and proficient in performing the needed rescue service.
- 5) Ensure the rescue team or service has been informed of, or is aware of, the hazards they may confront when called on to perform rescue at the site.
- 6) Ensure the rescue service has been given access to permit spaces for which they may be called upon to perform rescue, so they can develop appropriate rescue plans and practice rescue operations.

g. Use of BLM Employees for Rescue and Emergency Services. BLM employees who are designated to provide rescue and emergency services shall:

- 1) Be provided with the personal protective equipment needed to conduct required rescues and be trained in the proper use of this equipment.
- 2) Be trained in, and establish proficiency in, confined space procedures as authorized entrants as outlined in this chapter.
- 3) Be trained to perform assigned rescue duties.
- 4) Be trained in, and current in, CPR and basic first-aid.
- 5) Practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from representative permit spaces. Representative spaces must be similar with respect to opening size, configuration, and accessibility.

18. Process Flowchart.



19. Training Requirements. (Reference Appendix 11, Training and Duties for Confined Space Entry).

20. Personnel involved with confined space entry shall be trained (documented) as outlined in this section prior to participating in any confined space operations. This training shall take place:
- 1) On initial assignment;
 - 2) Before or whenever there is a change in assigned duties;
 - 3) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;
 - 4) Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.
21. The entry supervisor, entrants, attendants, rescuers, and testing and monitoring personnel will be trained to perform their duties safely, including but not limited to:
- 1) BLM Confined Space Program (the requirements of this document).
 - 2) Associated hazards with this type of work and any new hazards created or identified, as well as the ability to recognize the signs and symptoms of exposure to these hazards and the consequences of exposure.
 - 3) Changes in duties or new assigned tasks within confined spaces.
 - 4) Deviations from the permit space entry procedures.
 - 5) The specific PPE required for safe entry and exit including the reason for, proper use, and limitations of this equipment and any other safety equipment required for entry into the confined space.
 - 6) Permit requirements and the permit system.
 - 7) How to respond to an emergency, including how to contact appropriate personnel and entry/exit procedures during an emergency. Personnel shall also be reminded that no one, other than qualified rescue personnel, is to attempt to perform a rescue.
22. Inspection and Program Review.
- a. BLM will review entry operations and correct deficiencies before subsequent entries are authorized. Examples of circumstances requiring the review of the permit-required confined space program are:
 - 1) Any unauthorized entry of a permit space,
 - 2) Detection of a permit space hazard not covered by the permit,
 - 3) Detection of a condition prohibited by the permit,
 - 4) The occurrence of an injury or near-miss during entry,
 - 5) A change in the use or configuration of a permit space, and

- 6) Employee reports about the effectiveness of the program.
- b. At least annually, check for the presence and condition of signs posted to warn of the presence of permit spaces and check the means used to prevent unauthorized entry. Annually,
 - 1) Determine whether any new confined spaces have been acquired or made and add to the inventory list;
 - 2) Review all confined spaces on the inventory list and determine if any have become permit spaces;
 - 3) Validate the associated hazards on the inventory list for each confined space;
 - 4) Review the measures necessary to prevent unauthorized entry during permit space entry operations;
 - 5) Review the means, procedures, and practices for safe permit space entry;
 - 6) Inspect the permit space entry equipment for proper operation and calibration.
 - 7) Audit and update the permit space entry personnel roster (Authorized Entrants list);
 - 8) Review cancelled entry permits;
 - 9) Audit and update the duties and training of the entry supervisors, entrants, attendants, testing and monitoring personnel, and rescue team; and
 - 10) Practice rescue operations.

23. Definitions.

- a. **Attendant:** A trained individual stationed outside a permit required confined space that monitors the authorized entrants and performs attendant duties as outlined in this chapter.
- b. **Biological Hazards:** Infectious agents presenting risk to the well-being of humans or animals, either directly through infection or indirectly through environmental disruption.
- c. **Blinding/Blanking:** Inserting a solid barrier across the open end of a pipe leading into or out of the confined space, and securing the barrier in such a way as to prevent leakage of the material into the confined space.
- d. **Confined Space:** A space that meets ALL THREE of the following conditions:
 - 1) Is not designed for continuous employee occupancy.
 - 2) Has limited or restricted means for entry or exit (for example, tanks,

vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).

- 3) Is large enough and so configured that an employee can bodily enter and perform assigned work.
- e. **Confined Space Entry Supervisor:** An employee designated in writing and properly trained as outlined in this chapter, who is responsible for determining if acceptable entry conditions are present at a permit space where entry is planned. They are also responsible for authorizing entry (issuing the entry permit), overseeing entry operations, and terminating the entry as required by this chapter.
- f. **Double Block and Bleed:** A method used to isolate a confined space from a line, duct, or pipe by physically closing two in-line valves on a piping system and opening a “vented-to-atmosphere” valve between them.
- g. **Engulfment:** The surrounding, capturing, or both, of a person by divided particulate matter or liquid.
- h. **Entry:** Ingress by persons into a confined space that occurs upon breaking the plane of the confined space portal with any part of their body; periods of time that the confined space is occupied.
- i. **Entry Permit:** A written permit issued by a designated confined space entry supervisor that authorizes entry into a permit-required confined space. Entry shall not be allowed into a permit-required space without this written permit.
- j. **Hazard Evaluation:** A process to assess the severity of known, real, or potential hazards in the confined space to classify the confined space as a permit-required or a non-permit required space. This process is documented on the inventory form.
- k. **Hazardous Atmosphere:** An atmosphere that may be, or is, injurious to occupants from one or more of the following:
 - 1) A flammable gas, vapor, or mist in excess of 10% of its **Lower Flammable Limit (LFL)**.
 - 2) An airborne combustible dust at a concentration that meets or exceeds its LFL. If dust obscures vision to a distance of five feet or less it will be assumed to exceed its LFL.
 - 3) An atmospheric oxygen concentration below 19.5% or above 23.5% by volume, as determined by atmospheric testing.
 - 4) An atmospheric concentration of any substance for which a **permissible exposure limit (PEL)** is published by a regulatory agency, and could result in employee exposure in excess of its permissible limit. If the substance is not listed or published, the SDS can be referred to for the manufacturer’s recommendations.
 - 5) Any atmospheric condition recognized as Immediately Dangerous to Life or Health.
- l. **Hot Work:** Work within a confined space that produces arcs, sparks, flames,

- heat, or other sources of ignition.
- m. **Hot Work Permit:** A written authorization, issued by an authorized agency or individual, to perform operations capable of providing a source of ignition.
 - n. **Immediately Dangerous to Life and Health (IDLH):** Any condition that poses an immediate threat of loss of life; may result in irreversible or immediate-severe health effects; may result in eye damage, irritation, or other conditions that could impair escape from the confined space.
 - o. **Immediate-Severe Health Effects:** Any acute clinical sign of a serious, exposure-related reaction manifested within 72 hours after exposure.
 - p. **Inerting:** Rendering the atmosphere of a confined space non-flammable, nonexplosive or otherwise chemically nonreactive by such means as displacing or diluting the original atmosphere with steam or a gas that is nonreactive with respect to that space.
 - q. **Isolation:** A process of physically interrupting, or disconnecting, or both, pipes, lines, and ALL energy sources from the confined space.
 - r. **LEL/LFL and UEL/UFL:** Acronyms for Lower Explosive Limit/Lower Flammable Limit and Upper Explosive Limit/Upper Flammable Limit.
 - s. **Lockout/Tagout:** The placement of a lock/tag on the energy-isolating device, indicating that the energy-isolating device shall not be operated until removal of the lock/tag.
 - t. **Non-Permit Required Confined Space:** A confined space that does not contain, or with respect to atmospheric hazards have the potential to contain, any hazard capable of causing death or serious physical harm.
 - u. **Oxygen Deficient Atmosphere:** An atmosphere containing less than 19.5% oxygen by volume.
 - v. **Oxygen Enriched Atmosphere:** An atmosphere containing more than 23.5% oxygen by volume.
 - w. **PEL:** An acronym for Permissible Exposure Limit that is the allowable air contaminant level based on OSHA mandated exposure limits.
 - x. **Permit-Required Confined Space:** A confined space that has at least one of the following characteristics:
 - 1) Contains, or has the potential to contain, a hazardous atmosphere.
 - 2) Contains a material that has the potential for engulfing an entrant.
 - 3) Has an internal configuration that could trap or asphyxiate an entrant such as inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section.
 - 4) Any other recognized serious safety or health hazard.
 - y. **Prohibited Condition:** During entry into a permit required confined space, a prohibited condition is anything that is not allowed during the entry process. Examples include, but are not be limited to, atmospheric hazards, loss of required ventilation, conditions such as the introduction of a substance or activity not listed on the permit such as welding or paints, or entry into the

- space by an unauthorized person, etc.
- z. **Purging:** The method by which gases, vapors, or other airborne impurities are displaced from a confined space.
 - aa. **Rescue Service:** Personnel designated to rescue employees from permit required confined spaces.
 - bb. **Retrieval System:** A line or rope secured at one end to the worker by a chest-waist or full-body harness, or wristlets, and with its other end secured to a lifting or other retrieval device, or to an anchor point located outside the entry portal. This system is used for “nonentry” rescue.
 - cc. **TLV:** An acronym for Threshold Limit Value. TLVs are recommended allowable air contaminant levels published by the American Conference of Governmental Industrial Hygienists (ACGIH).
 - dd. **Toxic Atmosphere:** An atmosphere containing a concentration of a substance above the published or otherwise known safe levels.

24. Caving.

Cave management responsibilities include consideration for employee and public health and safety while in a cave. A safety orientation based on the following guidelines and a cave risk assessment is required before BLM employees enter caves as part of their assigned duties.

Program elements for caving include:

- a. BLM Cave Safety Standards.
- b. Risk assessment.
- c. Search and rescue procedures/pre-planning.

25. Active Mines - Mineral Examination and Mine Safety.

a. **Practices.**

- 1) Personnel responsible for inspection of exploration activities will receive training in the use of 4-wheel-drive vehicles and ATV/snow machines, if appropriate, since exploration may involve off-road driving.
- 2) When inspecting surface facilities, employees should be accompanied by a company official whenever possible. Comply with “No Smoking” signs posted by the operator. These facilities, which include mills and processing plants, present dangers that include:
- 3) Machinery with moving parts can snag loose items. Clothing should not be loose-fitting; long hair should be secured and confined under a hard hat; and all jewelry should be removed.
- 4) **Chemicals and fuel.** Be aware of storage areas, obey company rules regarding these areas, and know emergency procedures to be taken after accidental exposure or contact with these substances. Extreme care must be taken in HAZMAT storage facilities (e.g., holding ponds

at cyanide operations).

- 5) Before going underground, all employees must have completed the **Mine Safety and Health Administration (MSHA)** “Mine Safety Equipment and Survival Training” and have a completed and approved risk assessment. This ensures that personnel recognize hazards and informs them of approved survival gear and how it is used in the event of an emergency. Employees must not enter underground mine workings or deep open cuts unless accompanied by a qualified person and have assigned duties in the location.

b. Mine Safety

- 1) BLM personnel must be aware of their personal safety at all times, even though they may be accompanied by the operator or a representative of the operator. Inexperienced personnel must not be taken underground until fully informed of the associated dangers. Experienced BLM personnel should pay special attention to their colleagues until they have gained confidence and knowledge of proper behavior and procedures. Personnel must be familiar with the use and maintenance of safety equipment. In addition to hard hats, steel-toe shoes, and safety glasses, a mine belt, earplugs, and self-rescuers, as appropriate, should be used for inspection of underground mines. Know the areas of active mining and reclamation, blasting, and other activities on-site that may involve equipment that could pose a danger to an individual. Care must be taken at all times around any mechanized equipment operating in the vicinity of the inspection.
- 2) In underground mine situations, at a minimum, personnel must have training in the use of self-rescuers and be aware of the following dangers:
 - a) Gas and dust conditions and emergency mine escape procedures. The atmosphere in old or idle mines must be tested prior to entry to determine if it is oxygen deficient or methane contaminated.
 - b) Unstable roof and rib conditions. Do not enter any section of the mine that has not been properly supported. Entry into areas marked “Danger” is expressly prohibited except by MSHA personnel or those company personnel authorized by the operator to correct the hazard.
 - c) If a mine uses electrical equipment such as electric locomotives, be aware of high-voltage cables.
 - d) Keep limbs and clothing away from conveyor belts, drive wheels, idlers, and other operating equipment and their haulage routes. Be familiar with hazards and procedures associated with blasting.

26. Inactive/Abandoned Mines.

- a. An abandoned, inactive mine is considered a confined space as per the definition in paragraph D 18 of this chapter. Work underground in an abandoned mine can be conducted according to the non-permit space rules if all the characteristics listed under permit-required confined space have been shown not to occur in the workspace. The workspace here means the section of the abandoned mine from the portal/collar to a depth necessary to complete the mitigation / remediation actions. If the abandoned mine workspace has hazard characteristics that classify it as permit-required, measures can be taken to reclassify the workspace as non-permit following Section D.6 of this chapter. Measures might include environmental engineering to reduce atmospheric hazards (e.g. radon gas, low oxygen); scaling the back to eliminate rock fall; or support structures to eliminate engulfment.
- b. In addition to the requirements of this chapter, BLM personnel must comply with the following:
 - 1) BLM employees will enter an underground AML feature only if there is an official need to do so and travel no farther than is necessary to complete mitigation / remediation actions.
 - 2) Training Requirements:
 - a) BLM or USFS 40-hour Underground Mine Safety for AML or MSHA equivalent,
 - b) OSHA confined space, and
 - c) CPR and first aid.
 - 3) Each project requires a Risk Management Assessment.
 - 4) Perform continuous air monitoring for hazards (e.g., lower explosive limits, oxygen deficiency, toxic gases, etc.) while underground.

E. References.

1. OSHA 29 CFR 1910.146 Permit-Required Confined Spaces.
2. BLM Cave Safety Standards.
3. 43 CFR 37, Cave Management Regulations.
4. Federal Cave Resources Protection Act 1988.
5. H-3720-1 AML Program Policy Handbook.
6. H-1703-1 CERCLA Response Actions.
7. MSHA 30 CFR Part 48 Subpart A.
8. Appendix 11, Training and Duties for Confined Space Entry.
9. Appendix 12, Reclassification of Permit Required Space.
10. Appendix 13, Confined Space Entry Permit.

Chapter 29 – Asbestos Exposure Control (reserved)

Chapter 30 – Lead Exposure Control (reserved)

Chapter 31 – Chemical Hygiene

A. Introduction.

A laboratory chemical hygiene plan is used to protect laboratory employees from harm due to hazardous chemical exposures. A plan must be implemented when chemical manipulation is conducted on a laboratory scale, when multiple chemical procedures are used, and when procedures are not part of production or simulated production.

B. Purpose.

The purpose of this Chapter is to describe how to implement a written chemical hygiene plan that includes policies, procedures, and responsibilities for protecting employees from health hazards associated with hazardous chemicals used in a particular workplace, generally a laboratory.

C. Program Elements.

1. Important Terms.
2. Chemical Hygiene Officer.
3. Hazardous Chemical Inventory.
4. Safety Data Sheets.
5. Protective Practices and Equipment.
6. Chemical Receiving, Handling, Storage, and Disposal.
7. Employee Exposure Determination.
8. Personal Protective Equipment.
9. Employee Information and Training.
10. Medical Consultation and Examination.
11. Written Chemical Hygiene Plan.

D. Explanation of Program Elements.

1. Important Terms.
2. **Action Level.** A concentration designated in 29 CFR 1910 for a specific substance, calculated as an eight (8) hour time weighted average, that initiates certain required activities such as exposure monitoring and medical surveillance.

3. **Chemical Hygiene Officer.** An employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the chemical hygiene plan. This definition is not intended to place limitations on the position description or job classification that the designated individual holds within the employer's organizational structure.
4. **Chemical Hygiene Plan.** A developed and implemented written program that sets forth procedures, equipment, personal protective equipment, and work practices that are capable of protecting employees from the health hazards presented by hazardous chemicals used in that particular workplace and meets the requirements of 29 CFR 1910.1450(e).
5. **Combustible Liquid.** Any liquid having a flashpoint at or above 100°F.
6. **Designated Area.** An area that may be used for work with select carcinogens, reproductive toxins, or substances that have a high degree of acute toxicity. A designated area may be an entire laboratory, an area of laboratory, or a device such as a laboratory hood.
7. **Emergency.** Any occurrence, such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, that results in an uncontrolled release of a hazardous chemical into the workplace.
8. **Employee.** An individual employed in a laboratory workplace who may be exposed to hazardous chemicals in the course of their assignments.
9. **Explosive.** A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
10. **Hazardous Chemical.** Any chemical that is classified as a health hazard or simple asphyxiant in accordance with 29 CFR 1910.1200.
11. **Health Hazard.** A chemical that is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure), skin corrosion or irritation, serious eye damage or eye irritation, respiratory or skin irritation, germ cell mutagenicity, carcinogenicity, reproductive toxicity, specific target organ toxicity (single or repeated exposure), or aspiration hazard. Appendix A of 29 CFR 1910.1200 provides criteria for determining whether a chemical is classified as a health hazard.
12. **Laboratory.** A facility where the laboratory use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a nonproduction basis.
13. **Laboratory Scale.** Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. Laboratory scale excludes those workplaces whose function is to produce commercial quantities of materials.

- 14. Laboratory-Type Hood.** A device located in a laboratory, enclosed on five sides, with a movable sash or fixed partial enclosed on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and that allows chemical manipulations to be conducted in the enclosure without insertion of any portion of an employee's body other than hands and arms. Walk-in hoods with adjustable sashes meet this definition, provided that the sashes are adjusted during use so that the airflow and exhaust of air contaminants are not compromised and employees do not work inside the enclosure during the release of airborne hazardous chemicals.
- 15. Laboratory Use of Hazardous Chemicals.** Handling or using chemicals in which all of the following conditions are met:
- 1) Chemical manipulations are carried out on a laboratory scale.
 - 2) Multiple chemical procedures or chemicals are used.
 - 3) The procedures involved are not part of a production process and do not, in any way, simulate a production process.
 - 4) Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.
- 16. Medical Consultation.** A consultation that takes place between an employee and a licensed physician for the purpose of determining what medical examinations or procedures, if any, are appropriate in cases in which a significant exposure to a hazardous chemical may have taken place.
- 17. Oxidizer.** A chemical other than a blasting agent or explosive, as defined in 29 CFR 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.
- 18. Physical Hazard.** A chemical that is classified as posing one of the following hazardous effects: explosive, flammable, oxidizer, self-reactive, pyrophoric, self-heating, organic peroxide, corrosive to metal, gas under pressure, contact with water emits flammable gas, or combustible dust.
- 19. Protective Laboratory Practices and Equipment.** Those laboratory procedures, practices and equipment accepted by laboratory health and safety experts as effective, or that the employer can show to be effective, in minimizing the potential for employee exposure to hazardous chemicals.
- 20. Reproductive Toxins.** Chemicals that affect reproductive capabilities, including adverse effects on sexual function and fertility in adults and adverse effects on the development of offspring.
- 21. Select Carcinogen.** Any substance that meets one of the following criteria:
- 1) Is regulated by OSHA as a carcinogen,
 - 2) Is listed under the category "known to be carcinogens" in the latest edition of the Annual Report on Carcinogens published by the National Toxicology Program,

- 3) Is listed under Group 1 ("carcinogenic to humans") in the latest edition of "Monographs" by the International Agency for Research on Cancer, or
- 4) Is listed in either Group 2A or 2B by the International Agency for Research on Cancer or under the category "reasonably anticipated to be carcinogens" by the National Toxicology Program, and it causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:
 - a) After inhalation exposure of 6-7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m³,
 - b) After repeated skin application of less than 300 mg/kg of body weight per week, or
 - c) After oral dosages of less than 50 mg/kg of body weight per day.

16. Chemical Hygiene Officer.

A chemical hygiene officer is appointed to develop and implement the elements of a chemical hygiene plan. To perform these functions, the chemical hygiene officer must be qualified based on training and experience.

17. Hazardous Chemical Inventory.

In accordance with 29 CFR 1910.1200, Hazard Communication, each laboratory must maintain an inventory of all chemicals located in the laboratory. This inventory must be attached to the chemical hygiene plan and made available to all employees in the workplace. The inventory must be updated when new chemicals are introduced in the laboratory or when specific chemicals are taken out of the inventory.

18. Safety Data Sheets.

In accordance with 29 CFR 1910.1200, safety data sheets are required for all chemicals. They are intended to provide workers and emergency personnel with procedures for handling or working with chemical substances in a safe manner and to identify potential hazards associated with a particular material or product. The data sheets must be maintained and made readily available at all times.

19. Protective Practices and Equipment.

In order to minimize the potential risk of exposure to hazardous chemicals, employees should follow specific laboratory practices and use personal protective equipment.

- a. **Minimize Chemical Exposures.** Precautions must be taken to minimize exposures to hazardous chemicals when conducting laboratory activities. Avoid all skin contact with the chemicals being used. Experimental operations

should be designed to use the minimum amount of material. Understanding the routes of exposure and specific chemical characteristics allows employees to apply appropriate engineering and administrative controls and personal protective equipment.

- b. **Special Hazards.** Some chemicals may present extraordinary hazards that require special precautions when used (carcinogens, reproductive toxins, and substances with a high degree of acute toxicity). In addition, synergistic or additive effects of chemicals must be taken into account for mixtures, and protective measures must be implemented. Requirements for work with these types of chemicals may include special designated work areas, containment devices such as fume hoods or glove boxes, special handling procedures, special procedures for safe removal of contaminated wastes, and decontamination procedures.
- c. Laboratory-type hoods are a primary engineering control that allow for the ventilation of chemical constituents (gases, fumes, aerosols, mists, etc.) during the work process. These hoods help minimize employees' exposure to chemicals by keeping chemical constituents below occupational exposure limits. If designed, installed, operated, and maintained properly, the laboratory-type hood will provide personnel with a high degree of protection. Exposure monitoring must be conducted to ensure the proper and adequate performance of ventilation and other protective equipment.

20. Chemical Receiving, Handling, Storage, and Disposal.

Each location using chemicals on a laboratory scale must establish procedures for safe and proper receiving, handling, storage, and disposal of these substances. Incoming containers must be labeled and identifiable. Significant fire, explosive, and environmental hazards may exist when proper storage and disposal activities are not followed. Store corrosive and toxic liquids in a cool, dry, well-ventilated, isolated place, with concrete floors treated to reduce solubility.

21. Employee Exposure Determination.

Specific chemical substances identified and regulated by OSHA may require periodic monitoring. In addition, if there is any reason to believe that employees have been exposed to a chemical substance with a concentration at or above the action level, personnel monitoring must be performed.

22. Personal Protective Equipment.

The use of PPE may be necessary when feasible engineering and administrative controls are unavailable or there is a need to supplement those controls. A risk assessment must be conducted to determine the correct PPE that should be used for laboratory procedures. When required, PPE must be provided by the BLM.

23. Employee Information and Training.

All laboratory employees must be provided with information and training at the time of initial assignment to ensure they are aware of the chemical hazards in their labs. Additional training must be provided when there is a change in procedures, modification to the chemical hygiene plan, or use of a new chemical. Training must address the following topics:

- a. The contents of 29 CFR 1910.1200 and its appendices.
- b. The location and availability of the chemical hygiene plan.
- c. The permissible exposure limits of OSHA.
- d. Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.
- e. The location and availability of known reference material on the hazards, safe handling, storage, and disposal of hazardous chemicals found in the laboratory, including, but not limited to, material safety data sheets received from chemical suppliers.
- f. Methods and observations that may be used to detect the presence or release of a hazardous chemical.
- g. The physical and health hazards of chemicals in the work area.
- h. The precautions employees can take to protect themselves from physical and health hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and use of personal protective equipment.

24. Medical Consultation and Examination.

The BLM must provide medical attention to laboratory employees who work with hazardous chemicals under the following circumstances:

- a. **Medical Examination.** When a laboratory worker develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory.
- b. **Medical Monitoring.** When a laboratory worker is routinely exposed to an OSHA- regulated substance with a concentration at or above the action level for which there are exposure monitoring and medical surveillance requirements.
- c. **Medical Consultation.** When an event takes place in the work area, such as a spill, leak, explosion, or other occurrence, resulting in the likelihood of a hazardous exposure.

25. Written Chemical Hygiene Plan.

Each laboratory must develop a written plan that includes the following topics:

- a. Introduction.

- b. Responsibilities.
- c. Standard Operating Procedures.
- d. Control Measures and Equipment.
- e. Specific Safety Procedures.
- f. Chemical Receiving, Handling, Storage, and Disposal.
- g. Employee Training Program.
- h. Medical Consultation and Examination.
- i. Safety Data Sheets.
- j. Chemical Inventory.

E. References.

1. 29 CFR 1910.1200, Hazard Communication.
2. 29 CFR 1910.1450, Occupational exposure to hazardous chemicals in laboratories.
3. 29 CFR 1910.109, Explosives and blasting agents.

Chapter 32 – Indoor Air Quality (reserved)

Chapter 33 – Occupational Medical Surveillance

A. Introduction.

Medical screening and medical surveillance are two fundamental strategies for optimizing employee health. Medical screening is only one component of a comprehensive medical surveillance program. Medical screening focuses on a clinical aspect with the fundamental purpose of early diagnosis and treatment of individuals. Medical surveillance focuses on prevention with the fundamental purpose of detecting and eliminating the underlying causes of illness, such as hazards or exposures of any discovered trends. A medical surveillance program may provide information about the actual effectiveness of the engineering, administrative, and personal protective measures and may act as an early warning to employees and managers if harmful effects from hazardous exposure are occurring.

B. Purpose.

BLM employees may develop adverse effects from occupational stressors or exposure to physical, chemical, or biological hazards during work activities. Because work-related diseases generally do not have an acute onset but develop over time, a medical surveillance program should be in place that consists of baseline and periodic medical screening of the workers at risk. The primary reason for establishing a medical surveillance program is to detect changes in an employee's health status so that the individual's exposure conditions can be corrected before serious damage is done.

C. Program Elements.

1. Important Terms.
2. Medical Surveillance Needs Assessment.
3. Medical Administration.
4. Medical Screening.
5. Notification.
6. Recordkeeping.

D. Explanation of Program Elements.

1. Important Terms.
2. **Action Level.** The level of worker exposure to a hazardous agent determined by an examination or screening will be performed. Action levels prescribed by OSHA take precedence. However, in the absence of an OSHA-defined action level, the action level will be 50 percent of the current OSHA permissible exposure limit or 50 percent of the most current American Conference of Governmental Industrial Hygienists Threshold Limit Value, whichever is more stringent.

3. **Permissible Exposure Limit.** An employee's permitted exposure to any material listed in Tables Z-1, Z-2, or Z-3 of OSHA regulation 29 CFR 1910.1000.
4. **Threshold Limit Value.** The airborne concentration of a substance that represents conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects. Threshold Limit Value guidelines are published by the American Conference of Governmental Industrial Hygienists.
5. **Time-Weighted Average.** The concentration of a stressor or hazard that has been averaged for the time duration of the sample. It is most commonly expressed as an average concentration for a normal 8-hour workday.
6. **Emergency Exposure.** Any occurrence, such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, that may result in an unexpected release and exposure to a hazardous substance or condition.
7. Medical Surveillance Needs Assessment.
 - a. BLM supervisors are responsible for conducting risk assessments to determine if a medical surveillance program is required and which employees should be placed in the program. Justification for placement into a medical surveillance program may be warranted based on a specific job. For example, certain hazardous jobs (e.g., hazardous materials response, welding, pesticides application, etc.) may require medical screening and surveillance. In addition, individual exposure assessments or exposure to specific hazardous agents in the workplace may also warrant inclusion in a surveillance program.
8. Job titles and job descriptions provide information that can be used to determine the basic tasks, hazardous exposures, and health outcomes likely to be experienced by workers in a specific occupational group. Examples of these types of jobs are hazardous materials and emergency response workers. Medical surveillance criteria are outlined in 29 CFR 1910.120, Hazardous waste operations and emergency response.
9. Industrial hygiene exposure assessments quantify the specific exposure of an employee to a hazardous substance. A personal sampling pump is used to collect a breathing zone sample. Once results are obtained from the laboratory and calculated as a time-weighted average, they can be compared to the action level, permissible exposure limit, and Threshold Limit Value to make a determination regarding placing an individual in a medical surveillance program.
10. ["Medical Screening and Surveillance Requirements in OSHA Standards: A Guide"](#) OSHA 3162-01R 2014 , provides a summary of regulated hazardous agents and job tasks that require medical screening and surveillance of employees.
11. Medical Administration.

Administration of a medical surveillance program must be conducted under the direction of a physician who specializes in occupational medicine. Generally, an agreement or contract is negotiated with a provider who conducts baseline and periodic medical examinations/screening. A comprehensive evaluation of the activities in which employees are engaged is analyzed and assessed in conjunction with any associated specific regulatory standards. The physician and occupational safety and health representative work together to develop an exposure-specific physical examination that may include blood and urine collection and analysis. The physician is provided with a description of duties that relate to the hazardous workplace, results of employee exposure monitoring, a description of personal protective equipment used, and information from previous medical examinations. The "Occupational Medicine Program Handbook," prepared by the DOI Office of Occupational Safety and Health, provides guidance, procedures, and forms that may be used by managers in establishing a medical surveillance program.

12. Medical Screening.

An employee must be notified of their inclusion in the medical surveillance program and educated on the goals and procedures of the program. An appointment for the medical examination must be made, and the employee must be given specific instruction regarding medical examination procedures. The employee must be provided a written assessment and summary of the exam and the results of any laboratory tests that were administered. Additional tests may be required as a result of the medical exam.

a. Types of Evaluations:

- 1) **Initial or Baseline.** These evaluations are performed before placement in a specific job to assess whether the worker is able to perform the job capably and safely and to obtain baseline measurements for future comparison. Ideally, these medical evaluations are completed before the employee begins work.
- 2) **Periodic.** These evaluations are conducted at scheduled intervals. Periodic examinations may include an interval history, physical examination, and clinical and biological screening tests. The scope of these examinations is determined by regulatory guidance and professional healthcare practice standards.
- 3) **Emergency (Acute) Exposure.** These evaluations are required when the applicable short-term exposure limit or ceiling limit of a substance is exceeded. The requirement applies whether or not the worker exhibits any overt symptoms of acute exposure. Emergency exposure evaluations are also required when a worker exhibits adverse effects following an acute exposure to a suspected hazardous substance.
- 4) **Termination of the Exposure.** These evaluations are performed when exposure to a specific hazard has ceased. Exposure to specific hazards may cease when a worker is reassigned, a process is changed, or the worker leaves employment. Some federal regulations require these examinations (e.g., 29 CFR 1910.120, Hazardous waste operations and emergency response).

- 5) **Termination of Employment.** These evaluations are designed to assess pertinent aspects of the employee's health when leaving employment. Documentation of examination results may be beneficial in assessing the relationship of any future medical problems to an exposure in the workplace. This is particularly applicable to those conditions that are chronic or that may have long latency periods. Some federal regulations require these evaluations (e.g., 29 CFR 1910.1001, Asbestos).
- b. [“Medical Screening and Surveillance Requirements in OSHA Standards: A Guide](#), OSHA 3162-01R 2014 , is a reference guide to help employers locate and implement the medical screening and surveillance requirements of 29 CFR 1910. The guide provides a general overview of OSHA requirements.

13. Notification.

Work-related and non-work-related findings must be conveyed to the employee as soon as possible. The medical provider must provide the employer with the physician's opinion concerning: (1) any detected medical conditions that place the employee at an increased risk of harm from continued performance on the job, (2) any recommended work modifications, and (3) a statement that the employee has been informed of the results and any other matters requiring further medical follow-up. The employee's supervisor must receive a statement clearing the employee for unrestricted duty, or if restricted duty is found to be required, the specifics of that restriction must be included in the statement.

14. Recordkeeping.

The medical provider must be the custodian of employee medical records. These records are confidential and must be treated as such. Employees have the right to a copy of these records and must be provided a copy at no cost upon a formal request to the provider.

E. References.

1. Department of the Interior, Office of Occupational Safety and Health, “Occupational Medicine Program Handbook (485 DM 18),” December 20, 2010.
2. Department of the Interior Standard Medical History and Examination Form, Form DOI EXAM 2-17-2005.
3. Occupational Safety and Health Administration, [“Medical Screening and Surveillance Requirements in OSHA Standards: A Guide](#), OSHA 3162-01R 2014
4. [OSHA Medical Screening and Surveillance.](#)
5. 29 CFR 1910.1000, Tables Z-1, Z-2, and Z-3.
6. 29 CFR 1910.120, Hazardous waste operations and emergency response.

Chapter 34 – Visiting Public Safety and Health

A. Introduction.

The BLM manages more than 245 million acres of public lands, the most of any federal agency. The BLM offers a large variety of recreational opportunities on its National System of Public Lands—all types of winter sports, bird watching and wildlife viewing, boating, camping, climbing, fishing, hang gliding, hiking, horseback riding, hunting, mountain biking, off-highway vehicle driving, photography, visiting natural and cultural heritage sites, and whitewater rafting. In an increasingly urbanized West, these recreational opportunities and the landscape settings where they take place are vital to the quality of life enjoyed by residents of western states, as well as national and international visitors.

B. Purpose.

The BLM is responsible for providing the public with recreation areas and facilities that are free from recognized hazards insofar as practicable. It is BLM policy to hold paramount the safety, health, and welfare of its employees, volunteers, contractors, and the visiting public. The BLM strives to eliminate or minimize physical or environmental conditions that cause, or have the potential to cause, harm to persons, property, or the environment. Under the Federal Tort Claims Act, if an accident should occur, the government is liable to the same extent a private person would be liable in accordance with the laws of the area where the accident occurred. For these reasons, safety personnel should ensure that safety programming includes procedures to minimize accidents in recreation areas and facilities.

C. Program Elements.

1. Recreation Areas.
2. Recreation Facilities.
3. Public Awareness.
4. Signs.
5. Accident Reporting.
6. Recordkeeping.

D. Explanation of Program Elements.

1. Recreation Areas.

There are numerous hazards on BLM public lands, such as abandoned mines, hot springs, unstable rock in rock climbing areas, unstable trees in undeveloped recreation sites, and dangerous animals. Given the inherent risks of outdoor environment and the risks of activities in which visitors engage when they recreate in these areas, visitor safety is a principle concern for managers of these public spaces. Visitor use supervision is not the BLM's responsibility.

However, the BLM must make a concerted effort to inform the public of known hazards. Site managers must use available methods to communicate known hazards to the visiting public. Developed recreation sites must be regularly reviewed for safety and health hazards. These reviews must be based on visitor use or need and must be documented.

2. Recreation Facilities.

Construction and development of recreation facilities must be planned and designed so that they are free from recognized hazards. Those areas where the BLM provides recreation facilities are particularly important in terms of liability. As the BLM develops facilities, they must be properly maintained and kept free from recognized hazards. Developed recreation facilities must be inspected at least once a year, and the inspection must be documented. The procedures outlined in Chapter 10 of this handbook, "Inspections and Abatements," must be used for these inspections, to include the assignment of a risk assessment code for each deficiency noted.

3. Public Awareness.

Informing the public of hazards on public lands can reduce injuries and save lives. This can be accomplished in a variety of ways. Information can be included in visitor-use documents and brochures, in land use and recreation area management plans, and through the use of signs. Personal contact, local media, and social media should also be used to educate the public. All employees that have contact with the public should be able to inform the public of known hazards in their areas when in the field. While informing the public of hazards could raise liability issues, the safe use of public lands by informed visitors is a goal of the BLM.

4. Signs.

Signs warning of hazards on public lands can be a critical safety issue. Signs can limit liability because they identify known hazards for the public. However, signs may also increase liability to the government by identifying a hazard that might otherwise go unrecognized by the public. For these reasons, when signs are being developed for a high-risk hazard, concurrence of the DOI's Office of the Solicitor should be sought if there is any question of suitability or government liability.

5. Accident Reporting.

All known visitor accidents/incidents on public lands must be reported and entered in the Safety Management Information System at [the SMIS website](#). All accidents associated with special recreation permits, special use permits, or vendor permits must also be reported in the Safety Management Information System.

6. Recordkeeping.

Visitor reports of hazardous conditions at facilities must be investigated as employee reports of hazardous conditions and must be tracked as required by 29 CFR 1960.28(d). Unsafe conditions that are identified either through inspections or by employees must be documented and tracked

until abatement is completed. See Chapter 8, “Employee Report of Unsafe/Unhealthful Working Conditions,” for more information.

E. References.

1. 43 CFR 2920.7, Terms and conditions.
2. 43 CFR 8360, Visitor Services.
3. 29 CFR 1960.28(d).
4. Department of the Interior, Departmental Manual, part 485, Chapter 23, Public Safety and Health.

Chapter 35 – Contractor Safety and Health

A. Introduction.

Safety and health requirements for contractors and subcontractors were developed to help ensure the safety of BLM employees and the public who may be in proximity to renovation, construction, and demolition, installation, or maintenance operations performed by contractors and subcontractors.

B. Purpose.

The contractor safety and health program applies to all BLM properties and projects and to all work performed by contractors, subcontractors, architect/engineering firms, and BLM employees in or on property owned, leased, or occupied by the BLM.

C. Program Elements.

1. Agency Responsibilities at Multi-Employer Worksites.
2. Contracting Officer's Representative/Contracting Officer's Technical Representative/Project Inspector Requirements and Responsibilities.
3. Contractor Requirements and Responsibilities.
4. BLM Safety Personnel Responsibilities.

D. Explanation of Program Elements.

1. Agency Responsibilities at Multi-Employer Worksites.
 - a. A multi-employer worksite refers to a worksite where multiple contractors and subcontractors work. Multi-employer worksite rules apply to construction sites where more than one employer may be citable for a hazardous condition that violates an OSHA standard. If an employer meets the criteria of a creating, controlling, exposing, or correcting employer, or any combination thereof, they have safety and health obligations under OSHA regulations.
 - b. According to "OSHA's Field Operations Manual" and OSHA CPL 02-00-124, "Multi-Employer Citation Policy," the work of contractors and contracting agencies are considered multi-employer worksites. Therefore, the BLM is considered an "exposing employer" if BLM personnel are exposed to unsafe conditions, even if caused by a contractor. The BLM is liable if:
 - 1) It knew of the hazardous condition or failed to exercise reasonable diligence to discover the condition.
 - 2) It failed to take steps consistent with its authority to protect its employees
 - c. Employees who work through employment agencies are generally called

temporary, leased, or supplied workers. These employees are supplied by a temporary, leasing, or supplying employment agency who is their employer. This employer enters into contracts with secondary employers, generally called the host or client employer. When the BLM serves in the host employer capacity, it is responsible for providing information about hazards, controls, safety and health rules, and emergency procedures to all employers at the workplace.

2. Contracting Officer's Representative/Contracting Officer's Technical Representative/Project Inspector Requirements and Responsibilities
3. The contracting officer is responsible for the enforcement of safety and health standards in the same manner as other contract requirements (e.g., specifications and labor laws).
 - a. The contractor is responsible for the following:
 - 1) Safeguarding the public and government personnel, property, materials, supplies, and equipment exposed to contractor operations and activities.
 - 2) Avoiding interruptions of government operations and delays in project completion dates.
 - 3) Providing appropriate safety barricades, signs, and signal lights
 - 4) Complying with 29 CFR 1926 and 29 CFR 1910 or state OSHA requirements where required.
 - 5) Ensuring that any additional protective measures the contracting officer determines to be reasonably necessary for the purposes of loss prevention are taken.
 - b. If the contracting officer becomes aware of any noncompliance with these requirements or any condition that poses a serious or imminent danger to the health or safety of the public or government personnel, they must notify the contractor orally, with written confirmation to follow, and request immediate initiation of corrective action(s). If the contracting officer's representative becomes aware of these conditions, they should notify the contracting officer, who must then complete the stated process. The contracting officer's representative, project inspector, and/or contracting officer are all authorized by virtue of their appointment to issue immediate "Stop Work" or "Suspend Work" orders when a safety hazard presents an immediate threat to life or property or an imminent danger situation.
 - c. If the contractor fails or refuses to promptly take corrective action, the contracting officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken.
 - d. These provisions apply to all contractors regardless of the size or type of business entity.
4. Contractor Requirements and Responsibilities.

- a. The contractor is responsible for:
- 1) Ensuring that all work under contract meets or exceeds OSHA standards, in addition to complying with BLM safety and health standards.
 - 2) Ensuring safe work performance of their employees and subcontractors in a multi-employer worksite.
 - 3) Submitting a written project safety plan covering all aspects of onsite and applicable offsite operations and activities associated with the contract.
 - 4) Unless adequately covered in the project safety plan, submitting a supplementary detailed safety plan before starting each major phase of work or when requested by the contracting officer. Onsite work must not begin until the contracting officer has accepted the plan or appropriate supplementary submittals.
 - 5) Submitting initial and supplementary programs that provide adequate documentation for performing the work safely.
 - 6) Providing employees with a safe and healthful work environment.
 - 7) Conducting a safety program review meeting to allow the contracting officer to review the written project safety plan. During this review, contractors must be prepared to discuss in detail the procedures that will be used to control hazards that could happen during major phases of work.
 - 8) Conducting regularly scheduled safety meetings with the contracting officer, the contractor's principal onsite representative, and designated members of respective staffs. These meetings must review the effectiveness of the contractor's safety effort, resolve health and safety problems relating to current operations, and provide a forum for planning safe future activities. The contractor must prepare and maintain meeting minutes in a manner prescribed by the contracting officer.
 - 9) Conducting regularly scheduled safety meetings for its employees and maintaining a record of these meetings, to include signatures of attendees, for the contracting officer to review if requested.
 - 10) Ensuring that competent employees conduct regular safety inspections of the worksites, materials, and equipment. A competent person is defined as one who is capable of identifying existing and predictable hazards in surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them. The contractor must maintain written inspection records and make them available for review by the contracting officer.
 - 11) Maintaining machinery, tools, material, and equipment in compliance

with applicable safety requirements and tagging or locking the controls to make them inoperable or physically removing them from their place of operation if they are unsafe.

- 12) Reporting accidents and incidents immediately to the contracting officer and appropriate contractor personnel. The contractor is responsible for providing and obtaining appropriate medical and emergency assistance consistent with 29 CFR 1926.23 and notifying fire and law enforcement agencies, OSHA, and others as appropriate
 - 13) Except for rescue and emergency measures, not disturbing the scene of an accident or incident and not resuming the operation until authorized by the contracting officer. The contractor must assist and cooperate fully with the contracting officer in conducting the investigations of the accident/incident and must ensure availability of all information, personnel, and data pertinent to the investigation.
 - 14) When ordered by the contracting officer, conducting a complete and independent investigation of the accident or incident and submitting a comprehensive report of findings and recommendations to the contracting officer. The contractor must arrange and be financially responsible for the independent investigation and any equipment, material inspections or tests, or diagnostic studies required by the government or contractor investigators.
 - 15) Reporting potentially serious accidents or incidents immediately to the contracting officer. The contractor's involved equipment and worksite must remain secured until the contractor has completed a comprehensive investigation that is acceptable to the contracting officer. The contractor should not resume work until the contracting officer has given permission to do so.
 - 16) Maintaining an OSHA Form 300, "Log of Work-Related Injuries and Illnesses," or equivalent, that is acceptable to the contracting officer. Contractors must maintain this record of injuries and have it available for review by the contracting officer if requested.
 - 17) Maintaining records of employee training, detailing course content and names of attendees, and making them available for review by the contracting officer if requested. The contracting officer may consult a BLM safety professional to assist with interpretation of the safety and health training requirements and records.
 - 18) Removing employees from work assignments in which they refuse to or repeatedly fail to comply with safe work practices and standards or removing supervisors who fail to enforce compliance.
- b. The contractor is responsible for ensuring that the design of facilities, equipment, support structures, systems, embankments, shoring systems, and formwork (false work) used in the construction process are structurally suitable for the intended use. A preoccupancy safety inspection must be

conducted by the BLM prior to acceptance of the certification. Refer to preoccupancy safety inspections in Chapter 10 of this handbook, "Inspections and Abatements."

- c. If disputes between the contractor and the contracting officer involve safety issues, the work must not proceed until the dispute is resolved.

5. BLM Safety Personnel Responsibilities.

Safety personnel are responsible for:

6. Providing technical assistance to the contracting officer, contracting officer's representative, contracting officer's technical representatives, and project inspectors in administration and enforcement of appropriate safety and health codes.
7. Assisting with periodic formal inspections of the worksite, both announced and unannounced, with the contracting officer, contracting officer's representative, contracting officer's technical representative, and project inspector.
8. Conducting a preoccupancy safety inspection. Refer to Chapter 10 of this handbook, "Inspections and Abatements."

E. References.

1. Public Law 91-596, Occupational Safety and Health Act of 1970.
2. 29 CFR 1910, Occupational Safety and Health Standards.
3. 29 CFR 1926, Safety and Health Regulations for Construction.
4. 48 CFR 52.236-13, Accident Prevention.
5. CFR 1-53, Federal Acquisition Regulations System.
6. 40 U.S.C. 333, Construction Safety Act of 1969, as amended.
7. 41 CFR 101-20.002-1, Government-owned buildings.
8. 41 U.S.C. 351, Service Contract Act of 1965, as amended.
9. The Davis-Bacon Act.
10. Contract Work Hours and Safety Standards Act, as amended.
11. 40 U.S.C. 606, Public Buildings Act of 1959, as amended (see also Public Law 100-678 (1988)).
12. Department of the Interior, Departmental Manual, part 485, Chapter 24, Contractor Safety and Health.
13. Occupational Safety and Health Administration, "OSHA's Field Operations Manual."
14. Occupational Safety and Health Administration, CPL 02-00-124, "Multi-Employer Citation Policy."

15. 29 CFR 1926.23, First aid and medical attention.

Chapter 36 – Concessioner Safety and Health

A. Introduction.

The BLM may enter into recreation concession agreements to provide visitors with permanent facilities required for products, programs, management, or visitor services that enhance the recreational use of the public lands and related waters. Recreation concession agreements are long-term use authorizations for private parties to use public lands for a fixed time period.

Concessioners must comply with all applicable federal, state, and local safety and health regulations, providing protection for concessioner employees, the public, and BLM employees. One of the BLM's management goals is to provide for public safety and health and ensure that facilities and services offered to the public are in compliance with safety and health regulations.

B. Purpose.

To help provide for public safety and health, the BLM must take part in regular, periodic concession inspections, ensuring public visitors are provided quality services that are safe, sanitary, and attractive at levels they would expect from the private sector and as reflected in the concession agreement.

C. Program Elements.

1. Concessioner Safety and Health Requirements.

CI. Explanation of Program Elements.

1. Concessioner Safety and Health Requirements.
2. Any BLM office establishing agreements with concessioners must include applicable safety and health requirements for protecting concessioner employees, the visiting public, and BLM employees as a condition of the agreement.
3. The authorized officer or their agent is responsible for concessioner compliance with safety and health concerns.
4. At least one annual comprehensive occupational safety and health inspection must be carried out by a qualified safety inspector, or concessioners may submit written copies of similar satisfactory inspections completed by their insurance underwriter. Safety and health documentation is required of concessioners consistent with lease stipulations, the public welfare, and DOI regulations. Certification must be submitted under the lease compliance portion of the concession review program and must be considered a critical item of agreement compliance.
5. Safety and health managers/collateral duty safety officers may participate in by concessioners to evaluate safety and health conditions. Safety personnel do not have the right to stop concessioner operations unless there is an imminent danger situation. Safety and health concerns must be provided to the agreement manager for resolution.

E. References.

1. 43 U.S.C. 1701, Federal Land Policy and Management Act, Congressional declaration of policy.
2. 43 U.S.C. 1732, Federal Land Policy and Management Act, Management of use, occupancy, and development of public lands.

Chapter 37 – Firearms

A. Introduction.

At times, it is necessary for non-law enforcement BLM personnel to transport, carry, and use firearms during work hours for reasons such as protecting work parties from dangerous wild animals; reducing the number of undesirable, crippled, or infected animals; or collecting biological specimens.

B. Purpose.

This Chapter establishes the minimum safety requirements for possessing, carrying, handling, storing, transporting, and/or using firearms and ammunition on official business by non-law enforcement BLM employees.

C. Program Elements.

1. Requirements.
2. Policy.
3. Responsibilities.
4. Authorization.
5. Training.
6. Transport, Storage, and Maintenance.
7. Recordkeeping.
8. Incident Reporting and Investigation.

D. Explanation of Program Elements.

1. Program Requirements.

Each BLM state that authorizes non-law enforcement personnel to carry firearms must develop and maintain a written firearms safety program for non-law enforcement personnel, detailing the administration of the program and assignments of program responsibilities, consistent with the requirements stated in this Chapter. Each BLM state must ensure that their firearms safety program maintains a professional level of instruction and that offices support and fund the training and ongoing instructor development of all employees designated to serve as BLM firearms instructors.

2. Policy.

- a. Law enforcement personnel are exempt from the requirements of this Chapter and must follow the guidance established in BLM Manual 9260, “Law

Enforcement General Order 15,” and the DOI Departmental Manual, part 446, Chapter 10, Firearms and Other Defensive Equipment.

- b. BLM personnel under the age of 18 may not carry or use firearms or have access to the possession or control of firearms.
- c. In accordance with 18 U.S.C. 922, the following employees are prohibited from possessing firearms:
 - 1) Those who have been convicted of a misdemeanor crime of domestic violence or anyone subject to a domestic violence protective order.
 - 2) Those who have been convicted of a crime punishable by a term of imprisonment exceeding 1 year.
 - 3) Those who are unlawful users of, or addicted to, any controlled substance defined in 21 U.S.C. 802.
- d. The use of firearms by non-law enforcement personnel must be conducted in accordance with the requirements of this Chapter. All requirements of this Chapter apply specifically and solely to the use of firearms on official business.
- e. Non-law enforcement employees that possess, carry, or use firearms must do so in compliance with all applicable federal, state, and local laws. Prior to possessing, carrying, or using a firearm in the performance of their official duties, non-law enforcement employees must pass a background check as defined in paragraph 3(a)(3) of this Chapter. Prior to possessing, carrying, or using a firearm in the performance of their official duties, non-law enforcement employees must successfully complete the minimum training designated in this Chapter.
- f. Non-law enforcement employees are prohibited from carrying or using firearms for law enforcement purposes or for purposes of self-defense from human beings. Non-law enforcement employees are prohibited from carrying concealed firearms on their person.
- g. Non-law enforcement personnel are only authorized to carry a firearm on their person while on BLM lands, and they are authorized to transport firearms to and from their assigned work site(s) in their work vehicle.
- h. For animal protection, the BLM is only authorized to issue 12-gauge pump shotguns and solid slug ammunition.
- i. Personally owned firearms may be used by employees for the purpose of self-protection from dangerous wild animals, provided that the requirements in paragraph D(2)(q) of this Chapter are followed.
- j. If BLM employees are specifically requested by local officials to carry firearms to help curb an epidemic of rabid animals; to reduce the number of undesirable, crippled, or infected animals; or to implement other authorized activities, such as cone harvesting, the purpose of the action and the caliber of the firearm(s) must be stated in the letter of authorization.
- k. Non-law enforcement employees that use firearms against wild animals must

comply with the requirements of the Endangered Species Act (16 U.S.C. 1531-1544), Marine Mammal Protection Act (16 U.S.C. 1361- 1423h), and other applicable federal and state animal protection laws, including those related to reporting the destruction of the animal and the collection and ultimate disposition of the animal's body parts.

1. BLM employees are prohibited, at all times, from using government-owned firearms, ammunition, vehicles, or other equipment for the express or incidental purpose of sport hunting, shooting, or transportation of game. Violators are subject to disciplinary action and/or prosecution under the law.
- m. Firearms issued to non-law enforcement employees must be recorded and tracked as specified in this chapter.
- n. Transport of BLM-authorized firearms on aircraft must follow the requirements of:
 - 1) 14 CFR 108, Airplane Operator Security.
 - 2) 14 CFR 108.11, Carriage of weapons.
 - 3) The DOI's handbook called "[NWCG Standards for Aviation Transport of Hazardous Materials](#)".
 - 4) This handbook chapter.
- o. An effective and fully engaged trigger locking mechanism must be in place and locked on all BLM-issued or BLM-approved firearms being stored or transported. Locking gun cases do not meet or negate this requirement.
- p. Reloaded ammunition is not allowed for use in either BLM-issued or personal firearms.
- q. Employees wishing to use their personal firearms must:
 - 1) Comply with all BLM firearms policies, including authorization, training, transport, storage, and reporting requirements.
 - 2) Meet the minimum caliber and power requirements (.30-06 or equivalent for rifles; .44-caliber magnum or greater for side arms).
 - 3) Successfully complete a safety check of the specific firearm they will be carrying, performed by a designated BLM instructor.
 - 4) Successfully complete qualifying firearms training using the specific firearm(s) and load(s) they will be carrying.
 - 5) Provide a functioning trigger locking device for their firearm.

3. Responsibilities.

- a. State directors are responsible for:
 - 1) Promulgating guidelines consistent with the minimum requirements provided herein.
 - 2) Authorizing each qualified non-law enforcement BLM employee to

possess, carry, or use firearms in the performance of their official duties by issuing a certificate of firearms authorization. To be qualified, employees must complete the minimum requirements provided in this chapter and any additional requirements imposed by BLM state or field offices.

- 3) Ensuring that background checks are being conducted to determine whether an employee is prohibited from possessing, carrying, or using a firearm by court order; as a condition of sentencing, probation, or parole or pretrial diversion agreement; because of a misdemeanor crime of domestic violence; because of a felony crime; or because of a history of mental illness that presents a risk of injury to the employee or others. This responsibility includes conducting updates of background checks every 4 years and requires employees to report any changes to their qualifying conditions.
- 4) Designating a state firearms manager to oversee the authorization of employees to possess, carry, or use firearms in the performance of their official duties.
- 5) Designating a custodial property officer at each issuing facility to maintain custody and control of firearms and ammunition when they are issued to authorized employees.
- 6) Designating qualified employees to serve as authorized BLM firearms instructors and designating one qualified instructor to serve as the state firearms training coordinator to oversee and coordinate firearms training statewide.

b. Supervisors are responsible for:

- 1) Determining if there is a legitimate need for their non-law enforcement employee(s) to possess, carry, or use firearms in the performance of their official duties.
- 2) Upon determining that there is a legitimate need, submitting a request to the state firearms coordinator to obtain state director authorization for the employee to complete firearms training and carry and use firearms.
- 3) Determining that the minimum requirements in this Chapter and any additional requirements imposed by state office policy, are met when non- law enforcement employees possess, carry, and use firearms.

c. State firearms managers are responsible for:

- 1) General oversight and coordination of the non-law enforcement firearms program.
- 2) Ensuring that coordination of the firearms authorization process is being performed when a supervisor requests authorization for an employee to possess, carry, or use firearms in the performance of their official duties, by confirming that all training, qualification, and

- background check requirements are being successfully completed.
- 3) Ensuring that records are maintained consistent with the requirements of this chapter.
 - 4) Generating incident investigations as specified in this chapter.
- d. Custodial property officers are responsible for:
- 1) Establishing and monitoring accountability records consistent with directions in this chapter to provide effective control of firearms and ammunition.
 - 2) Conducting an inventory of all firearms and ammunition in the possession, custody, or control of their bureau or office in accordance with the property management requirements in BLM Manual 1520, "Personal Property Management."
 - 3) Ensuring that adequate safeguards are in place to protect firearms and ammunition in the possession, custody, or control of their bureau or office from loss, theft, or misuse.
- e. Firearms training coordinators are responsible for:
- 1) Overseeing and coordinating firearms instructors and instruction and confirming live fire range qualifications statewide.
 - 2) Ensuring that the firearms training curriculum and live fire range qualification requirements are consistent and meet all minimum national- and state-level BLM standards.
 - 3) Ensuring that all firearms instructors meet all minimum national- and state-level BLM instructor qualification standards.
 - 4) Promoting a professional level of firearms instruction by ensuring that firearms instructors are aware of opportunities to receive advanced instructor training.
 - 5) Ensuring that all records of firearms training and live fire range qualification are submitted to the state firearms manager.
- f. Firearms instructors are responsible for:
- 1) Successfully completing and maintaining all minimum instructor training requirements.
 - 2) Using the training curriculum and live fire range qualification requirements prescribed by state and national BLM policies.
 - 3) Maintaining zero tolerance for violations of firearms safety principles and practices during all classroom firearms training and all live qualifying fire on the range.
 - 4) Examining all personal firearms and ammunition for functioning trigger locks, sound operable condition, and appropriate caliber and projectile weight prior to employees attempting to qualify with them.

- 5) Refusing to qualify any employee who demonstrates a basic lack of situational awareness or firearms safety awareness or a solid understanding of the mechanical operation of firearms, regardless of the employee's successful completion of the live fire range qualification.

g. Employees are responsible for:

- 1) Complying with the requirements provided in this chapter and the guidelines issued by their state or field office.
- 2) Successfully completing the training required in this chapter.
- 3) Maintaining constant situational awareness and consistently following all BLM firearms safety rules when carrying a firearm.
- 4) Immediately reporting to their supervisor or safety office any incident of which they have knowledge involving the destruction of an animal or the accidental discharge, mishandling, or abuse of a firearm.
- 5) Immediately reporting the loss or theft of any firearm to their supervisor, local law enforcement, state firearms manager, and the authorized officer and completing a report of survey for any lost, damaged, or destroyed firearm or ammunition, following the procedures outlined by the state property manager for the loss, damage, or theft of firearms and ammunition.
- 6) Immediately reporting to their supervisor any changes to their qualifying conditions (e.g., they have been prohibited from possessing, carrying, or using a firearm by court order as a condition of sentencing, probation, or parole or pretrial diversion agreement; or they are subject to a domestic violence protective order or have been convicted of a misdemeanor crime of domestic violence or a felony crime; or they have been diagnosed with a mental illness that presents a risk of injury to the themselves or others).

4. Authorization

- a. Upon determining that there is a legitimate need for a non-law enforcement BLM employee to possess, carry, or use a firearm, and in accordance with the process prescribed by the state firearms manager, the supervisor must submit a request to obtain authorization from the state director. This authorization allows the supervisor's employee to complete firearms training and carry and use firearms. In addition, field office manager endorsement is required as part of the request to the state director.
- b. A background check must be conducted to determine whether an employee is prohibited from possessing, carrying, or using a firearm by court order; as a condition of sentencing, probation, or parole or pretrial diversion agreement; because of conviction of a misdemeanor crime of domestic violence; because of a felony crime; or because of a history of mental illness that presents a risk

of injury to the employee or others. After the initial background check, rechecks must be performed a minimum of every 4 years.

- c. After successful completion of a background check, the employee may attend firearms training.
- d. The state firearms manager must prepare a certificate of firearms authorization for the employee, verify that the employee has passed a background check and successfully completed training and live fire range qualification requirements, and request the state director's signature on the certificate of firearms authorization.
- e. The certificate of firearms authorization must not cover more than a 12-month period and must include the following information:
 - 1) Employee's name,
 - 2) Duties requiring use of firearms,
 - 3) Geographic area where the authorization is valid,
 - 4) Purpose of firearm use,
 - 5) Issuance and expiration date,
 - 6) Specific type of firearm(s) the employee is authorized to carry,
 - 7) Serial number(s) of personal firearm(s) the employee is authorized to carry,
 - 8) State director's name, and
 - 9) State director's signature and date.
- f. A certificate of firearms authorization expires upon the occurrence of any of the following circumstances:
 - 1) At the end of the calendar year in which it was issued or the completion of the project, whichever occurs first,;
 - 2) When there is a change of duty station, status, or transfer;
 - 3) Upon failure to demonstrate shooting proficiency or strict adherence to firearms safety, transport, or security requirements;
 - 4) A conviction for domestic violence or the subject of a domestic violence protection order; or
 - 5) When rescinded for any reason by the employee's supervisor or manager.

5. Training.

6. Non-law enforcement employees who possess, carry, or use a firearm in the performance of their official duties must successfully complete classroom training in the following categories, at a minimum:

- 1) General and range firearms safety;

- 2) Laws, rules, regulations, and policies;
 - 3) Employee and supervisory responsibilities;
 - 4) Incident reporting;
 - 5) Firearms care and maintenance; and
 - 6) Firearms skills.
- b. **Live Fire Range Qualification.** This portion of the firearms training course must take place on the firing range under the control of an authorized instructor. The target for animal protection training must be 8 ½ by 11 inches in size and must be placed a distance of 15 yards from the firing line. Proficiency is achieved when 70 percent of the shots are on the target and when all sequences of shots are fired within the allowable time of 25 seconds. Each sequence must be performed twice to demonstrate proficiency. The shooter must also exhibit proper safe handling of the firearm(s).
- c. **Pump and Semi-Automatic Shotguns.** This portion of the training course includes two sequences of live range fire consisting of magazine capacity for the shotgun, plus one (i.e., Remington 870, four rounds in magazine, plus one).
- 1) The shooter must start with a full magazine and empty chamber. The weapon must have the action closed and the safety on.
 - 2) On the command to fire, the shooter is required to fire the rounds in the magazine, then reload and fire one additional round.
 - 3) Upon completion, the shooter must open the action and make sure the safety is on.
 - 4) The time limit is 25 seconds, and this sequence is repeated.
- d. **Double-Barrel Shotguns.** This portion of the training course includes two sequences of live range fire consisting of four rounds per sequence.
- 1) The shooter must start with a full magazine and empty chamber. The weapon must have the action closed and the safety on.
 - 2) On the command to fire, the shooter is required to fire the rounds in the magazine, then reload and fire one additional round.
 - 3) Upon completion, the shooter must open the action and make sure the safety is on.
 - 4) The time limit is 25 seconds, and this sequence is repeated.
- e. **Rifles.** This portion of the training course includes two sequences of live range fire consisting of magazine capacity for the rifle, plus one round (i.e., a bolt action rifle with magazine capacity of three rounds; the course is four rounds for each sequence).
- 1) The shooter must start with the magazine fully loaded. The action must be closed on an empty chamber and the safety on.

- 2) On command to fire, the shooter must fire the rounds in the magazine, then reload and fire one additional round.
 - 3) Upon completion, the shooter must open the action and make sure the safety is on.
 - 4) The time limit is 25 seconds, and this sequence is repeated.
- f. **Handguns.** This portion of the training course includes two sequences of live range fire, each consisting of cylinder/magazine capacity for the handgun.
- 1) The shooter must start with a fully loaded handgun.
 - 2) On the command to fire, the shooter must fire all rounds contained in the cylinder/magazine.
 - 3) Upon completion, the shooter must open the cylinder/slide and make sure the handgun is unloaded.
 - 4) The time limit is 25 seconds, and this sequence is repeated.
- g. **Refresher Training.** Employees must successfully complete refresher classroom training every 2 years and successfully complete live fire range qualification on an annual basis. Certificates of firearms authorization must not be renewed for employees that cannot successfully complete their refresher training and perform their firearms qualification.
- h. Firearms instructors must refuse to qualify any student who demonstrates a lack of basic situational awareness or firearms safety awareness or a solid understanding of the mechanical operation of firearms, regardless of that employee's successful completion of the prescribed live fire range qualification.
- i. **Wild Animal Behavior Training.** A basic understanding of animal behavior is an essential component of effective self-defense against large predators. All firearms instruction that is conducted to prepare employees to defend themselves against wild animal attacks must include the following:
- 1) A minimum of 2 hours of training in the behaviors and characteristics of the applicable dangerous animal, taught by a knowledgeable instructor.
 - 2) The use of nonlethal rounds and capsaicin-based deterrent spray for deterring aggressive animals.
 - 3) The ethical implications and legal requirements associated with killing a game animal in defense of life and property.
 - 4) Employees choosing to supplement or replace the use of firearms with pepper-based deterrent spray for protection against dangerous wild animals must complete a training program in the use of the spray, taught by a trained and knowledgeable instructor.
- j. BLM firearms instruction must be of professional caliber. States are encouraged to promote and fund advanced instructor training relevant to the

type(s) of firearms and conditions to which employee(s) will be exposed. Firearms instructors and firearms training coordinators must have significant experience in the use of firearms and must meet one or more of the following requirements prior to independently instructing employees:

- 1) A Federal Law Enforcement Training Center graduate.
 - 2) A National Rifle Association firearms instructor.
 - 3) Minimum 16 hours of basic firearms instructor training.
 - 4) One block of discipline-specific firearms instructor training, as applicable:
 - a) Shotgun.
 - b) Rifle.
 - c) Handgun.
7. Transport, Storage, and Maintenance.
8. All firearms must be completely unloaded except when it is necessary that they be readily available for their intended use. Any employee returning a loaded firearm to its place of issue must immediately lose their certificate of firearms authorization and must be subject to disciplinary action.
9. When not under the direct control of an authorized employee, all firearms stored for issue must be secured; unloaded with the action open; and in a locked safe, vault, or other approved firearms storage container. Access to firearms storage containers must be limited to those employees designated and authorized to possess, carry, or use firearms.
10. All firearms in transport or temporary storage must have a functioning trigger locking device in place and locked. The placement of the firearm in a locking gun safe or carrying case does not negate this requirement. The key to the trigger locking device must, at all times, be in the secure possession of the employee that is responsible for the firearm.
11. Firearms and ammunition must not be left unattended in motor vehicles or watercraft unless they are physically secured from theft and out of public view. All bureau issued and authorized non-law enforcement firearms left unattended in personally owned or government owned vehicles (to include rental vehicles) must be protected by a minimum of two layers of security as follows:
- 1) The first and innermost layer of security must consist of the firearm being physically attached to a substantial component of the vehicle by a cable, chain, or gun mount; or the firearm being stored within a hardened locking container that is similarly attached to the vehicle frame. For the purpose of this policy, "substantial components" consist of significant metal elements such as seat mounting brackets and similar vehicle hard points. A vehicle's factory standard glove box, center console, or other nonmetal points of attachment do not

- meet the "substantial component" requirement as they can be easily defeated with minimal effort.
- 2) The second layer of security may consist of the locked vehicle or the locked garage in which the vehicle is secured. For example, a locked vehicle containing a firearm that is physically attached to a vehicle seat mounting bracket via a cable style lock would be considered to have two layers of security; the locked vehicle and the cable style firearm lock. If that same vehicle were parked inside a locked garage, the firearm would be considered to have three layers of security; the locked garage, the locked vehicle and the cable style firearm lock. In addition to ensuring firearms left unattended in personally owned or government-owned vehicles are protected by a minimum of two layers of security, to the extent practicable, employees are also encouraged to secure firearms in a manner that disables the action and conceals the firearm from view.
- b. Transport of firearms on scheduled commercial aircraft must conform to all relevant Federal Aviation Administration and Transportation Security Administration requirements and airline policies. Transport of firearms and ammunition on field aircraft must conform to DOI Office of Aviation Services guidance, which includes the:
 - 1) [NWCG Standards for Aviation Transport of Hazardous Materials](#)
 - 2) "Aerial Capture, Eradication and Tagging of Animals (ACETA) Handbook," (supplement to DOI Departmental Manual, part 351, Chapter 2).
 - 3) DOI Interior Business Center, AM Operational Procedures Memorandum (OPM) 06-AR-18, "The Use of Firearms in Survival Equipment for Fleet Aircraft."
 - c. The custodial property officer must ensure that each firearm is inspected, cleaned, and mechanically checked annually and each time upon return from the field to confirm that the firearms are in serviceable condition. A written inspection, maintenance, and repair record must be maintained for each firearm. A visual inspection and safety function check of the firearm and review of the maintenance and repair records must be performed prior to issuing the firearm to an employee.
 - d. A firearm in need of repair, regardless of whether it is a minor or major repair, must be put out of service until it is repaired and approved for use by a trained and competent gunsmith or armorer.
 - e. Ammunition must be stored in a locked safe, vault, or other BLM approved storage container. Small arms ammunition (handgun, shotgun, and rifle) must be separated from materials that are classified by the Department of Transportation as flammable liquids, flammable solids, and oxidizing materials by a distance of 15 feet (4.6 meters) or by a fire partition that has a fire resistance of at least 1 hour. Explosives must not be stored together with

small arms ammunition.

12. Recordkeeping.
13. Records for firearms must be maintained by the custodial property officer and the state firearms manager at their respective levels and remain available for internal and external review.
14. Records maintained by the state firearms manager must include all records of firearms training, including certifications that training requirements have been met. A record of all issued certificates of firearms authorization must also be maintained.
15. Records maintained by the custodial property officer must include an inventory of all firearms stored in the armory or firearms container. The inventory must include, at a minimum, the caliber, make, model, serial number, and property number of all firearms stored in the armory or container. A firearm sign in/out log must be maintained to track the location of firearms. Records of firearm purchase and disposal and records of firearm inspection, routine maintenance, and repair must also be maintained.
16. Incident Reporting and Investigation.
 - a. All firearm incidents must be reported and investigated at an appropriate level determined by the BLM, in accordance with the following guidelines:
 - 1) Incidents that are criminal in nature must be reported to and investigated by appropriate law enforcement authorities.
 - 2) Incidents that involve human death, personal injury, property damage, or a “near miss” must be reported and investigated in accordance with the DOI Departmental Manual, part 485, Chapter 7, Incident/Accident Reporting/Serious Accident Investigation.
 - 3) All firearm incidents that are safety violations must be reported by the employee’s supervisor using the DOI Safety Management Information System at [the SMIS website](#).
 - 4) Incidents resulting in the death of an animal must be reported to the employee’s supervisor, servicing safety personnel, and the state firearms manager. All applicable state reporting laws and game processing requirements must be followed.
17. Lost or stolen firearms must be immediately reported to the employee’s supervisor, office manager, unit accountability officer, state firearms manager, office law enforcement ranger, and local enforcement authorities.

E. References.

1. Department of the Interior, Departmental Manual, part 446, Chapter 10, Firearms and Other Defensive Equipment.

2. BLM Manual 1520, "Personal Property Management."
3. The Lautenberg Amendment to the Gun Control Act of 1968.
4. BLM Manual 4700, "Wild Free-Roaming Horses and Burros Management."
5. 21 U.S.C. 802, Controlled Substances Act.
6. 18 U.S.C. 922, Firearms: Unlawful acts.
7. 16 U.S.C. 1531-1544, Endangered Species Act.
8. 16 U.S.C. 1361-1423h, Marine Mammal Protection Act.
9. 14 CFR 108, Airplane Operator Security.
10. Department of the Interior, "Interagency Aviation Transport of Hazardous Materials," January 2005, NFES 1068.
11. "Aerial Capture, Eradication and Tagging of Animals (ACETA) Handbook" (supplement to Department of the Interior, Departmental Manual, part 351, Chapter 2).
12. Department of the Interior, Interior Business Center, AM Operational Procedures Memorandum (OPM) 06-AR-18, "The Use of Firearms in Survival Equipment for Fleet Aircraft."
13. Department of the Interior, Departmental Manual, part 485, Chapter 7, Incident/Accident Reporting/Serious Accident Investigation.

Chapter 38 – Explosives

A. Introduction.

Some tasks in the BLM may require the use of explosives, such as fire operations or roadway projects. The use, storage, and transportation of explosives can put employees, emergency responders, and the general public at risk. However, the risk associated with explosives can be minimized by strictly adhering to guidelines set forth for the safe handling, storage, and use of explosives.

The definition of an explosive is any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion (i.e., with substantially instantaneous release of gas and heat), unless such compound, mixture, or device is otherwise specifically classified by the U.S. Department of Transportation as explosives with a mass explosion hazard, explosives with a projection hazard, explosives with a fire hazard, etc. (see 49 CFR 173.2). The term “explosives” includes all material classified as Class 1 explosives by the U.S. Department of Transportation and includes, but is not limited to, dynamite, black powder, pellet powders, initiating explosives, blasting caps, electric blasting caps, safety fuse, fuse lighters, fuse igniters, squibs, cordeau detonant fuse, instantaneous fuse, igniter cord, igniters, small arms ammunition, small arms ammunition primers, smokeless propellant, cartridges for propellant-actuated power devices, and cartridges for industrial guns.

Commercial explosives are those explosives that are intended to be used in commercial or industrial operations.

B. Purpose.

This chapter addresses the minimum standards for safe storage, use, and transportation of all explosives and blasting agents used in BLM operations and serves as a written explosive safety program. Additionally, this Chapter outlines proper procedures and training required of BLM employees that may encounter unexploded ordnance during their course of operations.

C. Program Elements.

1. Terms.
2. Storage.
3. Training.
4. Transportation.
5. Handling and Blasting.
6. Recordkeeping.
7. Unexploded Ordnance.
8. Wildfire Fireline Explosives.

D. Explanation of Program Elements.

1. Important Terms.
2. **Approved Storage Facility.** A facility for the storage of explosive materials conforming to the requirements of 29 CFR 1926.914 and covered by a license or permit issued under the authority of the Bureau of Alcohol, Tobacco, Firearms, and Explosives, 27 CFR 55.11
 - a. **Artificial Barricade.** An artificial mound or revetted wall of earth of a minimum thickness of 3 feet or any other approved barricade that offers equivalent protection.
 - b. **Barricaded.** The effective screening of a magazine containing explosive materials from another magazine, a building, a railway, or a highway, either by a natural barricade or by an artificial barricade. To be properly barricaded, a straight line from the top of any sidewall of the magazine containing explosive materials to the eave line of any other magazine or building, or to a point 12 feet above the center of a railway or highway, must pass through the natural or artificial barricade.
 - c. **Blasting Agent.** Any material or mixture, consisting of a fuel and oxidizer, intended for blasting, not otherwise classified as an explosive and in which none of the ingredients are classified as an explosive, provided that the finished product, as mixed and packaged for use or shipment, cannot be detonated by means of a number 8 test blasting cap when unconfined.
 - d. **Blasting Supervisor.** The supervisor or lead person with the overall responsibility of ensuring safe and efficient blasting operations.
 - e. **Blocking Personnel.** Employees designated to block unauthorized personnel from gaining access to explosive sites.
 - f. **Deflagration.** Deflagration is a technical term describing subsonic combustion that usually propagates through thermal conductivity (hot burning material heats the next layer of cold material and ignites it). Most "fire" found in daily life, from flames to explosions, is technically deflagration.
 - g. **Detonation.** Detonation involves a supersonic exothermic front accelerating through a medium that eventually drives a shock front propagating directly in front of it.
 - h. **Explosive-Actuated Power Device.** Any tool or special mechanized device which is actuated by explosives, but not including propellant-actuated power devices.
 - i. **Quantity-Distance.** The correlation between the net explosive weight and the safe storage distance from inhabited buildings, public traffic routes, and other magazines.
3. Storage.
 - a. All explosives must be stored in approved storage magazines designed to appropriate specifications. All explosives and blasting agents must be stored

in a manner that meets (or exceeds) standard requirements of OSHA and the Bureau of Alcohol, Tobacco, Firearms, and Explosives. The storage of explosives and blasting agents must also meet state and BLM standards, including:

- 1) Separate magazines of approved construction must be provided for the storage of explosives and detonators.
 - 2) All storage magazines must be double-locked (each with two different locks). Each lock must be covered with a metal security box to protect the lock from weather and/or vandalism.
 - 3) Access to storage magazines must be strictly controlled. The delivery, removal, and return of explosives, primers, etc., must be documented.
 - 4) Storage magazines must be properly grounded and ventilated, and the area around the magazines must be kept free of vegetation and other combustible materials for a minimum distance of 25 feet.
 - 5) The interior of magazines must be kept clean, dry, organized, and free of all extraneous material.
 - 6) No open flame or other sources of ignition or volatile material is permitted within 50 feet of storage magazines.
 - 7) Repairs to magazines are not permitted when explosives are contained in the magazines.
 - 8) The perimeter and entrance to storage areas must be posted with signs that read, "Danger, Explosives Storage Area."
4. **Quantity and Distance.** 27 CFR 555.218-224 provide tables of distances for the storage of various types and amounts of explosive material. At a minimum, the BLM must comply with the prescribed distances outlined in these charts.

5. Training.

A blaster must be qualified, by reason of training, knowledge, and experience, in the field of transporting, storing, handling, and using explosives, and the blaster must have a working knowledge of state and local laws and regulations that pertain to explosives. Blasters must have the following training:

- a. A minimum of 32 hours of classroom training at a government-approved explosive training facility.
- b. A minimum of 24 months of on-the-job training in the preceding 36 months of applying for certification.
- c. Evidence of completion of training requirements.
- d. A minimum of 24 hours of refresher training every 6 years.
- e. Blasters must be knowledgeable and competent in the use of each type of blasting method used.

- f. All BLM personnel that work in or may work in proximity to locations that may contain **unexploded ordnance (UXO)** must have UXO training prior to conducting operations in that area.

6. Transportation.

- a. Explosives must be transported in accordance with Department of Transportation and Bureau of Alcohol, Tobacco, Firearms, and Explosives regulations, which require Division 1.1 explosives (explosives with a mass explosion hazard) to be transported in approved nonconductive containers and to be transported in a separate vehicle from that of Division 1.4 explosives (explosives with no significant blast hazard). Explosives may be transported in the same vehicle (bed of a truck) if a box of 4-inch hardwood, or the equivalent, is prepared with two compartments separating the explosives by class. The construction of the transport box must be in compliance with Bureau of Alcohol, Tobacco, Firearms, and Explosives regulations.
- b. Drivers of vehicles that contain explosives must be trained for the task. Explosives must be transported directly from the magazines to the delivery point on routes calculated to expose a minimum number of people. Similarly, explosives being returned to magazines must be transported by the most direct route and immediately returned.
- c. The following items must not be carried in any vehicle (bed or body) that is transporting explosives: metal tools, carbides, oils, matches, firearms, electric storage batteries, flammable substances, acids, or oxidizing or corrosive compounds. Other materials or supplies must not be placed on or in the cargo space of a conveyance containing explosives, detonating cord, or detonators, except for safety fuse and properly secured, nonsparking equipment used expressly in the handling of such explosives, detonating cord, or detonators.
- d. The number of employee(s) involved in the transportation and use of explosives should be limited to the least number of people required to perform those tasks.
- e. Employees must not smoke while transporting or handling explosives or detonators.
- f. Smoking or open flames are prohibited within 50 feet of explosives or detonators.
- g. Vehicles used in the transportation of explosives and detonators must be operated in accordance with established safe-operating practices. Vehicles must be well- maintained and in good operating condition.
- h. When vehicles containing explosives or detonators are parked, the brakes must be set, the motor must be off, and the vehicles must be blocked securely against rolling. The vehicles must not be left unattended except in blasting areas where loading or charging is in progress.
- i. Specifically equipped vehicles must be used for the transport of detonators

and explosives, and vehicles must be properly placarded.

- j. Vehicles containing explosives must not be taken into a shop.
- k. Vehicles transporting explosives must be equipped with a minimum of two 10 BC fire extinguishers.

7. Handling and Blasting.

The following guidelines must be followed during blast operations.

- a. **Cardinal Rule of Explosives.** Limit exposure to a minimum number of personnel, for a minimum amount of time, to the minimum amount of explosives consistent with safe and efficient operations.
- b. All persons conducting loading and blasting must be properly task trained. All task training must be properly documented in the employee's official training records.
- c. Once priming and loading operations have commenced, only employee(s) engaged in those operations should enter the loading site unless cleared by the blasting supervisor or their designee.
- d. Equipment, other than that involved in loading operations, must not come within 50 feet of a primed or loaded blast site.
- e. Loading activities must be suspended during lightning storms, and the blast site must be cleared of all personnel.
- f. All blasting must take place during daylight hours.
- g. Blasting sites must be properly guarded, and signs identifying the blast area must be posted.
- h. Proper precautions must be taken to ensure that employee(s) and equipment are moved to a safe distance from the blast.
- i. Notification of a pending blast must be made on all radio channels.
- j. Immediately prior to the blast, "radio courtesy" must be called for on a designated channel.
- k. Once radio courtesy has been established, the blast supervisor or their designee must ensure, once more, that the area is clear.
- l. Upon confirmation that the area is clear, the blasting supervisor must notify all personnel of the pending blast and its location. This notification must be followed by 20 seconds of warbling siren, followed by four long blasts of the same siren.
- m. Unless notified by one of the blocking personnel that it is not clear to blast, the blaster will detonate the shot upon completion of the siren blasts.
- n. After the blast has been detonated and the blaster has determined that all is clear, the blaster must broadcast on all radio channels that the blast is complete and that radio courtesy is clear on the designated channel.

- o. No one is permitted to re-enter the blasting area until all smoke, dust, and fumes have dissipated.
 - p. After the blast has been cleared, the blasting supervisor or their designee must conduct a thorough inspection of the blast area. During the inspection, the blaster must look for undetonated explosives or explosives that are burning.
 - q. If the blaster suspects or notes explosives burning at the blast site, all employee(s) in the area must be moved to a safe location and not return to the area for at least one hour.
 - r. If a misfire is located or suspected, the blasting supervisor must be notified, and proper precautions must be taken in the disposal of the misfire.
 - s. No employee is permitted to enter the blasting area for at least 30 minutes after any misfire.
 - t. After 30 minutes, the blast supervisor must assess the situation.
 - u. All misfires must be blown in place using the previously noted guidelines for safe blasting operations.
 - v. In the presence of electronic initiation devices, electronic communications equipment must not be used within 100 meters (approximately 329 feet).
8. Recordkeeping.
9. Copies of an explosives use and storage permit must be posted inside each magazine visible to persons opening the magazines. If storing explosives in magazines other than BLM-owned magazines, verification of properly permitted storage space must be completed prior to acquiring explosive material.
10. Current inventory documents must be maintained in each magazine. All explosive materials removed from or added to the magazines must be indicated on inventory sheets. The signature of the approved person removing or adding to the inventory is required at the time of the adjustment.
11. All training records must be maintained and available for inspection by authorized employees upon request.
12. Unexploded Ordnance (UXO).
13. UXO or discarded military munitions can be found in various locations and present a hazard to anyone who encounters it. Most commonly, UXO is found near military reservations. Although many military reservations in the early to mid-20th century were closed down and much of the land was transferred to federal, state, and local governments for public land, some was sold as private land. Also, many military units conducted training on public lands and have left munitions and pyrotechnics behind. Other types of explosives might also be found in or near abandoned mining areas. Additional information can be found in BLM Handbook H- 1703-2, "Military Munitions and Explosives of Concern: A Handbook for Federal Land Managers, with Emphasis on Unexploded Ordnance."

14. At a minimum, supervisors must ensure their personnel receive training on identification of UXO and the proper conduct of operations around UXO. This section provides an example of basic skills that personnel should employ to improve operational safety in the proximity of UXO. The following skills serve as guidelines for UXO training:

- 1) UXO is inherently hazardous. The deadly capabilities of UXO are categorized as conventional, chemical, biological, or any combination thereof. UXO pose a risk of injury or death to all personnel and citizens. They take the form of missiles, bombs, rockets, mines, or other devices and can range in size from very small to extremely large. Additionally, explosive ordnance is used in a variety of nonmilitary-related operations, such as construction/demolition sites and mining operations, and these types of operations also have the ability to leave UXO in their areas.
- 2) If a UXO hazard or object suspected to be UXO is discovered, there are four important steps to take: identify, mark, evacuate, and report.
 - a) **Identify.** When a UXO hazard is discovered, proper identification is important to report the hazard accurately. Accurate reporting of the hazard assists experts in determining clearance requirements and accurately warning other personnel of the hazard. Identify the type of UXO, if possible (known ordnance). Note features (categories such as dropped, projected, thrown, or placed) and size, shape, color, and condition of the ordnance (intact or leaking).
 - b) **Mark.** Marking the hazard warns other personnel and provides a locating mechanism for clearance by qualified personnel. Mark the hazard from where you are. Do not approach any closer to the hazard. When marking UXO use whatever material (such as engineer tape or warning tape) is available. Ensure markings are visible from all directions, even at night.
 - c) **Evacuate.** Evacuate all personnel and equipment from the area. When possible, evacuating personnel and equipment is the best protective measure. See Figure 15 for minimum evacuation distances based on the approximate weight of the UXO. Allow occupation of the area only by mission essential personnel and equipment. After evacuating all personnel and equipment, allow movement within the area only for essential operations.

Figure 15 – Evacuation Distances Based on Approximate UXO Weight

Explosive Weight (pounds)	Evacuation Distance (meters)
27 or less	350
30	360
35	380
40	400
45	410
50	430
100	540
150	610
200	670
250	730
300	770
400	850
500	910

- d) **Report.** First, report the incident to local law enforcement. Next, notify the ranger or hazardous material coordinator that has jurisdiction of the site. If sending the report by radio or mobile phone, transmit from a minimum-safe distance (100 meters) to avoid detonation. Reporting by radio or mobile phone can send an electrical pulse to the hazard causing detonation. Provide all pertinent details: size, shape, color, condition, landmarks, and grid coordinates. Further guidance for special precautions is found in BLM Handbook H-1703-2.

15. Wildfire Fireline Explosives.

Explosives are no longer used in BLM wildland fire operations. Any future consideration of returning to the use of fireline explosives must include the development of specific policies that comply with all current, relevant federal laws and BLM policies and the development of detailed technical guidance meeting all current industry standards.

E. References.

1. 27 CFR Part 555, Commerce in Explosives.
2. 29 CFR 1910.109, Explosives and blasting agents.
3. 30 CFR 955, Certification of Blasters in Federal Program States and on Indian Lands.
4. DOI, Office of Surface Mining Reclamation and Enforcement, Directives System, Reg-33, "Federal Blaster Certification Program and Blaster Enforcement."
5. 49 CFR Parts 171-177, Hazardous Materials Regulations
6. 49 CFR Parts 390-399. Federal Motor Carrier Safety Administration, Department of Transportation.
7. BLM Handbook H-1703-2, "Military Munitions and Explosives of Concern: A Handbook for Federal Land Managers, with Emphasis on Unexploded Ordnance."

Chapter 39 – Radiation Safety

A. Introduction.

Employees in the workplace can be exposed to ionizing radiation in a variety of ways. These include the use of soil density gauges, x-ray fluorescence analyzers, and work in and around abandoned uranium mines.

B. Purpose.

BLM employees should be aware of the sources of ionizing radiation present in the workplace, how to recognize them, and how to minimize exposure to them.

C. Program Elements.

1. Radiation Safety Program.
2. Radiation Emitting Devices.

D. Explanation of Program Elements.

1. Radiation Safety Program

When Bureau employees are assigned to work in or near areas where they may be exposed to radioactive material, whether it be contained in sealed devices or emitted from other sources, a Radiation Safety Program (RSP) must be established. The Radiation Safety Program shall include the following elements:

- a. Radiation Safety Officer,
- b. Handling and storage procedures,
- c. Transportation,
- d. Security,
- e. Personnel monitoring and recordkeeping,
- f. Records and reports,
- g. Response to incidents,
- h. Emergency procedures,
- i. Leak testing,
- j. Maintenance and maintenance records, and
- k. Training.

2. Radiation Emitting Devices.

Bureau employees use a number of devices that emit radiation, including soil moisture/density gauges and **X-ray fluorescence (XRF)** analyzers. These devices fall into two categories: nuclear

devices that contain radioactive source materials (licensed) devices and x-ray tube (unlicensed) devices that use high voltage electricity to generate x-rays. only when the unit is powered.

- a. **Licensed Devices/ Gauges.** The **Nuclear Regulatory Commission (NRC)** requires a general license for businesses and Federal, State and local government agencies to acquire, possess, or use devices that contain nuclear by-product (source) material. Covered devices include those designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere. All authorized users must adhere to the operating and emergency procedures outlined in NRC 10 CFR Part 30, NUREG-1556, and the BLM District/Field Office Radiation Safety Plan. The following requirements apply to licensed devices:
 - 1) **Authorized Users.** Individuals using the gauges are referred to as authorized users. Authorized users have the responsibility to ensure the surveillance, proper use, security, and routine maintenance of portable gauges containing licensed source material.
 - 2) **User Training.** All users of the gauges must receive approved training (Outlined in NUREG-1556, Vol. 1, and as specified in the Unit Radiation Safety Plan) in a portable-gauge manufacturer's course or in an alternative training program for gauge users approved by the Radiation Safety Officer identified on the license. This training is to be certified and training certificates must be on file with the Radiation Safety Officer prior to engaging in gauge operations. No one is to operate a nuclear gauge without the required training. Users will receive refresher training at least every 5 years to include radiation safety and regulatory requirements, emphasizing practical subjects important to safe use of the gauge; radiation vs. contamination; internal vs. external exposure; concept of time, distance, and shielding to minimize exposure; control and surveillance of gauges; location of sealed source within the portable gauge; inventory; recordkeeping; incidents; licensing and inspection by regulatory agency; need for complete and accurate information; employee protection; and deliberate misconduct.
 - 3) **Radiation Safety Officer Training.** Individuals serving as a **Radiation Safety Officer (RSO)** must receive training as directed in NUREG-1556.
 - 4) **Transportation.** Whenever a gauge is transported, shipping papers must be maintained in the transport vehicle within the reach of the driver. The required shipping papers consist of:

- a) A current copy of the **International Atomic Energy Agency (IAEA) Certificate of Competent Authority** (special form certificate) for each source in the gauge must be on file.
 - b) A bill of lading filled out in accordance with 49 CFR 172.200-204.
 - c) An Emergency Response Information document must be in the transport vehicle with the shipping papers and immediately accessible to the driver or emergency personnel.
 - d) The gauge must be controlled by constant surveillance when not in storage and must be secured from damage or theft while at temporary job sites and while on **temporary duty (TDY)**.
 - e) Whenever the gauge is transported in a vehicle, it must be locked in the trunk of a car, locked in a van, or secured by lock and chain and properly tied down while in an open-bed truck.
 - f) The gauge must be in a TYPE A package and a copy of the TYPE A Package Certificate provided by the gauge manufacturer must accompany the package during transportation.
 - g) The package must be properly marked, labeled, sealed, and inspected prior to each shipment.
- 5) **Personnel Monitoring.** All operators must be monitored for radiation exposure by personnel monitoring equipment (e.g., film badges). Processing of personnel monitoring devices must be performed by a qualified laboratory institution.
 - 6) **Leak Test.** Leak tests must be performed on the gauges at six-month intervals or at intervals approved by NRC.
 - 7) **Physical Inventory.** All gauges must be accounted for periodically. Physical inventories are to be conducted every 6 months. Physical inventory records must be kept for 5 years and the RSO must have copies of these inventories.
 - 8) **Public Dose.** Gauge users will ensure that licensed gauges will be used, transported, and stored in such a way that members of the public will not receive more than 100 millirem in 1 year, and the dose in any unrestricted area will not exceed 2 millirem in any 1 hour, for licensed operations. Members of the public include persons who live, work, or may be near locations where portable gauges are used or stored and employees whose assigned duties do not include the use of licensed materials and who work in the vicinity where gauges are used or stored. Operating and emergency procedures regarding security and surveillance are specified under that section of NUREG-1556, Public Dose. Public dose is controlled by each individual Unit Radiation Safety Plan, in part, by ensuring that gauges not in use are stored securely (e.g., stored in a locked area) to prevent unauthorized access or use. There should be a designated individual at each facility storing

a gauge who must calculate distance, time, and shielding when choosing a permanent or temporary storage location. Decreasing the time spent near a gauge, increasing the distance from the gauge, and using shielding (i.e., brick, concrete, lead, or other solid walls) will reduce radiation exposure. As a rule of thumb, gauges should be stored as far as away as possible from areas that are occupied by other employees and members of the public.

- 9) **Annual Audit.** Each facility storing a gauge should designate one individual to perform an annual documented audit (NUREG-1556, Appendix F), and note corrective actions taken. A copy of the audit must be sent to the RSO for signature and verification.
- 10) **Unlicensed Devices (RESERVED).**

E. References.

1. Latest Version of NUREG-1556, Vol. 1, Consolidated Guidance about Materials Licenses: Program Specific Guidance about Portable Gauge Licenses.
2. 10 CFR 19, Notices, Instructions and Reports to Workers; Inspection and Investigations.
3. 10 CFR 20, Standards for Protection against Radiation.
4. 10 CFR 30, Rules of General Applicability to Domestic Licensing of Byproduct Material.
5. 10 CFR 71, 49 CFR 100-185, Packaging and Transportation of Radioactive Material.
6. 29 CFR 1910.1096, Ionizing Radiation.
7. 49 CFR Parts 171-177, Hazardous Materials Regulations (DOT).

Chapter 40 – Search and Rescue

A. Introduction/Purpose.

Search and rescue (SAR) operations are the primary responsibility of state and/or local officials. The BLM will normally function in a supportive role during SAR operations on public lands.

B. Program Elements.

1. Authority.
2. Coordination and Assistance with SAR Organizations.
3. Response to Search Requests.
4. Employee Training and Certifications.
5. BLM Responsibilities.
6. State/Center/District/Field Office Responsibilities.
7. SAR Procedures for Missing/Overdue BLM Employees.

C. Explanation of Program Elements.

1. Authority.

According to the Federal Land Policy and Management Act, in an emergency, the BLM may incur expenses, as may be necessary, in the search for and rescue of persons lost on public lands, in protecting or rescuing persons or animals endangered by a calamity produced by natural forces, or in transporting deceased or seriously ill or injured persons.

2. Coordination and Assistance with SAR Organizations.

Local and state authorities have the primary responsibility for locating persons lost on public lands. Bureau personnel are authorized to assist them in searching for persons lost on or near the public lands. The extent of such assistance depends on local agency capabilities, BLM training and equipment, and the nature of the emergency. BLM personnel do not replace existing SAR organizations, but supplement those already in existence. Bureau personnel must, to the maximum extent feasible, cooperate and coordinate with local, state, and other Federal agencies within their areas of responsibility. Areas of cooperation often fall into support roles such as, but not limited to, interagency radio communications, shared patrol responsibilities, cooperative search and rescue planning and implementation, cooperative management agreements, monitoring a search effort and completing required reports, providing local agencies with information regarding topography, visitor use areas, water sources, mine shafts, structures, etc., and supplying maps, vehicles, radios, search equipment, or aircraft. Appropriate support would include using employees to manage or participate in searches.

3. Response to Search Requests.

Whenever a request for a search is received, BLM employees must relay the nature of the situation to local authorities through the appropriate manager. When encountering a search situation on public lands, BLM employees may take charge of the situation when no local authorities are present on the scene. Whenever local authorities are on the scene of a search incident on or near public lands, Bureau managers may offer available BLM assistance.

4. Employee Training and Certifications.

BLM employees who will provide on-the-ground SAR support need appropriate skills acquired through training to participate in specific tasks, such as climbing, off-highway vehicle use, diving, operating a water vessel, etc. BLM employees also need to be trained in first aid and possess a current certificate. Additionally, BLM employees who will be involved in SAR operations should be in good physical condition commensurate with a wide range of environmental circumstances.

5. BLM Responsibilities.

Within the limitations of the FLPMA, the BLM's responsibilities include:

- a. To participate in a supportive role for national, regional, and intrastate SAR emergencies. The BLM will normally be in a supportive role in SAR operations. BLM employees may provide emergency assistance to persons whose lives or safety are in danger on or adjacent to public lands.
- b. To take the lead role when local SAR emergencies occur, or are believed to occur, on lands or facilities administered by the BLM and other assistance is not available. In cases where the BLM is the lead on a SAR, a formal risk assessment will be accomplished.
- c. To take a temporary lead role in any SAR emergencies in which immediate and quick response can save lives. The concept of "closest forces" will be used and the lead role maintained until other assistance becomes available and responsibility is transferred. However, BLM may take the lead for expediency in life or death situations or when non-Bureau SAR programs are not capable of providing the services. Such assistance must be fully coordinated with local agencies that have the primary responsibility for emergency assistance.

6. State/Center/District/Field Office Responsibilities.

Comprehensive SAR plans must be developed for each state/center/district/field office. Plans must include responsibilities, SAR procedures for incidents involving the public, SAR procedures and incidents involving BLM employees, a directory of trained SAR contacts, and available resources. Field personnel involved in SAR operations must be trained in the specific function in which they will participate. Managers must ensure that visitor services personnel are supplied with search equipment necessary to provide assistance, as needed. Districts, Field

Offices, Resource Areas, and other detached facilities will write Search and Rescue Plans or Emergency Action Plans that include search procedures for lost, overdue, or missing employees. The purpose of the plan is to expedite emergency actions by various individuals to determine status, effective rescue, facilitate medical treatment, and handle security measures involved in a successful search and survival mission.

7. SAR Procedures for Missing/Overdue BLM Employees.

Reference procedures for BLM employees versus procedures for non-BLM employees/public. BLM districts must have a comprehensive SAR plan in place to respond to missing employees. The BLM will initiate whatever action it deems necessary if a SAR action involves a BLM employee.

- a. Determine whether a search needs to be implemented for the employee(s).
This can be done by:
 - 1) Attempting contact with the missing individual(s) by radio or phone.
 - 2) Checking with their supervisor and co-workers as to their whereabouts.
 - 3) Checking the compound, parking lots, and surrounding area for the missing person's private and work vehicles.
 - 4) Contacting by phone the family and/or friends of the missing individuals for information as to their whereabouts.
 - 5) Dispatching a BLM employee to the employee's residence and/or contacting the local law enforcement office to request that they do so.
- b. If contact with the missing employee cannot be made, then:
 - 1) Notify the appropriate manager.
 - 2) Notify the appropriate primary search and rescue agency.
 - 3) Notify the appropriate Logistics Center and/or Dispatch Center.
 - 4) Once it has been determined that there is a lost, overdue, or missing employee or employees, it is necessary to gather additional information:

- a) Names, number of persons missing, descriptions of person(s): gender, nationality, height, weight, hair color, eye color, and attire;
 - b) Missing person's travel plan and proposed schedule, mode of transportation, work assignment, type of communications equipment missing person(s) took on assignment;
 - c) Time persons were last seen or contacted, time persons were to complete work assignment, time persons were to return to base; and
 - d) The person's planned destination, departure point, travel routes and any stops.
- c. Once appropriate information has been gathered, provide the information to the primary search and rescue coordinator.

D. References.

1. The Federal Land Policy and Management Act of 1976.

Chapter 41 – Field Work

A. Introduction.

Bureau activities sometimes require employees to travel and work in remote areas or under hazardous field conditions. Examples include work in and around caves and active or inactive mines, and near active forestry operations.

B. Purpose.

BLM employees should be aware of the hazards encountered during field work activities. When they encounter these hazards, they should recognize them and understand which actions can be taken to mitigate them.

C. Program Elements.

1. First Aid
2. Lightning Strikes
3. Field Personal Safety
4. Tree Climbing
5. Poisonous Plants
6. Poisonous Insects
7. Poisonous Snakes
8. Horse Travel
9. Water Safety
10. Forestry
11. Altitude

D. Explanation of Program Elements.

1. **First Aid.** Employees whose field work assignment makes it difficult to reach emergency medical care within 10 minutes must be trained to render first aid and **cardiopulmonary resuscitation (CPR)**. First-aid kits should be available in two different centrally located areas (i.e., kitchen, shop area, recreation tent, project leader's tent, etc.). Kits should be sufficient to accommodate the number of people in the crew.
2. **Lightning Strikes.**

The passage of electricity through the body can either burn tissues or cause only muscle spasms or contractions. Vital nerve centers may be blocked, causing the heart or breathing to stop.

Immediate revival should be attempted using CPR techniques. A lightning struck person can be touched without any risk of shock to you. Other recommendations include:

- a. Observe the 30/30 rule. If you see lightning and hear thunder claps within 30 seconds, seek protection and do not resume work until 30 minutes after storm activity has passed.
- b. Do not stay on ridge tops, in wide-open areas, near ledges or rock outcroppings, and do not group together.
- c. Do not operate landline telephones, machinery, or electric motors. Hand-held radios and cellular phones can be used.
- d. Motor vehicles provide good protection against lightning strikes.

3. Field Personal Safety.

For guidance on Personal Safety during field work activities see Appendix 10 – Personal Safety Tips and the personal safety card on the BLM Safety Program [Best Practices and Lessons Learned Sharepoint Site](#).

4. Tree Climbing.

All tree climbing must be done in conformance with the United States Department of Agriculture National Tree Climbing Guide.

5. Poisonous Plants.

All employees subject to potential exposure to poisonous plants should be instructed on how to identify these plants, i.e., poison sumac, poison oak, and poison ivy. Take extra precautions with persons known to be highly sensitive to poisonous plants. If practical, set up work assignments so highly sensitive persons do not have to work in poisonous plant areas.

Basic safety precautions:

- a. Wear proper field attire. Dried poison oak resin on clothing can cause a rash if it touches the skin. Wash clothing daily.
- b. Wash your hands. While the palms of the hands rarely are affected, poison oak resin can be transferred from your hands to other parts of your body. The plant resin can be removed by rinsing affected areas with water. **Always** wash your hands before and after urinating. Use caution when wiping sweat from your face or around your eyes.
- c. Wash tools. Tools can also become contaminated with plant resin. Rinse tools with water.
- d. **Do not** use unidentified leaves as emergency toilet paper.
- e. **Do not** attempt to desensitize yourself by eating the leaves. This can cause severe lesions in the mouth, and around the rectum, and can cause kidney damage. Do not stand in the smoke of fires made of brush as it may contain

unburned particles of poison oak.

- f. **Do not** use a leaf mulcher in areas with poison oak unless your legs and arms are covered and you are wearing a face shield.

6. Poisonous Insects.

7. Employees assigned to areas of heavy insect infestation (e.g., ticks, chiggers, spiders, scorpions, bees, wasps, yellow jackets) should wear proper field attire. Additional protective clothing or equipment for specific activities will be determined by the risk assessment. Secure trousers by tucking pant legs into socks to prevent insects from crawling up pant legs.

8. Bees, Wasps, Hornets

- 1) Bees are attracted to odors and bright colors. Hairspray and gels, sunscreen, scented lotions, perfumed toiletries, and suede or leather odors attract insects and should be avoided. Bright colors and bright metal objects, such as jewelry, belt buckles, etc., also attract bees.
- 2) Swatting or running may aggravate stinging insects. Shield your face with your arms and move slowly out of a danger zone or lie face down on the ground if under attack. Do not poke at bee or wasp nests! People who are allergic to bee stings should carry a bee sting kit and alert co-workers that they are allergic.
- 3) **Symptoms.** One or more of the following symptoms may occur at the sting site and may last from 48 to 72 hours: pain, redness, swelling, itching and/or burning.
- 4) **Treatment.** Care of the sting site and pain relief are the two main concerns.

- a) Bee Sting Kit/Epinephrine. When a bee or wasp sting causes throat swelling, shortness of breath or difficulty breathing or signs of shock, the patient should immediately receive epinephrine. If one or more of these symptoms is present and a bee sting kit is not available, be prepared to administer CPR.
 - b) Remove the stinger with an outward scraping motion of a fingernail, credit card, knife blade, or a needle. Do not pinch the stinger between nails or tweezers because this action can squeeze the attached venom sac and worsen the injury.
 - c) The honeybee has a barbed stinger that could be left in the skin. The venom sac of the honey bee stinger may be attached and continue to inject venom for some time after the bee has left.
 - d) Remove jewelry from the affected area.
 - e) Wash the area, if possible.
 - f) Apply ice or cold water to the sting site.
 - g) Administer oral antihistamines.
- b. Ticks.
- 1) When working in areas infested with ticks, tuck your pant legs into your socks, tuck your shirt into your pants, and apply a tick repellent to your clothes. Perform a body check at the end of each workday. Pay particular attention to armpits, navel, behind the ears, and in the groin area. At night, place clothing where ticks, spiders, or scorpions cannot get in them. Arrange bedding so that insects cannot crawl into it during the day and night. Remove all ticks. If you find a tick on your body, the sooner you remove it, the better.
 - 2) **Tick Removal.** Tweezers work best at removing ticks. If fingers are used, shield them with a piece of paper or medical gloves. Grasp the tick as close to the skin surface as possible and pull outward with a steady, even pressure. Do not jerk or twist the tick, as you may cause the head of the tick to break off in the skin. Take care not to squeeze, crush, or puncture the body of the tick, as this may cause the injection of fluids from the tick to enter the wound. After removing the tick, disinfect the area with alcohol or soap and water. You may want to keep the tick in a small jar for later identification in case you develop additional symptoms (see below.) Caution! Folklore methods of tick removal, such as painting the tick with petroleum jelly, fingernail polish, or alcohol, or applying a hot match head do not work.
 - 3) Tick-Borne Diseases.

- a) Lyme disease is found in many parts of the United States and is transmitted by infected deer ticks. Deer ticks are small in size and black or reddish-brown in color.
 - (1) Prevention: An infected tick must be attached to the skin for 12 to 24 hours in order to transmit the spirochete that causes Lyme disease, so prompt tick removal is a good safeguard against the disease.
 - (2) Symptoms: Headache, rash at the bite site, stiff neck, fever, muscle ache, flu-like symptoms, and general malaise. Symptoms can develop within a few days or after several weeks. In about 70% of Lyme disease cases, a “bull’s eye” rash or lesion appears.
 - (3) Treatment: If these symptoms occur following tick exposure, seek prompt medical attention. If left untreated, Lyme disease can cause severe health problems. Prompt and accurate diagnosis is essential.
- b) Rocky Mountain spotted tick fever commonly found in the Rocky Mountains of the western United States is transmitted by small, brown ticks with distinctive spots.
 - (1) Prevention: During tick season, spray tick repellent on your clothing. Check your body daily for evidence of ticks. Prompt removal is the most effective method of prevention.
 - (2) Symptoms: Symptoms normally appear within 2-14 days and are characterized by headache, fever, loss of appetite, rash, which begins on the wrists and ankles and spreads over the entire body, swelling and muscle aches.
 - (3) Treatment: Seek medical attention.
- c. Mosquito-borne Diseases.
 - 1) **West Nile Virus (WNV)** is a potentially serious illness that affects the central nervous system and is transmitted by mosquitoes. Experts believe that WNV is established as a seasonal epidemic in North America that flares up in the summer and continues into the fall. Mosquitoes become carriers of the disease when they feed on infected birds. Infected mosquitoes spread WNV to humans and other animals when they bite. WNV is not spread through casual contact such as touching or kissing a person with the virus.
 - 2) **Prevention:** The easiest and best way to avoid WNV is to prevent mosquito bites. When you are outdoors, use insect repellents containing DEET and use as directed. Wear light-colored clothing so you can easily see mosquitoes that land on you. Avoid outdoor activities at dusk and at dawn. Because mosquitoes are most active at dusk and dawn, be sure to use insect repellent and wear long sleeves

and pants during these periods. You may choose to stay indoors during these hours. Get rid of mosquito breeding sites by emptying standing water.

- 3) **Symptoms:** Humans typically develop WNV symptoms between 3 and 14 days after they are bitten by an infected mosquito. Approximately 80 percent of people who are infected with WNV will not show any symptoms at all. Up to 20 percent of the people who become infected will display symptoms which can include fever, headache, and body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Symptoms can last for as short as a few days, though even healthy people have been sick for several weeks. About one in 150 people infected with WNV will develop severe symptoms, such as high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent.
- 4) **Treatment:** There is no specific treatment for WNV infection. With mild symptoms, fever and aches normally pass on their own and it is not necessary to seek medical attention though some choose to do so. If you develop symptoms of severe WNV illness, such as unusually severe headaches or confusion, seek immediate medical attention. Severe WNV illness usually requires hospitalization where patients may receive supportive treatment including intravenous fluids, help with breathing, and professional medical care. Pregnant women and nursing mothers are encouraged to talk to their doctor if they develop symptoms that could be WNV.

9. Poisonous Snakes.

Not all snakes are poisonous: however, it is safest to avoid contact with all snakes, when possible.

- a. **Snake Characteristics.** Snakes are temperature sensitive. At cool to cold temperatures, snakes are slow and lethargic; at hot temperatures, snakes are quick, but uncomfortable and will normally seek cool shelter. On a cool morning, a snake may be sunning on a warm ledge; in the heat of the day, a snake may be under a rock or brush where it is cool. Snakes have excellent camouflage and are difficult to see. Do not underestimate the speed and agility of a snake. Rattle-snakes can strike over a distance of at least one-half their length and can strike faster than you can jump. Snakes do not need to be coiled to strike, so give them a wide margin. Some snakes swim, so be alert near water.
- b. **Safe Field Behavior.** Assume that all snakes are poisonous and avoid contact whenever possible. Wear appropriate field clothing and boots. Be alert when walking in back country, especially if the ground is obscured by foliage. Walk

on clear paths as much as possible. A walking stick can be useful. Be particularly careful around logs and fallen trees. Watch where you are putting your feet and hands at all times. Do not pick up rocks or other objects that might conceal a snake. Use a tool to turn the rock over first.

- c. **First Aid for Snake Bites.** If medical help can be secured within one hour, no first-aid measures are necessary. However, if medical help is further away, do the following:
- 1) Keep still and avoid panic.
 - 2) Move away from the snake. Snakes usually stay within twenty feet of the incident.
 - 3) Apply a constricting band, 2-inches wide, above the bite site.
 - 4) Immobilize the affected extremity.
 - 5) Do not take/give aspirin.
 - 6) Seek medical help. Do not wait until symptoms develop as the onset of symptoms may be delayed for up to six hours.
 - 7) Caution! No ice packs or ice water immersion, no tourniquets, no incisions and suction, and no electrical current in the treatment of snake bites.

10. Horse Travel.

Only trained and experienced personnel should ride, handle, saddle, or pack horses. A demonstrated ability to ride on all types of terrain, handle, saddle, and pack horses is required. Use of personally owned horses and equipment must be authorized.

- a. **Inexperience with Horses.** Inexperienced personnel who must use horse transportation must be supervised at all times by experienced personnel and be provided with specific step-by-step instructions during each phase of activity. Inexperienced personnel must not engage in any non-transportation horse activity (wrangling, roundup, etc.). Inexperienced personnel should consider the following guidelines:
- 1) Speak to animals upon approach. Avoid quick movements and coming up to them from the rear.
 - 2) Lead animals around gently after saddling. Check cinch for tightness before mounting or packing frequently when riding.
 - 3) Never wrap reins or lead rope around hand.
 - 4) Avoid carrying too much gear and equipment on a saddle horse. Balance the weight on both sides.
 - 5) Avoid excess lead rope to prevent entanglement.
 - 6) When tying an animal, avoid slack that might entangle person or animal. Never tie to a barbed wire or woven wire fence.

- 7) Always use a halter when tying an animal.
- 8) Tie animals to objects that they cannot walk completely around them. Take special precautions with animals that might panic easily.

b. Tips for Riding a Horse.

All personnel should consider the following suggestions:

- 1) Do not wear shoes or boots that may hang up in the stirrup.
- 2) Wear snug-fitting clothing.
- 3) Use chaps when riding in brush.
- 4) Never beat or abuse an animal.
- 5) Always mount and dismount from the left side, keeping near rein tight. On slopes, mount from the upper side. Never wrap rein around saddle horn.
- 6) Do not gouge horse with spur or heel or surprise animal with erratic actions.
- 7) Dismount horse when lightning is near or overhead. A clap of thunder might stampede an unpredictable animal.
- 8) Avoid running a horse on pavement, frozen ground, or up and down hills.
- 9) Never shoot a firearm while on horseback.
- 10) Do not force an animal into impossible situations. Get off and lead the horse across areas where there is poor footing or clearance.
- 11) Picket or hobble animals only when necessary, but be aware of hazards such as mud holes, obstructions, other animals, etc.

11. Water Safety.

12. **Fording Streams.** As a guiding principle, never ford a water crossing if a satisfactory above-water crossing is nearby. If it becomes necessary to ford a stream, the following procedures are recommended:

- 1) Using a stick or pole, place it on the upstream side at a slight angle. The force of the water will help hold the pole down.
- 2) Work the pole ahead to test for deep holes, then wade up to the pole.
- 3) Work in teams of two or more within sight of one another.
- 4) Avoid crossing streams on logs, wade if possible. If necessary, cross by straddling rather than by walking on the log.
- 5) Secure chest waders around the chest with quick-release belt or rope to prevent filling.
- 6) If depth, velocity, or stream bottom makes continued wading too

hazardous, back out of the stream using the wading pole to brace yourself. Turning around exposes a broader body surface to the current and increases chances of falling.

- 7) If carrying backpacks, use quick-release harnesses or slip off the upstream shoulder strap so that pack can be discarded in emergency.
 - 8) Use lifelines securely anchored on the bank for hazardous crossings.
- b. **Vehicle Water Crossings.** Before crossing through unfamiliar water, complete a field risk assessment and check for hidden obstacles such as logs, stumps, rocks and debris. Use a stick to check depth and bottom conditions prior to crossing. Most 4x4 vehicles can be driven in water that is hub-deep without taking any special precautions. Remember to cross streams only at legitimate fords. Drive slowly and steadily, creating a small bow wave in front of the bumper that will reduce the height of the water behind the bumper and keep the water away from the engine. Cross fast-flowing streams at an angle, driving slightly upstream. This presents a smaller surface area and lessens the force of the stream on the vehicle. Apply your brakes several times after a water or deep mud crossing to dry out. Do not cross fast-flowing deep streams, as you and your vehicle might be swept away.
- c. **Swimming.** If swimming is allowed, designate a person, qualified in water safety, to supervise the activity. Have a lookout observing the swimmers at all times. Use a buddy system — no one shall enter the water alone. The swimming area must be equipped with strategically placed lifesaving equipment, such as reaching poles, lines, and ring buoys, or Type III throwable PFD (flotation aid). Inspect swimming areas for treacherous currents, deep holes, or other hazards. Swimmers should wait an hour after meals before swimming. Do not swim if overheated. Never dive into unfamiliar water. Do not swim in stock-watering holes, or in tanks with vertical walls.

13. Forestry.

Danger Trees. Employees working in forested areas where the timber canopy is above their heads should pay particular attention to danger trees. Danger trees are trees that present a hazard to people due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem, or limbs, and the position, direction or lean of the tree. Trees with dead, broken, or rotted limbs and treetops that are suspended in overhead branches are often referred to as “widow makers” because they can easily break/fall and employees should give them a wide berth. Employees should also exercise added precaution when under the forest canopy in gusty and/or windy conditions. Workers who are not part of a felling crew should never be closer than two and one-half (2.5) times the height of the tree(s) being felled.

14. Altitude-Related Problems.

15. Most difficulties at high altitude are a direct result of the lowered concentration of oxygen in the atmosphere. High-altitude pulmonary edema (excessive fluid in the lungs), “altitude sickness”, usually occurs in an unacclimatized individual who rapidly ascends to an altitude exceeding 6,600 feet, particularly if heavy exertion is involved. Symptoms include:

- 1) Headache,
- 2) Fatigue,
- 3) Mental disorientation,
- 4) Rapid breathing,
- 5) Restlessness,
- 6) Vomiting and nausea,
- 7) Hallucinations,
- 8) Difficulty walking, and/or
- 9) Loss of consciousness.

b. Treatment:

- 1) Monitor the person’s airway, breathing, and circulation.
- 2) Quiet and reassure the patient to conserve oxygen and energy.
- 3) If auxiliary oxygen is available, allow patient to breathe air from this source. Keep the patient warm and at rest until symptoms subside and normal breathing returns.
- 4) If the symptoms persist, move the patient to a lower elevation.
- 5) Do not ascend to higher altitude when symptoms are present.

E. References.

1. 29 CFR 1910.151(c), Medical Services and First Aid.
2. Official Use of Horses, BLM Manual 1113.

Chapter 42 – Machines and Tools

A. Introduction.

Machines and tools assist BLM in maintaining its facilities and accomplishing its mission. To help prevent injuries, they shall be properly maintained, operated, stored, and inspected. Only trained and authorized personnel may operate shop equipment and all required PPE must be used.

B. Purpose.

This chapter provides guidance for use and care of machines and tools commonly used in shops, warehouses, and field work.

C. Program Elements.

1. Portable Hand Tools.
2. Portable Electric Tools.
3. Radio Equipment.
4. Fixed Machines.
5. Compressors, Portable Air Tanks, and Air Tools.
6. Welding and Cutting.
7. Spray Painting.

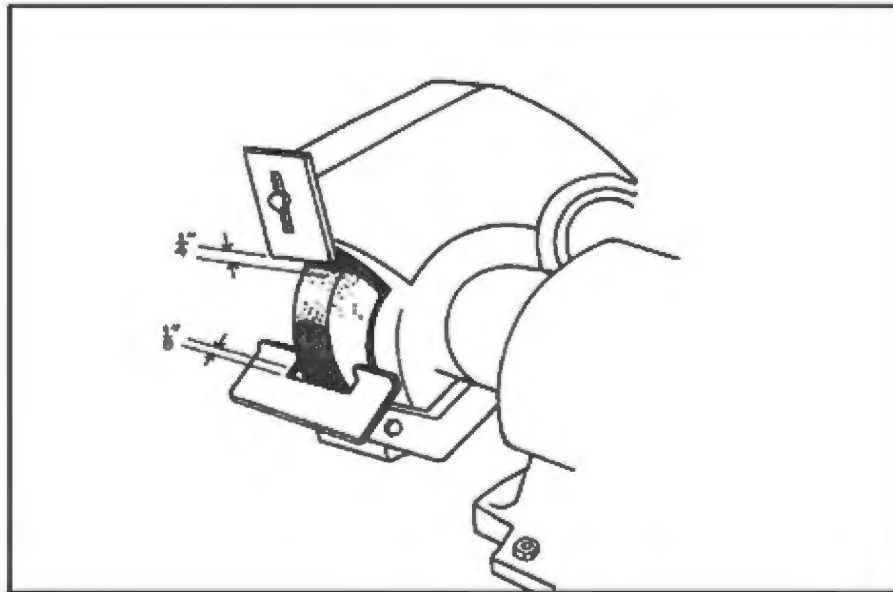
D. Explanation of Program Elements.

1. Portable Hand Tools
2. Tools must be kept sharpened with a splinter-free handle and a tight head. Ends of axe handles and other swinging tools must be treated to prevent slippage and wedges inspected for tightness.
3. Ensure ample clearance from objects and persons near the swing arc of chopping tools. Maintain 15-foot space between workers using tools and allow overhead clearance when using a brush-cutting tool. Always chop away from feet, legs, and body.
4. Sheath chopping tools when not in use. Do not leave tools in a normal path of movement or sticking in a tree or stump. Be watchful of the force released by cutting a sapling that is being held in a bowed position by adjacent trees or brush.
5. Tools must be hand carried on the downhill side, but not carried on the shoulder. If tripping, slipping, or falling, throw the tool to the downhill side and use both hands to regain balance or break a fall.

6. When using chipping tools, eyes must be protected from flying particles. Use screens to protect other persons from flying chips.
 - a. Screwdrivers must be used with an insulated handle and shaft for all electrical work. Do not use a screwdriver as a chisel.
7. Files must be kept clean to reduce slipping and gloves must be worn to protect hands when filing sharp objects. Do not use a file as a pry.
8. Teeth guards must be used when carrying a crosscut or rip saw.
9. Chain saws.
 - 1) Follow manufacturer's operating and safety instructions. Training (S-212) and PPE are required for chainsaw operators. Required PPE for chainsaw operators are chaps, ear, eye, face, head, foot, and hand protection. Other required equipment includes wedges and a single-bit axe.
 - 2) Blades must be placed vertically before carrying a saw and the chain must be guarded. Carry saws on the downhill side with the blade to the rear. Saw must be secured when transported in vehicles.
 - 3) Engines must be stopped for cleaning, adjustments, or repair and before refueling. Fuel tanks will be filled on bare ground and any spilled fuel will be wiped off the engine. Start saws at least 10 feet away from refueling areas. Do not smoke while fueling or while the saw is running. Fuel tanks must be purged prior to storage.
 - 4) Keep co-workers away from chainsaw starting and operation.
10. Portable Electric Tools.
 11. Power tools must be inspected and tested regularly and maintained in good condition. All electric tools must be three-wire grounded and **ground fault circuit interrupter (GFCI)** protected, or double-insulated.
 12. Three-wire ground systems supplying electric power tools must be tested regularly and maintained in good condition. Use only electric cords and plugs that are in good condition. Tool cords must be protected against insulation damage during use and unplugged when not in use.
 13. Do not use power tools without proper training and authorization. Power tools must not be operated where flammable vapors or gases are present or in wet areas.
 14. All portable electric tools must have the manufacturer's guards in place. Tools that are damaged, have dull blades, damaged cords, or are otherwise unserviceable must not be used.
 15. Drill-chuck wrenches must be eject type. Unplug tools when changing bits or accessories. Always anchor material being drilled.

16. Bench grinder guards must be in place and properly adjusted. Tool rests must be one-eighth inch away from grinding stones and tongue guards must be one-fourth inch away (see Figure 16).
17. Motor-driven grinding stones must be inspected for cracks, damage, and excessive wear at least weekly. Stones must be kept free from oil and properly dressed. Discard defective stones.

Figure 16: Bench Grinder Guards



18. Radio Equipment.

AC-powered radio equipment cabinets must be locked, and keys must be available only to specially instructed and authorized radio technicians or personnel. Whip antennas will be provided with safety knobs, closed loops, or other protective devices to prevent injury. Only those qualified and trained personnel may climb antenna towers. Appropriate PPE, such as fall protection equipment, etc., must be worn when climbing high structures. Do not work on energized antennas.

19. Fixed Machines (woodworking and metalworking)

20. Personnel must not wear loose clothing, ties, or jewelry, or have loose hair that may catch in moving machinery.
21. On equipment where injury to the operator might result if motors were to restart after power failures, provision must be made to prevent machines from automatically restarting upon restoration of power.

22. Machines must be located to ensure adequate space for movement of the operator and handling of stock. Safety zones must be marked around each machine. Machine switches must be within immediate reach of the operator.
23. Keep floor and work areas free of sawdust, scrap, and excess material.
24. Anchor machines designed for a fixed location.
 - a. Machines must be shut down and locked in accordance with lockout/tagout requirements before authorized and experienced persons make repairs.
25. Machines that are operating must be attended at all times and no machines may be operated unless required guards are in place and functional.
26. Compressors, Portable Air Tanks, and Air Tools.
27. All compressor tanks must be in compliance with the **American Society of Mechanical Engineers (ASME)** standard, conform to state laws, and be inspected monthly for leaks and signs of corrosion on surfaces. Clean or replace air filters, replace worn parts, and remove corrosion, as needed. Maintain a service log.
28. Never replace brass fusible plugs with an ordinary pipe plug.
29. All pressure tanks or lines must have safety valves, air-pressure gauges, and a drain cock at the lowest point on the tank that is opened periodically to drain the condensation. Air compressors must be drained periodically to allow condensation to escape and reduce rust in the tank.
30. Portable Air Tanks are pressure tanks that can be filled at a maintenance shop, gas station, or other air compressor. These air tanks are normally used to inflate low or flat tires in the field. Homemade or shop made tanks must not be used. Portable air tanks must have:
 - 1) an over-pressure device, either a pop-off valve or a frangible disk, and
 - 2) a pressure gauge. The maximum allowable working pressure must be painted or stenciled on the tank.
 - b. Portable air tanks must be inspected and drained periodically. If the tank does not have a separate bleed valve, remove the air outlet fitting and manually drain any accumulated fluid. A service log must be maintained.
 - c. Prior to each use, visually inspect portable air tanks for damage, corrosion, improperly functioning valves, expired disposal date, or other potential safety problems. Special emphasis should be given to sharp indentations that would serve as stress points or could be corroded internally. If there is any question as to the safety or serviceability of a portable air tank, dispose of it immediately.
 - d. Prior to placing a new tank in service, **PAINT** the disposal date on the tank. Use of metal stamps can damage and weaken the tank. Do not use a portable air tank with an expired disposal date. Portable air tanks must be disposed of five years after being put into service. Tanks must be disposed of by

depressurizing the tank, removing all fittings, and cutting a hole or the entire end of the tank.

e. Air Tools.

- 1) Specified PPE, such as earplugs, protective shoes, respirator, gloves, etc. will be worn when operating air tools.
- 2) Do not use air tools unless a fixture on the tool retains the replaceable bit or jack set. Retainers must be inspected for cracks daily.
- 3) Air hose couplings must have safety chains to keep them from whipping loose if coupling fails. Release pressure and unkink hoses before breaking connections.
- 4) Never aim air hoses at personnel. Do not use pressurized air to blow dust or chips from hair or clothing. Compressed air used for cleaning purposes must be equipped with a valve that reduces the pressure to less than 30 psi when dead-ended and then only with effective chip guarding and PPE.

31. Welding and Cutting.

32. Only qualified welders, mechanics, machinists, or specially qualified personnel are allowed to use welding equipment. Appropriate PPE must be worn.

33. Confine welding to well-ventilated areas and away from flammable and combustible materials. Keep sparks and flames away from cylinders and hose lines. Remove all flammable or explosive material in the areas of welding operations. The correct type of fire extinguishing equipment must be easily accessible at all times during welding operations.

34. Before cutting into tanks or drums, determine the present or previous contents. Drain, steam clean, and thoroughly dry tanks and drums that held oil, gasoline, or other highly flammable fluids. Fill the tank or drum with water up to the point to be welded. Leave an opening for steam generated during welding to escape.

35. Use a respirator or point-of-operation exhaust ventilation when welding on metals coated with paint containing lead or zinc or when welding brass. Fumes from these metals are toxic. Adequate exhaust systems must be provided to ensure removal of injurious fumes and gases. Respirators must be appropriately matched to the toxicity types and levels being generated, and they must meet all respiratory requirements in chapter 22, Respiratory Protection.

36. Curtains or screens must be used around all welding locations.

37. Ensure that hoses are equipped with appropriate flashback devices.

38. Spray Painting.

39. Where spray-painting operations are regularly performed indoors, painting must be done in specially constructed, isolated, fire-resistant areas with approved electrical equipment. All motors, fixtures, switches, and electrical devices must be explosion-proof. All sources of ignition must be eliminated, and spray booths must be fitted with sprinkler heads in accordance with **National Fire Protection Association** (NFPA) requirements. Smoking is prohibited. A fire extinguisher of the correct type and size must be available.
40. All paint labeled as flammable must be stored and mixed in an approved flammable liquid storage cabinet or flammable storage shed.
41. Painting areas must have adequate ventilation to remove flammable and toxic substances and respirators must be worn when spray painting.

E. References.

1. 29 CFR 1910 Subpart O, Machinery and Machine Guarding.
2. 29 CFR 1910 Subpart P, Hand and Portable Power Tools and Other Hand-held Equipment.
3. 29 CFR 1910.252, Welding, Cutting, and Brazing - General Requirements.
4. 29 CFR 1910.268, Telecommunications.
5. 29 CFR 1926, Subpart I, Tools – Hand and Power.
6. 29 CFR 1926, Subpart J, Welding and Cutting.
7. NFPA 51B, Fire Prevention during Welding, Cutting and Other Hot Work.

Illustration 1 – Sample Chemical Inventory Sheet
Chapter 21

Chemical Identity or Label Name	Location and/or Area Used	Date Added to Inventory	SDS Obtained (Yes/No)	Vendor or Supplier (Name and Phone #)

Retain this inventory record for 30 years in accordance with 29 CFR 1910.1020.

Illustration 2 – Sample Hazard Communication Training Checklist And Attendance Sheet

Chapter 21

Topic: _____ Conducted by: _____

Date: _____

Subjects Covered:

1. The OSHA Hazard Communication Standard (29 CFR 1910.1200) and a review of the specific workplace written hazard communication program.
2. Types and locations of hazardous chemicals used in the workplace.
3. Implementation of the hazard communication program in the work area, where to obtain a copy of the written program, how to read and interpret information on labels and safety data sheets, and how employees can obtain and use the appropriate hazard information.
4. Appropriate measures employees must take to protect themselves from hazards (e.g., engineering controls, work practices, and the use of personal protective equipment).
5. Methods that must be used to inform employees of the hazards of non-routine tasks and the hazards associated with chemicals contained in unlabeled pipes (e.g., helium gas pipes, oil pipes, oil tanks) in their work areas.
6. Emergency procedures and the location of the nearest health facility that can provide medical or other occupational health services.
7. Hazardous materials spill and leak procedures.
8. Employee training records, which must be maintained for the duration of employment, plus 1 year.

Attendees:

Name	Employee ID #
_____	_____
_____	_____
_____	_____

Supervisor's signature: _____

Illustration 3 – Sample Respirator Inspection Checklist

Chapter 22

The assigned user must check all respirators before and after use to ensure:

- a. Tightness of connections and good condition of all parts, including the face piece, head straps, valves, connection tube, cartridges, canisters, and filters.
- b. The face piece is free from damage.
- c. There are not any damaged flexible parts (i.e., pliability, elasticity, and signs of deterioration).
- d. A proper filter, cartridge, or canister is available for the expected atmospheric hazard. Inhalation and exhalation valves are in good condition.
- e. Gaskets/seals are in good condition.
- f. Filters, cartridges, and canisters are replaced at proper intervals and according to the manufacturers' specifications.

Inspection procedures for supplied-air respirators:

In addition to the above checklist items, the user should also inspect the following areas:

- a. Check the face piece and headgear suspension for worn or broken parts; check protective screens if applicable; and look for kinks or breaks in hoses.
- b. Check for loose fittings and proper regulator/valve settings (per manufacturer recommendations).
- c. For self-contained breathing apparatus units, check the integrity of the regulator, harness assembly, and all straps and buckles. The air pressure of the compressed gas cylinder should also be checked. Finally, the user must always ensure that the regulator and warning device alarm function properly.

Inspection procedures for filtering face piece respirators:

- a. Check for holes in the filter medium.
- b. Check for elasticity and deterioration of the head straps.
- c. Check the metal nose clip for deformation or deterioration.

Illustration 4 – Exposure Levels And Durations

Chapter 27

Occupational noise exposure must be controlled so that employee exposures are less than the combination of exposure level and duration, as shown in Table 1.

Table 1.

Comparison of Duration Per Day in Hours to Allowable Sound Level in dBA (Slow Response Sound Pressure Level)		
Duration per day (hours)	Sound level (dBA, slow response)	PEL = 90 dBA (TWA), or 100% Dose
8	90	
6	92	
4	95	
2	100	
1	105	
.5	110	
.25	115	

Daily Dose

When the daily noise exposure consists of periods of different noise levels, the daily dose (D) must not equal or exceed 100, as calculated according to the following formula: $D = [C1/T1 + C2/T2 + \dots + Cn/Tn] \times 100$ where Cn = total time of exposure at a specified noise level, and Tn = exposure duration for which noise at this level becomes hazardous

The BLM must administer a hearing conservation program whenever employee noise exposures are at or above an 8-hour time-weighted average (TWA) of 85 dBA or a dose of 50 percent. See Table 2.

Table 2.

Conversion from Percent Noise Exposure or Dose to 8 Hour Time Weighted Average (TWA) Sound Level	
Dose or Percent	TWA (dBA)
50	85.0
55	85.7
60	86.3
65	86.9
70	87.4
75	87.9
80	88.4
85	88.8
90	89.2
95	89.6
100	90.0
105	90.4
110	90.7
115	91.1
120	91.3
125	91.6
Assumes 5 dB exchange rate and 90 dBA permissible exposure limit.	

In addition, the daily dose can be converted into an 8-hour TWA according to the following formula:

$$\text{TWA} = 10.0 \times \text{Log} (\text{D}/100) + 90$$

Illustration 5 – Methods for Estimating Hearing Protection Device Attenuation

Chapter 27

The following information describes how to determine the adequacy of hearing protection device attenuation using the noise reduction rating (NRR) of a given hearing protection device, according to 29 CFR 1910.95 Appendix B. The NRR is defined as the maximum number of decibels that the hearing protection device will reduce the sound level when worn. The following formulas can be used to estimate the attenuation afforded by ear muffs, ear plugs, or both simultaneously for an employee exposed to noise.

A common method used for single protection (either ear muffs or ear plugs) is as follows:

1. Determine the laboratory-based noise attenuation provided by the hearing protection device. This is referred to as the noise reduction rating (NRR) and is listed on the packaging.
2. Subtract the NRR from the C-weighted time-weighted average (TWA) workplace noise level, as follows:

$$\text{Estimated Exposure (dBA)} = \text{TWA (dBC)} - \text{NRR}$$

3. If the C-weighted noise level data is not available, the A-weighted data can be used by subtracting a 7 dB correction factor from the NRR, as follows:

$$\text{Estimated Exposure (dBA)} = \text{TWA (dBA)} - (\text{NRR} - 7)$$

4. For example:

$$\text{TWA} = 100 \text{ dBA}$$

$$\text{Ear muff NRR} = 19 \text{ dB}$$

$$\text{Estimated Exposure} = 100 - (19 - 7) = 88 \text{ dBA}$$

For dual protection (ear muffs and ear plugs used simultaneously), complete the following steps:

- Determine the laboratory-based NRR for the higher rated protector (NRRh).
- Subtract 7 dB from NRRh if using A-weighted sound level data.
- Add 5 dB to the field-adjusted NRR to account for the use of the second hearing protector.
- Subtract the remainder from the TWA as follows:

$$\text{Estimated Exposure (dBA)} = \text{TWA (dBC)} - (\text{NRRh} + 5), \text{ or Estimated Exposure (dBA)} = \text{TWA (dBA)} - [(\text{NRRh} - 7) + 5]$$

For example:

$$\text{TWA} = 110 \text{ dBA}$$

$$\text{Ear plug NRR} = 29 \text{ dB Ear muff NRR} = 25 \text{ dB}$$

$$\text{Estimated Exposure} = 110 - [(29 - 7) + 5] = 83 \text{ dBA}$$

To adjust for workplace conditions, the BLM must apply a 50 percent correction factor when estimating field-based (versus that obtained in the laboratory) attenuation. This is especially important when considering whether engineering controls should be implemented. The previous equations will be modified as follows:

Single Protection:

$$\text{Estimated Exposure (dBA)} = \text{TWA (dBC)} - [\text{NRR} \times .50], \text{ or}$$

$$\text{Estimated Exposure (dBA)} = \text{TWA (dBA)} - [(\text{NRR} - 7) \times .50] \text{ Dual Protection:}$$

$$\text{Estimated Exposure (dBA)} = \text{TWA (dBC)} - [(\text{NRRh} \times .50) + 5], \text{ or}$$

$$\text{Estimated Exposure (dBA)} = \text{TWA (dBA)} - \{[(\text{NRRh} - 7) \times .50] + 5\}$$

Illustration 6 – Compressed Gas Cylinders
Chapter 12

**THE DANGERS OF COMPRESSED
GAS
CYLINDERS**

I stand 57 inches tall.

I am 9 inches in diameter.

I weigh in at 175 pounds when filled.

I am pressurized at 2,200 pounds per square inch (psi).

I have a wall thickness of about 1/4 inch.

I wear a regulator and hose when at work.

I wear a label to identify the gas I'm holding. My color is not the answer.

I transform miscellaneous stacks of material into glistening ships and other things— when properly used.

I may transform glistening ships and many other things into miscellaneous stacks of material— when allowed to unleash my fury unchecked.

I can be ruthless and deadly in the hands of the careless and uninformed.

I am to frequently left standing alone on my small base without other visible means of support — my cap removed and lost by an unthinking workman.

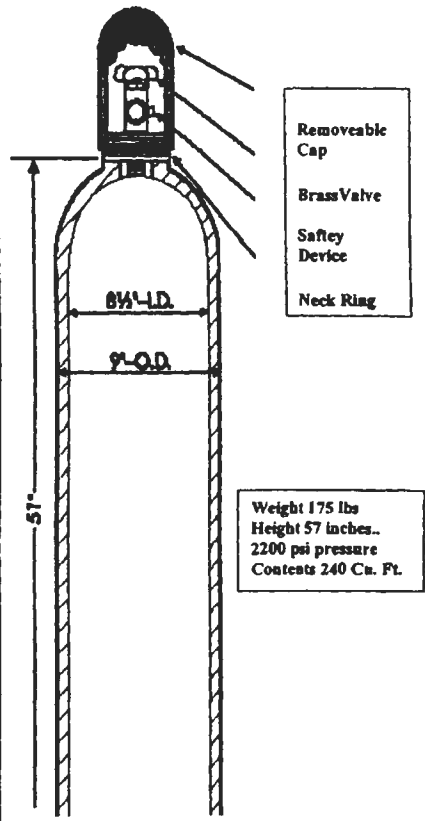
I am ready to be toppled over — when my naked valve can be damaged or even snapped off — and all my power unleashed through an opening no larger than a lead pencil.

I am proud of my capabilities — here are a few of them:

- I have on rare occasions been known to jetaway — faster than a dragster.
- I might smash my way through brick walls.
- I might fly through the air.
- I may spin, ricochet, crash and slash through anything in my path.

You can be my master only under these terms:

- Full or empty— see to it that my cap is on, straight and snug.
- Never—repeat—never leave me standing alone. Secure me so that I cannot fall.



Weight 175 lbs
Height 57 inches.
2200 psi pressure
Contents 240 Cu. Ft.

**Appendix 1 - Bureau of Land Management, State Office Fiscal Year
Safety and Occupational Health Action Plan**

Chapter 4

1. Program Management

Action Item Description	Target Due Date	Responsibility	Status or Accomplishments
Identify specific safety program funding needs, (including training for supervisors, employees and safety managers/collateral duty safety officers, awards, etc.) for state, district and field offices in budget process. <u>Measurement:</u> % of offices that identified specific safety funding needs.			
Appropriate/relevant state, district and field office safety and occupational health program policies are in place, reviewed, evaluated and updated as necessary to ensure regulatory compliance and effectiveness. <u>Measurement:</u> % of offices with all required programs reviewed, updated and reissued as necessary.			
Internal and external program management review (PMR) follow-up items are completed. <u>Measurement:</u> % of items corrected within 90 days of final PMR report.			
Managers and supervisors complete risk assessments for medium to extremely high hazard projects in their organizational unit. <u>Measurement:</u> % of tasks/projects with risk assessments that supervisors have completed with their employees.			

<p>Management commitment is demonstrated by policy statements, communications, direct involvement with safety committee, and attendance at safety training classes.</p> <p><u>Measurement(s)</u>: % of safety committee meetings with management participation; # of new or revised management safety policy statements issued; % of safety classes attended by manager.</p>			
<p>State, district and field offices have established employee/management safety committees with charters and regular committee meetings are held.</p> <p><u>Measurement(s)</u>: % of offices where safety committee meetings are documented and meeting minutes are communicated to all affected employees; % of committees who established annual goals; % of committee action items completed.</p>			
<p>Occupational health program initiative(s) are identified based on local needs (i.e. inspection findings, report of hazards/illness, PMRs, and/or complaints received) and plans are implemented to minimize risk through recognition, evaluation, training, policy and/or controls.</p> <p><u>Measurement(s)</u>: # of occupational health initiatives (identify); % of offices taking corrective measures and/or improving existing programs.</p>			

<p>Occupational safety program initiative(s) are identified based on local needs (i.e. inspection findings, report of hazards, PMRs, complaints received and/or injury reports) and plans are implemented to minimize risk through recognition, evaluation, training, policy and/or controls. <u>Measurement:</u> # of occupational safety initiatives (identify); % of offices taking corrective measures and/or improving existing programs.</p>			
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1. Training

Action Item Description	Target Due Date	Responsibility	Status or Accomplishments
<p>Required safety training is completed and documented, including hazard recognition, comprehensive risk assessment/management and job- specific safety training.</p> <p><u>Measurement:</u> % of required training courses completed; % of offices with an up-to-date training tracking system in place.</p>			
<p>New employee orientation is completed.</p> <p><u>Measurement:</u> % of new employees trained within 30 days of employment;% of all offices (state, district and field) with written site specific safety orientation materials available.</p>			
<p>Managers, supervisors, and team and work leaders receive safety management training relative to employee safety. Supervisors are trained in their safety responsibilities. Safety committee members receive safety committee responsibility's training.</p> <p><u>Measurement(s):</u> % of supervisors/managers trained; % of safety committee members trained.</p>			
<p>Collateral Duty Safety Officers (CDSO) are provided with formal and informal training to assist them in their safety responsibilities.</p> <p><u>Measurement:</u> % of new CDSOs trained within six months of starting; % of CDSOs receiving annual training.</p>			

<p>State and district safety managers are provided with technical and non-technical training to improve competencies. <u>Measurement:</u> % of safety managers receiving annual training; % of new district safety managers being trained within one year of starting.</p>			
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3. Inspections

Action Item Description	Target Due Date	Responsibility	Status or Accomplishments
<p>All major facilities, warehouses, and ware yards are inspected annually by qualified individuals and hazardous conditions corrected. Inspection results are reported to facility manager and copied to state safety manager. <u>Measurement:</u> % of all major facilities inspected; % of locations with serious hazards identified; % of serious hazards corrected.</p>			
<p>The top 3 hazards are identified during inspections and leading indicators are in place to lower the risk. <u>Measurement:</u> % of hazards identified that have corrective measures and/or leading indicators in place to prevent recurrence.</p>			

4. Safety and Health Promotion

Action Item Description	Target Due Date	Responsibility	Status or Accomplishments
<p>A safety recognition program is in place in all offices. Awards have been made within the fiscal year. <u>Measurement:</u> # of recognitions for observed safe (proactive, preventative, supportive) behaviors given to individuals.</p>			
<p>Safety and/or wellness-related activities are planned and conducted at each office (state, district, field) during the fiscal year. <u>Measurement:</u> % sites reporting safety week activities; % increase in participation from previous year; # of employees attending safety activities.</p>			
<p>Management and state safety manager utilizes various methods of communication to promote workplace safety and health. <u>Measurement:</u> # of new, or enhanced, communication methods utilized; % of employees reached.</p>			

5. Accident Investigation and Reporting

Action Item Description	Target Due Date	Responsibility	Status or Accomplishments
<p>Timeliness of SMIS report reviews improved. <u>Measurement:</u> % of accident reviews completed within 2 weeks with correction actions identified.</p>			
<p>Investigations of non-fatal accidents that do not meet the level of a serious accident investigation case are investigated based on criteria established by the state/center. Findings are reported to appropriate manager and copied to state safety manager. <u>Measurement:</u> % of offices investigating 100% of the qualifying accidents. [Note: does not apply if no qualifying accidents occur.]</p>			
<p>Accident reduction goals are established and met through use of safety leading indicators. <u>Measurement:</u> % offices that established goals; % of offices that achieved goals.</p>			

6. Program Evaluation

Action Item Description	Target Due Date	Responsibility	Status or Accomplishments
<p>Conduct internal safety program reviews of 1/3 of field offices annually. Offices not scheduled for a state audit, perform a self-evaluation and make program improvements where needed.</p> <p><u>Measurements:</u> % of field offices evaluated; % of deficiencies identified and corrected.</p>			
<p>District and field offices develop written annual safety program action plans that tier off their State’s plan. Action items are completed and accomplishments reported.</p> <p><u>Measurement:</u> % of offices completing annual action plans accomplishment reports.</p>			
<p>Accident data are analyzed quarterly to provide managers with trend analyses and recommended corrected actions.</p> <p><u>Measurement:</u> % of all offices (state, district, field,) analyzing and acting on accident trend data quarterly provided to senior management; # of corrective actions implemented and reported to senior management.</p>			
<p>Safety best practices and lessons learned are shared with other offices.</p> <p><u>Measurement:</u> # of best practices (identify) shared.</p>			

<p>Special safety evaluations (if needed) are conducted targeting hazardous work operations based on accident data. <u>Measurement:</u> # of special evaluations conducted.</p>			
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Appendix 2 - Administrative-Use UTV Operators Briefing

Chapter 17

This appendix describes the briefing information that must be addressed for the administrative use of UTVs. No other training is required. No documentation is required. All issues below must be addressed.

Definition – The administrative use of UTVs is solely for the purpose of short distance localized transportation:

- Within a defined, developed facility such as a ware yard, campground, fire camp, field office complex, or other administrative site;
- At speeds not exceeding 15 miles per hour; and
- On flat or nearly flat surfaces such as smooth asphalt, concrete, or compacted dirt or gravel (e.g., road or parking lot surfaces).

Administrative-Use UTV Operator Qualifications.

- Valid driver's license from the state, and
- Authorized to operate a motor vehicle on government duty.

Administrative-Use Personal Protective Equipment.

- Personal protective equipment is not required due to low operational speeds on flat terrain and the UTV's rollover protective structure.

Administrative-Use UTV Operations.

- The operator must know how to use the following operating controls of the specific UTV that will be driven.
 - Ignition,
 - Throttle,
 - Steering,
 - Brakes, and
 - Two-wheel drive versus four-wheel drive.
- The operator and each passenger must have their own fully functional seatbelt, which must be fastened and properly adjusted at all times when the vehicle is in motion.
- Carry no more passengers in a UTV than the number of seats installed by the manufacturer.
- Identify local hazards, conditions, or areas on the site to be avoided.
- UTVs are not designed to be operated on paved surfaces. Reduce speed and use extra caution when driving on those surfaces.
- Yield to pedestrians, automobiles, trucks, and heavy equipment.
- Be aware of local issues (e.g., wildlife, threatened and endangered species, archaeological issues, etc.).
- All requirements in Chapter 17 of this handbook must be followed for any operation beyond the definition of administrative use.

**Appendix 3 - Off-Highway Vehicle Operator
Training and Authorization Record**
Chapter 17

UNIT:			DATE:	
OPERATOR'S NAME	TYPE OF TRAINING: ATV, UTV, or Both	INITIAL TRAINING COURSE DATE	REFRESHER TRAINING DUE DATE	AUTHORIZING SUPERVISOR SIGNATURE

I certify that the individuals listed above have completed the required training to operate an ATV and/or UTV.

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BLM ATV Instructor - Signature and Organization

Date:

Appendix 4 - Fuel Firing Device Requirements

Chapter 17

All purchases of vehicle-mounted fuel firing devices must be reviewed by the National Interagency Fire Center's Fire Equipment Shop to ensure compliance with the most current technical standards and requirements.

Operational Requirements

Prior to Burn

- The UTV fuel firing device operator should perform reconnaissance of the burn area prior to ignition.
- Perform an inspection of the UTV, fuel firing device, fire extinguisher, etc., using checklists.
- Include a discussion of the UTV fuel firing device operations in the pre-burn briefing.
- Document UTV fuel firing device use in the risk assessment.

Firing Operations

- LCES guidelines (lookouts, communications, escape routes, and safety zones) must be followed during operation.
- The firing boss/ignition specialist must not be a fuel firing device operator.
- Change operators as needed to avoid fatigue.

Fueling the Fuel Firing Device

- Close the fuel firing device fuel valve and extinguish the wick/igniter when not actively firing.
- Watch out for fire burning under a lit wick/igniter when the UTV is stopped.
- Always use safe firing practices.
 - Turn off the UTV and allow to cool.
 - Ensure the wick/igniter is completely extinguished and cooled.
 - Ensure there is not a smoking or open flame within 50 feet.
 - Use the correct fuel mixture for conditions.
 - Do not completely fill the tank; fill to about 90 percent of tank capacity.
 - Wipe up any fuel spilled on the tank or the UTV.
 - Maintain a safe distance between UTVs when igniting.
 - Maintain continuous communication or visual contact with other operators.
 - Maintain position and speed during ignition.
 - Never ignite when another UTV is directly downwind of you.
 - Plan ignition operations to prevent entrapments (e.g., do not ignite where the operator may need a ride in, and ignite on the way out of areas with restricted egress).
 - When the operator dismounts the machine in an active fire area:
 - Park the UTV in the "black" or other safe area.
 - Turn off the fuel firing device, and extinguish the wick/igniter.

Emergency Procedures

Always provide for personal safety first.

In cases of a stuck, stalled, or rolled UTV:

- Halt further ignition.
- Extinguish the wick/igniter.
- Notify others of your situation and request help.
- Extinguish fire near the machine.

If the fuel firing device catches fire:

- Try to extinguish the fire.
- If practical, jettison the fuel firing device and drive the UTV away.
- If the fuel firing device cannot be jettisoned, abandon the UTV/fuel firing device, and leave the area immediately.
- Notify others of your situation.

Fuel Firing Device Inspection Checklist (Pre-operation)

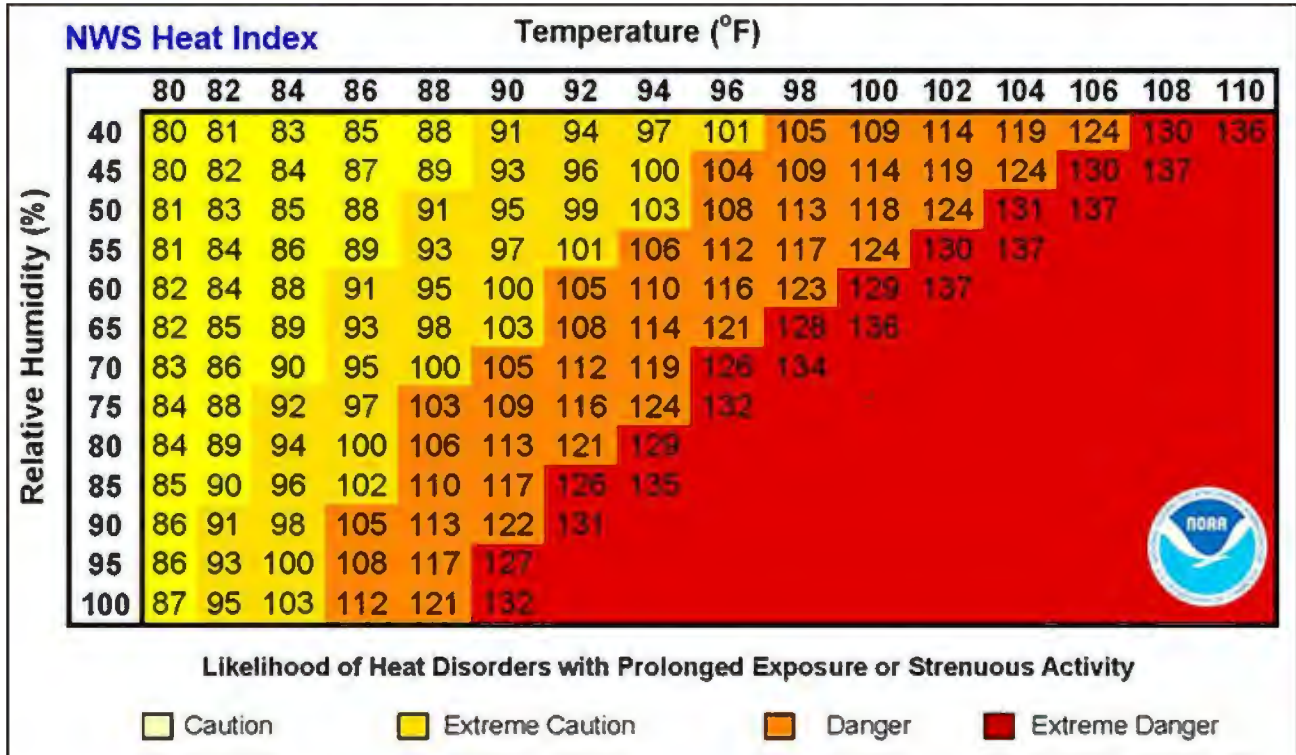
- Valves
- Filters
- Check all connections, including condition (fuel lines)
- Switches
- Ensure the fuel firing device is securely fastened to the UTV
- Fill tank
- Pump check
- Nozzle
- Igniter system
- Tank (cap tight, etc.)
- Fasteners
- Snuffer
- Spare fuses
- Wiring and connections

Safety and Auxiliary Equipment Checklist

- The fire extinguisher should be:
- Minimum 10 lbs., class B/C,
- Attached to the UTV, not mounted on the fuel firing device, and
- Mounted so it is accessible in the event of a rollover.

Appendix 5 - National Oceanic and Atmospheric Administration Heat Index Chart Chapter 17

The heat index provides a number in degrees Fahrenheit (F) that combines the percentage of relative humidity and air temperature to more accurately identify the effects of heat on the human body. Using this chart may prevent heat stress conditions (heat exhaustion or heat stroke).



1. Verify the temperature and humidity at your current location. You can get this information from the local weather report or by going to [the National Weather Service website](https://www.weather.gov) and entering your zip code.
2. To use the heat index chart, find the appropriate temperature at the top of the chart. Read down until you find the humidity on the left hand side. The number that appears at the intersection of the temperature and humidity is the heat index.

**Appendix 6 - Off-Highway Vehicle Operator
Pre-Ride Inspection Checklist
Chapter 17**

Warning: If a proper inspection is not done before each OHV use, severe injury or death could result. Always inspect the OHV before each use to ensure the equipment is in proper operating condition.

T = TIRES and WHEELS

- **Tires** - Air pressure and tire condition. Remember that more firmly inflated tires perform better on steeper side slopes.
- **Wheels** - Rim bolts (lug nuts) and axle nuts and wheel bearings.

C = CONTROLS and CABLES

- **Controls and throttle** – Check location and workability.
- **Brakes** – Check for proper adjustment and brake fluid level.
- **Recoil start and shifter** – Check that they are operational.

L = LIGHTS and ELECTRIC

- **Ignition switch, engine stop switch, lights** - Check that all are working.

O = OIL, FUEL, FLUIDS, and AIR FILTER

- **Oil** – Check level and ensure there are no leaks.
- **Fuel** – Check for a full tank.
- **Air filter** – Check that it is clean and not torn or blocked.
- **Coolant** – Check that it is full and that there are no leaks.

C = CHAIN/DRIVESHAFT, CHASSIS, SUSPENSION, and EXTERNAL EQUIPMENT

- **Chain** – Check chain slack for free-play and lubrication.
- **Drive shaft** – Check for oil leaks and missing nuts and bolts. Shake handlebars, footrests, racks, etc., to be sure nothing is loose. Check fasteners for tightness and racks for cracks.
- **Winches** – Check for proper operation, damaged cables, fairlead, hook, and controls.
- **Tool boxes and other external equipment and loaded items** – Should be secure and in good condition.
- **Trailer** – Tires, wheels, axle, bed, and box should be in good serviceable condition.
- **Trailer hitches** - Secured and properly sized to match ATV connection.

Appendix 7 - Facility Safety Inspection Checklist
Chapter 10

OK NEEDS ACTION

GENERAL

- | | | |
|--|-----|-----|
| 1. Is the required OSHA workplace poster prominently displayed? | () | () |
| 2. Has the Office Head demonstrated an active interest in safety and health matters by defining a policy for the workplace and communicating it to all employees? | () | () |
| 3. Are the required SMIS reports prepared for all employee and visitor accidents/incidents and promptly forwarded to the Safety Manager? | () | () |
| 4. Has the Safety Coordinator/Manager received the required training? | () | () |
| 5. Is there an active Safety Committee or group that allows and encourages participation of employees in safety and health activities? | () | () |
| 6. Does the Safety Committee or group meet regularly and prepare written reports of its activities? Are copies of the minutes promptly sent to the Safety Manager? | () | () |
| 7. Is there an established procedure for handling employee concerns regarding safety and health issues without fear of reprisal? | () | () |
| 8. Are workplace emergency plans current? Do they cover all types of natural | () | () |

disasters that might be anticipated to affect the workplace?

9. Are emergency telephone numbers posted where they can be easily seen in the event of an emergency? () ()
10. Are the workplace emergency plans readily available for quick reference during working hours? () ()
11. Are the workplace emergency plans readily available for quick reference before and after working hours and on weekends? Are appropriate after hours telephone numbers included in the emergency plans? () ()
12. Does the workplace emergency plan list the name and extension of employees currently certified in CPR and First Aid? () ()
13. Have copies of the current emergency workplace plans been sent to the Safety Manager? () ()
14. Have all employees that drive either a Government vehicle or a private or rental vehicle on Government business attended a Defensive Driving Course within the last 3 years? Has the training been documented? Are employees notified of the need for required Defensive Driving refresher training at least 6 months before their Defensive Driving Certificate expires? Do the employees have valid State driver licenses? () ()
15. Have all aircraft users had a minimum of 8 hours of aviation safety training within the last 3 () ()

years? Has the training been documented?

16. Have all employees that operate all-terrain vehicles or other large or unique vehicles been properly trained in the operation of such vehicles? Has the training been documented? When appropriate, do the employees have a valid State driver license to operate such vehicles? () ()
17. Have appropriate employees been trained in CPR and First Aid? Has the training been documented? Are employees notified of available refresher training before their CPR and/or First Aid certificates expire? () ()
18. Has other appropriate safety and health training been provided for appropriate employees? Has such training been documented? () ()

ELECTRICAL WIRING, FIXTURES, AND CONTROLS
29 CFR Part 1910, Subpart S

1. Are fuses and circuit breakers the right type and size for the load on each circuit? () ()
2. Are all fuses free of "jumping" with pennies or metal strips? () ()
3. Are all switches properly identified to show their purpose? () ()
4. Do switches or circuit breakers show evidence of overheating? () ()
5. Are switches mounted in clean, tightly closed metal boxes? () ()

6. Are all outlets covered by face plates? () ()
7. Are all plugs safe to use? () ()
8. Are metallic cable and conduit systems properly grounded? () ()
9. Are outlets tested for proper grounding? () ()
10. Are ground-fault circuit interrupter outlets provided in restrooms or at other locations within 6 feet of a water source? () ()
11. Are portable electric tools and appliances grounded or double insulated? () ()
12. Is any cord temporarily placed in a walkway covered by a runner? () ()
13. Are all electrical cords 3-pronged and free from fraying or other defects? () ()
14. Are all telephone cords and any temporary extension cords secured under desks or alongside baseboards? () ()
15. Do all electrical installations in hazardous (classified) locations, due to the possible presence of flammable vapors, liquids or gasses, or combustible dusts or fibers, meet the OSHA requirements of 29 CFR 1910.307 for such locations? () ()
16. Are electric motors clean and kept free of excessive grease and oil? () ()
17. Are electric motors properly maintained and provided with adequate over-current protection? () ()

18. Are portable lights equipped with proper guards? () ()
19. Are all lamps kept free of combustible material? () ()

EXITS AND ACCESS
29 CFR Part 1910, Subpart E

1. Are all exits visible and unobstructed? () ()
2. Are all exits marked with a readily visible sign that is properly illuminated? () ()
3. Are there sufficient exits to ensure prompt escape in cases of emergency? () ()
4. Are adequate controls established and posted for areas requiring limited occupancy? () ()
5. Is the exterior egress from the emergency exit to designated safe areas smooth, solid, and substantially level? () ()
6. Are special precautions taken to provide employees with adequate exits during construction and rehabilitation work? () ()
7. Are latches or other fastening devices on exit doors provided with a panic bar for easy exit? () ()

FIRE PROTECTION
29 CFR Part 1910, Subpart L

1. Are portable fire extinguishers provided in adequate number and type?
(Total travel distance does not exceed () ()

75 feet for a Class A fire or 50 feet for a Class B fire).

2. Are fire extinguishers serviced annually and is such service properly noted on the inspection tag? () ()
3. Are fire extinguishers mounted in readily accessible locations? () ()
4. Are fire extinguisher locations marked with a readily visible sign? () ()
5. Are fire extinguishers inspected monthly for general condition and operability? Is the monthly inspection recorded on a tag attached to the extinguisher? () ()
6. Is the fire alarm system tested at least once a year? () ()
7. Are evacuation drills conducted at least once a year? () ()
8. Are employees periodically instructed in use of extinguishers and fire protection procedures? () ()
9. Is the Emergency Evacuation plan current and posted throughout the building? () ()
10. Are any interior stand pipes and valves inspected regularly? () ()
11. Are fire doors and shutters in good operating condition? Are fusible links in place, unobstructed, and protected from obstruction? () ()
12. Is the local fire department well acquainted with the facilities and any specific hazards? () ()

HOUSEKEEPING AND GENERAL WORK ENVIRONMENT
29 CFR Part 1910, Subparts D and J

- | | | |
|---|-----|-----|
| 1. Are halls, passageways, storerooms, and service rooms kept in a clean, orderly, and sanitary condition? | () | () |
| 2. Is the general work area free from clutter and excess accumulation of paper or other debris? | () | () |
| 3. Are food products not kept in the same refrigerator as batteries, film, chemicals, or other non-food products? | () | () |
| 4. Are rubbish and litter disposed of daily? | () | () |
| 5. Are there tripping hazards in halls, walkways, or work areas? | () | () |
| 6. Are carpets well secured to the floor and free of worn or frayed seams? | () | () |
| 7. Is smoking permitted in designated "SMOKING" areas only? | () | () |
| 8. Are "NO SMOKING" signs prominently posted for areas containing combustibles and flammables? | () | () |
| 9. Do toilet facilities meet the requirements of applicable sanitary codes? | () | () |
| 10. Are adequate washing facilities provided? | () | () |
| 11. Are all areas of the facility adequately illuminated? | () | () |
| 12. Are the building ventilation systems regularly checked for their performance and balanced when necessary? | () | () |

13. Are stairways in good condition with standard risers provided for every flight having four or more risers? Are non-slip treads provided? () ()
14. Have weeds or other combustible material been removed from within 20 feet of any building? () ()
15. Are portable ladders adequate for their purpose, in good condition, and provided with secure footing? () ()
16. Are fixed ladders adequate, in good condition, and equipped with side rails or cages or special climbing devices, if required? () ()
17. Are all areas below 7 feet in height free from nails, hooks, screws, and any other sharp protruding object? () ()

MEDICAL AND FIRST AID

29 CFR 1910.151

1. If a hospital or medical clinic is not located near your facility, are one or more employees trained in first aid? () ()
2. Are the first aid supplies adequate for the type of potential injuries in the workplace? () ()
3. Are there quick water flush facilities available where employees are exposed to corrosive materials? () ()

MACHINES AND EQUIPMENT

29 CFR 1910.212

1. Are all machines or operations that expose operators or other employees to rotating parts, pinch points, flying chips, particles, or sparks adequately guarded? () ()
2. Are mechanical power transmission belts and pinch points guarded? () ()
3. Are hand tools and other equipment regularly inspected for safe condition? () ()
4. Whenever compressed air is used for cleaning, is the pressure reduced to 30 psi or less? () ()
5. Are power saws and similar equipment provided with safety guards? () ()
6. Are grinding wheel tool rests set to within 1/8-inch or less of the wheel? () ()
7. Are grinding wheels worn or cracked? () ()
8. Is all machinery and equipment kept clean and properly maintained? () ()
9. Are power saws and similar equipment provided with proper safety guards? () ()
10. Are radial arm saws equipped with an automatic return? () ()
11. Are table saws equipped with anti-kickback devices? () ()
12. Are eye guards and other protective equipment located near the machine area? () ()

COMPRESSED GASES
29 CFR 1910.101

1. Are compressed gas cylinders examined regularly for obvious signs of defects, deep rusting, or leakage? () ()
2. Are compressed gas cylinders securely fastened at all times and capped at all times when not in actual use? () ()
3. Are compressed gas cylinders only moved with an appropriate dolly? () ()
4. Are compressed gas cylinders segregated so that full, empty, oxidizers, and flammable gases are stored separately? () ()

FLAMMABLE LIQUIDS

29 CFR 1910.106

1. Are approved safety cans or other acceptable containers used for handling and dispensing flammable liquids? () ()
2. Are contents of safety cans or other acceptable containers clearly marked in large letters on the outside of the container? () ()
3. Are all flammable liquids that are kept inside buildings stored in proper storage containers and placed in approved flammable storage cabinets? () ()
4. Is storage of flammable materials at the work area limited to only a one day supply and all excess materials returned to the flammable storage cabinet at the end of the work day? () ()

- | | | |
|---|-----|-----|
| 5. Are flammable storage sheds provided with adequate ventilation? | () | () |
| 6. Is properly designed electrical wiring and equipment installed in flammable storage sheds? | () | () |
| 7. Do flammable storage sheds have a clear aisle at least 3 feet wide? | () | () |
| 8. Is there at least one portable fire extinguisher located outside, but not more than 10 feet from the door opening of the flammable storage shed? | () | () |
| 9. Are containers of over 30-gallon capacity not stacked? | () | () |
| 10. Are "NO SMOKING" signs posted and smoking regulations strictly enforced in areas used for storage of flammable liquids? | () | () |

WELDING, CUTTING, AND BRAZING
29 CFR 1910.252

- | | | |
|---|-----|-----|
| 1. Are only authorized, trained personnel permitted to perform welding, cutting, or brazing operations? | () | () |
| 2. Have operators been provided a copy of operating instructions and directed to follow them? | () | () |
| 3. Are welding gas cylinders stored so they are not subjected to damage? | () | () |
| 4. Are valve protection caps in place on all cylinders not connected for use? | () | () |

5. Are all combustible materials located near the operator covered with protective shields or otherwise protected? () ()
6. Is a fire extinguisher provided at the welding site? () ()
7. Do operators have the proper protective clothing and equipment? () ()

PERSONAL PROTECTIVE EQUIPMENT
29 CFR Part 1910, Subpart I

1. Are hard hats provided and worn where any danger of falling objects exists? () ()
2. Are protective goggles or glasses provided and worn where there is any danger of flying particles or splashing of corrosive materials? () ()
3. Are protective gloves, aprons, shields, or other equipment provided for protection from sharp, hot, cold, or corrosive materials? () ()
4. Are approved respirators provided for regular or emergency use where needed? () ()
5. Is all protective equipment maintained in a sanitary condition and readily available for use? () ()
6. Is special equipment available for electrical workers? () ()
7. Are noise protection devices available? () ()

HAZARD COMMUNICATION

29 CFR 1910.1200

1. Is a written Hazard Communication plan on file? () ()
2. Have all hazardous materials been inventoried and the inventory made available to all employees? () ()
3. Have employees been trained in the use of hazardous materials that they might use or come in contact with? () ()
4. Are all hazardous material containers properly labeled? () ()
5. Are Material Safety Data Sheets (MSDS) available for all hazardous materials? () ()
6. Are all containers of hazardous materials properly stored? () ()
7. Is storage of hazardous materials at the work area limited to a 1-day supply with all excess quantities returned to the storage area at the end of the work day? () ()

Appendix 8 - Trailer Safety Checklist and Explanations

Chapter 18

Bureau of Land Management Residential Safety Inspection Checklist and Structural Report: Recreational Vehicles: Travel Trailers/Fifth Wheel Trailers <small>[Travel trailers: ≤ 320 ft² of total trailer space/Fifth wheel trailers: >320 but ≤ 400 ft² of total trailer space]</small>		BLM Property #
<p>IMPORTANT NOTE: This checklist must be completed prior to the trailer being put into service for the season.</p> <p>Inspector (Print) _____</p> <p>Title _____</p> <p>Insp. Date ___/___/___</p>	<p>Current Field Location of Structure</p> <p>Common Name/General Location _____</p> <p>GPS Coordinates: Lat _____ Long _____</p> <p>Responsible Field Office: _____</p>	
<p>Use</p> <p>Lodging ___ Total#</p> <p>Beds ___</p> <p>Office ___ #</p> <p>Occupants ___</p> <p>Storage ___</p>	<p>Trailer Type: Travel trailer ___ Fifth wheel ___</p> <p>Manufacturer: _____</p> <p>Year Manufactured: _____</p> <p>Hitch Type: Ball ___ Plate ___</p> <p>Layout: Open floor plan ___ #</p> <p>Bedrooms ___</p> <p>Bath ___ Kitchen area ___</p> <p>Porch awning ___ Tip-out ___</p>	<p>Propane/LPG Supply</p> <p>Number of Tanks: ___</p> <p>Tank 1: OPD? ___ Size ___ Insp/Mfr date ___/___/___</p> <p>Tank 2: OPD? ___ Size ___ Insp/Mfr date ___/___/___</p> <p>Tank 3: OPD? ___ Size ___ Insp/Mfr date ___/___/___</p>
<p>O.S. Dimensions (ft/in)</p> <p>Front/back _____</p> <p>Sides _____</p> <p>Wall height _____</p>	<p>Electrical Service</p> <p>___ Local utility connect. ___ Portable generator ___ Solar/battery system</p> <p>___ Battery</p> <p>Interior Wiring</p> <p>___ Concealed conduit ___ Concealed NMC ___ 12V stranded</p> <p>___ Exposed conduit</p> <p>Plumbing System</p> <p>___ Copper pipe ___ Plastic pipe/tubing</p> <p>Hot Water Heater</p> <p>___ Tank storage type ___ Instant (tankless) ___ Natural gas ___ Propane</p> <p>___ Electric ___ None</p>	
		<p>Potable Water Supply</p> <p>___ Local water utility connection</p> <p>___ Onsite well</p> <p>___ Elect. pump, pressurized system</p> <p>___ Hand pump</p> <p>___ Hauled water, holding tank</p> <p>___ Hauled water, small indiv. containers</p> <p>Source of hauled water:</p>

Section 1: Structural/Environmental Evaluations					
G=Good F= Fair P= Poor, RR= requires repairs U= Unacceptable, requires replacement					
Component	G	F	P	U	Comments/Recommendations
Roof covering					
Exterior wall covering					
Interior wall covering					
Floor decking					
Floor framing					
Floor coverings					
Exterior finish					
Interior wall covering					
Entry doors/screens					
Windows/screens					
Plumbing					
Electrical					
<p>Other (describe)</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Environmental Evaluation</p> <p>Are there any obvious environmental or hazardous waste issues in the bunkhouse or the area immediately around it?</p> <p>List possible problems and where they are located in relation to the trailer:</p> <p>IMPORTANT NOTE: Do not attempt to approach or sample containers, piles, or pools of unknown substances. Record such items above and report to your FO/SO environmental specialist.</p> </div> <div style="width: 65%;"> <p style="text-align: center;">This space reserved for safety office or engineering office use:</p> <p>Current trailer condition is: <input type="checkbox"/> Suitable for overnight use. <input type="checkbox"/> Not suitable for overnight use.</p> <p>Name _____ <input type="checkbox"/> Position, Date:</p> </div> </div>					

Section 2: Trailer Safety Checklist		Y	N	N/A	Comments
General					
1	Is there an owner's manual available with the trailer?				
2	Is the trailer adequately and securely leveled and stabilized by the tongue jack, and other means, as necessary, to ensure stability?				
3	Are all tongue and leveling jacks intact, undamaged, and safely operable?				
4	Are the trailer wheels chocked to prevent rolling?				
5	Are the trailer's tires in good condition, with adequate tread remaining and no tread wear bars visible?				
6	Is there a functional spare wheel/tire for the trailer?				
7	Are all trailer turn signals, brake lights, and running lights operational?				
8	Is the trailer-to-vehicle electrical connection pigtail intact and functional?				
9	Is the glass intact and unbroken in all windows and doors?				
10	Is all glazing in hazardous locations safety glass? (See checklist note 10 below)				
11	Are interior mirrors with an exposed area greater than 431 in ² identified as being made with ANSI Z97.1 safety glass?				
Egress					
12	Are there at least two unobstructed means of escape exiting to the outside? [A roof hatch may serve as an alternate exit if it is of sufficient size and the trailer has an exterior fixed ladder.]				
13	Are the two exits remotely located from each other and situated on separate walls?				
14	Does each sleeping room/area have at least two unobstructed paths to exits?				
15	Are paths leading to alternate exits (windows) at least 13" wide, extending vertically from the surface below (floor or counter) to the top of the window?				
16	Are latches on egress windows easily opened (< 20-lb force), without requiring a tool or key to open from the inside, and are the latch handles painted red?				

17	Is there an unobstructed permanent label, with 1" red letters reading "EXIT," located within 8" of each alternate exit?				
18	Are there no more than 3' between the bottom of the egress window and the supporting surface (floor, counter, built-in furniture, or ledge)				
19	Does the supporting surface beneath the window appear capable of supporting a minimum of 300 lb.?				
20	Are alternate exit egress windows of sufficient size? (See checklist note 20 below)				
21	Are all interior and exterior door latches or other mechanisms easily opened from the inside? (See checklist note 21 below)				
22	Do closet doors have latches that can be opened from inside the closet? (See checklist note 22 below)				
23	Are all doors in the means of escape from the trailer of the type that cannot be locked against egress? (See checklist note 23 below)				
24	Can privacy locks on interior doors be opened from the outside in the event of an emergency?				
25	Are sleeping room doors arranged so that the occupant can readily close the door?				
Fire Safety					
26	Has the trailer been provided with at least one battery-powered smoke alarm, and is it UL listed (UL 217) for use in recreational vehicles ? (See checklist note 26 below)				
27	Is the required smoke detector installed in the main area, outside of any sleeping rooms?				
28	Are additional smoke detectors installed in each separate sleeping compartment? [Optional]				
29	Is the required smoke detector installed at least 6" from any exterior walls?				
30	Are wall-mounted smoke detectors approved for such use and mounted no closer than 6" to an exterior wall, with the top no closer than 4" and no farther than 12" from the ceiling?				
31	Are ceiling-mounted smoke detectors mounted so they are more than 6" from any exterior wall and 4" from any wall surface?				
32	Is there a permanently mounted operational check label on or within 24" of the smoke detector? (See checklist note 32 below)				

33	Is there at least one carbon monoxide detector installed? [Not required, but strongly recommended] (See checklist note 33 below)				
34	Are all smoke and CO detectors no older than 10 years old?				
35	Are all smoke and CO detector batteries replaced and the devices tested on at least an annual basis? (See checklist note 35 below)				
36	Are records of smoke and CO detector tests kept in the field office's maintenance file for 5 years? (See checklist note 36 below)				
37	Is at least one portable fire extinguisher with a minimum rating of 5-B:C provided?				
38	Is the extinguisher mounted in the trailer's interior easily accessible and mounted as near as possible to the main exit?				
39	Are the required inspections and servicing performed on all portable fire extinguishers? (See checklist note 39 below)				
40	If there is a built-in internal combustion generator, is it in a separated compartment designed for that purpose? (See checklist note 40 below)				
Gas Supply and Gas Appliances					
41	If there are LP appliances, is there an LP-gas detector listed as suitable for use in a recreational vehicle? [REQUIRED]				
42	If the trailer uses portable LP tanks, are they no more than 45-lb capacity?				
43	Are there no more than three 45-lb capacity portable LP tanks attached to the vehicle? [An LP tank permanently installed by the manufacturer can be up to a capacity equal to 200 gallons of water]				
44	No LP tanks are installed or stored in the interior space of the trailer, or mounted/installed on the exterior of the back wall of the trailer, or on the rear bumper?				
45	Are all LP tanks tightly secured with hold down fastenings to keep them firmly in place?				
46	Are all LPG containers properly located, mounted, and secured? (See checklist note 46 below)				
47	Are all pressure relief valves, shut-off valves, OPDs, and check valves listed for LPG?				

48	Are all LPG tank valves protected by a protective cap?				
49	Is the LPG supply system the vapor withdrawal type?				
50	Does each LPG tank have a listed 2-stage regulator with a pressure relief valve in the second stage?				
51	Are pressure relief valves on the regulators properly installed? (See checklist note 51 below)				
52	Are all tubing joints either made with flared fittings or brazed connections? If iron pipe is used, are all joints welded, brazed, or of screw on fittings?				
53	Is all tubing routed outside of trailer walls, floor or ceiling coverings? [Exception: 1/4" OD tubing may be concealed if it is run inside a second protective metal tubing]				
54	Are all appliances firmly connected to the floor/wall to prevent shifting?				
55	Do appliance LPG supply connections pass the soap bubble test?				
56	Are all appliances vented directly to the outside? [Doesn't apply to cooking range burners]				
57	Is there a vent through the roof above the LPG cook stove?				
58	Are all LPG appliances accessible for full inspection or repair without having to remove any permanent components of the trailer?				
59	Are all LPG appliances marked with minimum clearance distances to flammable material?				
60	Are all areas adjacent to LPG appliances that are within the minimum distance and conducive to storage labeled with a warning label? (See checklist note 60 below)				
61	Does the field office maintain a file or record listing the makes and models of appliances, maintenance work performed, and records of servicing contracts? (See checklist note 61 below)				
Trailer Systems (Interview maintenance personnel, review maintenance records)					
62	Is all electrical work performed by qualified personnel?				
63	Does any bathroom with 110 VAC power have GFCI-protected outlets? (See checklist note 63 below)				
64	Are GFCI outlets located in kitchens, garages, and other required locations that have 110 VAC power? (See checklist note 64 below)				

65	Are GFCI outlets tested routinely, with test records kept in the field office's maintenance files? (See checklist note 65 below)				
66	Are all 110 VAC circuit breakers clearly labeled?				
67	Is clear access maintained to any 110 VAC circuit breaker panel?				
68	Are outlet covers, switch plates, junction boxes, and other electrical system components maintained so that no live wires are exposed?				
69	Is all heating, air conditioning, and ventilation equipment installed to manufacturer specifications? Installation guides and manufacturer literature should be kept and filed in the field office's maintenance files.				
70	Is the furnace/heater serviced on an annual basis, with test records on file?				

Section 2: Trailer Safety Checklist		Y	N	N/A	Comments
71	If the trailer has both a potable water holding tank and a water service connection fitting, is there a backflow preventer between the holding tank and the service connection?				
72	If there is an external water service connection, does it have a cap to secure the connection when not in use?				
73	Does the water heater have a functioning pressure relief valve?				
74	If there are hose bibs, is the water system protected by a vacuum breaker at every bib?				
75	Is the holding tank sanitized before seasonal use?				
76	Are required warning labels in place? (See checklist note 76 below)				
77	Are all utility openings through walls, floors, or roof effectively sealed against entry by rodents?				
78	Is there evidence of rodent or insect infestation?				
79	Are occupants maintaining the trailer in reasonably sanitary condition, with clean kitchen and bathrooms and no accumulation of clutter, trash, soiled dishes, or soiled laundry?				
80	Are occupants properly sanitizing eating and cooking utensils and food preparation surfaces? (See checklist note 80 below)				
81	Is there an instruction sheet posted that clearly instructs inhabitants on: A) Operation of fire alarm devices, including procedures for testing, silencing, and resetting false alarms? B) The need to test smoke or fire alarms for battery failure caused by extreme cold temperatures? C) Emergency evacuation instructions and emergency contact information? D) No smoking requirement? Specific start up/shut down instructions for wood or gas fired appliances? F) Ban on fueling gasoline/kerosene appliances indoors?				

Checklist notes:

10. Safety glazing. Safety glass is required in exterior doors (other than jalousies), storm doors, sliding panel doors, guardrails, and windows within 12” of exterior doors (ANSI Z97.17).

20. Alternate Escape Standards (Windows). A secondary means of escape is required when a sleeping room does not have a door leading directly to the outside. The minimum opening must allow an oval clearance space of 24” at the long axis and 17” at the short axis. This is to allow the use of irregularly shaped windows. Rectangular windows must be 17” X 24” (clear space).

21., 22., and 23. Door Locks. From the inside, all exit doors or doors in the means of egress to an exit must not be locked against egress. No keys, tools, special knowledge, or effort must be needed to open any exit door from the inside. Locks that require two hands to open are not permitted. Locks that require two opening motions (i.e., a deadbolt and regular door handle) are permitted on bedroom doors, although it is strongly recommended that dormitory-style locksets (often seen in hotels) be used. These locks have a deadbolt, but all latches on the door open in a single motion from the inside by operating the main handle or doorknob. The main entrances to the structure must have locks that open in one single motion from the inside.

26. Smoke Detectors. May be 120 VAC with backup battery if the trailer wiring is designed for a 110 VAC connection. The Federal Fire Prevention and Control Act requires that all government quarters be provided with AC-powered hard-wired smoke detectors wherever AC power is available. No bedroom or sleeping area smoke detectors are required by the NFPA standard for camper trailers, due to the small interior area, but if the trailer has separated sleeping rooms, it is strongly recommended that a detector be installed in each separate sleeping area.

32. Smoke Detector Warning Labels. See Appendix 9, “Required Warning Labels in Camper Trailers.”

33. Carbon Monoxide Detectors. Carbon monoxide (CO) is a tasteless, odorless, and deadly gas that is a product of incomplete combustion. CO can be produced by gas appliances (e.g., furnaces, hot water tanks, dryers), oil furnaces, gasoline engines, wood stoves, etc. The types of detectors vary, some are battery powered, and some operate from outlets, while others have digital readouts of CO levels. While agencies do not currently recommend a specific type, many users prefer the digital readout type devices. Some companies also make models that can be integrated into a fire alarm or smoke detector system. Similar to smoke detectors, a CO detector samples the household air and alarms when the amount of CO reaches an unsafe level. It is strongly recommended that all residences with combustion-type appliances have CO detector(s) installed.

Installations must comply with manufacturer’s recommendations on location, power source, etc.

35. and 36. Testing Smoke Alarms. Testing for seasonal housing must be performed by maintenance personnel on at least an annual basis. For seasonal housing, testing should be performed prior to assigning personnel to the housing. Trailer occupants must also be informed of the need for them to routinely test smoke detectors in their quarters. Testing in all cases must include triggering the test button of each detection and initiation device and replacing batteries as required in each unit’s battery backup power supply (or, in the case of non-hard wired units, the battery power supply). Tests by maintenance personnel must be recorded in writing, with notation of the number and condition of the devices tested. This test result report must be kept on file by the field office for at least 5 years.

39. Fire Extinguisher Servicing. All fire extinguishers must have an annual maintenance check. In addition, all dry chemical fire extinguishers must have a 6-year maintenance check performed in which the extinguishing agent is removed, all operating parts and seals are inspected, and the extinguisher is recharged. Every 12 years, the extinguisher must also undergo a hydro test in which the shell is pressurized and checked for defects. All of the above services need to be performed by a qualified contractor. Gas extinguishers and other suppression systems have different requirements. Contact the RSO for additional information.

Monthly Fire Extinguisher Checks. All fire extinguishers must be visually inspected on at least a monthly basis to ensure that they are properly located, accessible, and charged. Occupants can be instructed on how to perform this requirement. Extinguishers need to be checked to see that the seal on the pin is intact, the pressure gauge is in the green, the extinguisher has not been discharged, it is properly mounted, and the shell is not rusty or has not been damaged. In addition, each extinguisher must be hefted and turned end for end several times to ensure that the powdered agent inside is not caked. The tag on the extinguisher is then initialed and dated.

40. Generator Compartments. Built-in generator compartments must be lined with galvanized steel \geq 26 MSG; seams and joints in the steel lining must be lapped, sealed, and vapor tight to the interior of the trailer.

46. Mounting of Propane Tanks. Propane tanks must be mounted in one of these 4 places on the trailer: (1) on the front tongue or A frame, (2) in a compartment vapor tight to the trailer interior, but well vented to the outside, (3) to the chassis under the floor behind the rear axle, provided the tank doesn't extend below the rear axle, or (4) to the chassis under the floor in front of the rear axle, provided the tank doesn't extend below the lowest point of the chassis frame in front of the tank.

51. Installation of Propane Tank Regulators. Regulators must be installed so that their pressure relief valve vent opening drains downward. The pressure relief valve vents must be located at least 3' from (1) openings into the trailer, (2) a fuel burning appliance's intake or exhaust vents, or (3) the discharge end of the vehicle exhaust.

60. LPG Combustible Material Clearance Distance Warning Labels. See Appendix 9 ,
"Required Warning Labels in Camper Trailers."

61. Maintenance Files or Records. Files and records are important. For example: If there were a fire, would you be able to tell investigators the make, model, and age of all of the major appliances, when the furnace had been serviced, and when the fire alarm system had been installed? A recall notice has just been issued for a particular smoke detector, fire sprinkler, or a brand of metal roofing – how would you know if any existed at your field office? It is important to create and maintain accurate records for trailers.

63. and 64. GFCI Outlets. GFCI (ground fault circuit interrupter) outlets provide protection for employees and residents. These circuits trip-out or lose power when subjected to a ground fault, for example, when a person drops a hair dryer in a sink of water. GFCI protection can be provided by either an individual outlet or by using a GFCI circuit breaker. In residences, GFCI protection is required for all outlets in bathrooms, unfinished basements, outdoors, garages, crawl spaces, and within 6 feet of any sink. In kitchens, GFCI outlets are required for any outlet above a kitchen countertop.

65. Testing GFCI Outlets. GFCI devices can cease to work properly over time. Areas that are subject to lightning and power surges have higher failure rates. Devices that fail will often still

provide power, but not GFCI protection for users. All GFCI devices have test buttons that need to be used on a routine basis (at least on an annual basis, some manufacturers recommend monthly). It is advised to purchase and use GFCI test devices (inexpensive and easy to use) to provide an additional check of the circuit.

76. Required Warning Labels. See Appendix 9, “Required Warning Labels in Camper Trailers.”

80. Cleaning and Disinfecting. For bunkhouses where employees prepare communal meals or have meals prepared for them, the Public Health Service has standards for cleaning and disinfecting work surfaces and utensils. Water temperatures, disinfectant strength, contact times, cleaning frequencies, and training of food handlers needs to take place in accordance with the Food Code requirements. Contact the BLM regional safety office for additional information if this situation applies to your field office. Even if communal meals are not prepared, proper disinfectants should be provided, and employees should routinely and thoroughly clean all food preparation areas

Appendix 9 - Required Warning Labels in Camper Trailers

Chapter 18

NFPA 1192, “Standard on Recreational Vehicles,” and ANSI A119.2, “Handbook for RV Standards,” require that camper trailers have specific warning labels in specific places:

Operational Check Warning Label. A permanent warning label with the word “WARNING” with minimum $\frac{1}{4}$ in (6 mm) high letters and body text with minimum $\frac{1}{8}$ in (3 mm) high letters on a contrasting background must be affixed in a visible location on or within 24 in (610 mm) of the smoke alarm and read as follows:

WARNING

TEST SMOKE ALARM OPERATION AFTER VEHICLE HAS BEEN IN STORAGE, BEFORE EACH TRIP, AND AT LEAST ONCE PER WEEK DURING USE.

FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY.

Location of Privacy Curtains. A permanent warning label with the word “WARNING” with minimum $\frac{1}{4}$ in (6 mm) high letters and body text with minimum $\frac{1}{8}$ in (3 mm) high letters on a contrasting background must be affixed in a visible location adjacent to the applicable appliance(s) and must read as follows:

WARNING

DO NOT OPERATE THIS APPLIANCE UNLESS THE PRIVACY CURTAIN IS SECURED.
FAILURE TO COMPLY COULD RESULT IN FIRE OR SERIOUS INJURY.

Maintaining Listed Clearances. A permanent warning label with the word “WARNING” with a minimum $\frac{1}{4}$ in (6 mm) high letters and body text with a minimum $\frac{1}{8}$ in (3 mm) high letters on a contrasting background must be affixed in a visible location adjacent to the applicable appliance(s) and must read as follows:

WARNING

**DO NOT STORE COMBUSTIBLE MATERIAL IN THIS AREA. FAILURE TO COMPLY
COULD RESULT IN FIRE.**

Gas Alert Instructions. The following label should be located in the trailer near the range area (it may be placed on the inside of a kitchen cabinet door):

IF YOU SMELL GAS:

- 1) Extinguish any open flames, pilot lights, and all smoking materials.
- 2) Do not touch electrical switches.
- 3) Shut off the gas supply at the container valve(s) or gas supply connection.
- 4) Open doors and other ventilating openings.
- 5) Leave the area until odor clears.
- 6) Have the gas system checked and leakage source corrected before using again.

Identification of Gas Supply Connections. Each recreational vehicle must have permanently affixed, in a visible location at or near each gas supply connection or at the end of the piping, an exterior label with the word "CAUTION" with minimum $\frac{1}{4}$ in (6 mm) high letters and body text with minimum $\frac{1}{8}$ in (3 mm) high letters on a contrasting background that reads (as appropriate) either:

CAUTION

THIS GAS PIPING SYSTEM IS DESIGNED FOR USE WITH LP-GAS ONLY.

DO NOT CONNECT NATURAL GAS TO THIS SYSTEM.

Securely cap this inlet when not connected for use. After turning on gas, except after normal cylinder replacement, test gas piping and connections to appliance for leakage with soapy water or bubble solution.

Do not use products that contain ammonia or chlorine.

OR

CAUTION

THIS GAS PIPING SYSTEM IS DESIGNED FOR USE WITH EITHER LP-GAS OR NATURAL GAS.

BEFORE TURNING ON GAS, BE CERTAIN APPLIANCES ARE DESIGNED AND ARRANGED FOR THE GAS CONNECTED.

(SEE EACH APPLIANCE INSTRUCTION PLATE.)

Securely cap this inlet when not connected for use. After turning on gas, except after normal cylinder replacement, test gas piping and connections to appliance for leakage with soapy water or bubble solution.

Do not use products that contain ammonia or chlorine.

LPG Overfill Warning Label. On exterior of trailer near the gas bottle(s):

WARNING

DO NOT FILL LP-GAS CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.
FAILURE TO COMPLY COULD RESULT IN A FIRE OR PERSONAL INJURY.

Warning Label for Cooking Appliances. A permanent warning label with the word "WARNING" with minimum ¼ in (6 mm) high letters and body text with minimum 1/8 in (3 mm) high letters on a contrasting background must be affixed in a visible location adjacent to fuel burning ranges and read as follows:

WARNING

IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING.

Cooking appliances need fresh air for safe operation. Before operation, open overhead vent or turn on exhaust fan. Open window.

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

Appendix 10 - Personal Safety Tips

Chapter 41

Personal Safety

Volunteers and Non-Law Enforcement Personnel

Volunteers and non-law enforcement employees are encouraged to conduct their required compliance and/or public contact duties. However, in doing so, they should be aware that some persons may be on the public lands for illegal purposes such as wildlife poaching, drug cultivation or manufacturing, felony theft, or disposing of hazardous materials or evidence of crimes committed elsewhere. Other individuals may be participating in activities involving the use of firearms or explosives. Still others may be interested in the consumption of alcohol or drugs to the point of becoming boisterous and disorderly. Persons who participate in these types of activities may become hostile and resistant to any official presence. Volunteers and non-law enforcement employees are not trained, equipped, prepared or authorized to make contact or deal with violators behaving in these ways.

We believe the procedures outlined below will help minimize situations where non-law enforcement employees and volunteers become involved in situations of jeopardy for which they are not trained or equipped. We know that all BLM employees are charged with public contact responsibilities, and BLM employees are expected to do their part in providing for the protection of the lands and resources that we manage. Not all risks can be avoided. **However, BLM non-law enforcement employees and volunteers should not take unnecessary risks that place them in a situation of personal jeopardy.** Trained law enforcement officers (LEOs) should always be used for such situations.

The following can be used as a reference for field-going personnel and volunteers when making public contacts.

If I am a non-law enforcement employee or volunteer, what should I do to enhance my personal safety on public lands?

- Prudently carry out public contact duties that include providing information related to the legal and regulatory requirements of particular activities when you believe a person may be in violation of a BLM regulation or prohibition. The keywords here are “contact” and “providing information.”
- Wear the official BLM uniform and other identifying accessories when conducting public contact duties.
- Call upon BLM LEOs to make contact with individuals if you anticipate persons to be contacted may be hostile or uncooperative. Also, notify BLM LEOs or local law enforcement officials if you observe actions or evidence that indicate a crime is occurring (i.e., drug activities, theft, violence against other persons, vandalism). Do not confront such individuals!

- Notify BLM LEOs if persons are ignoring the regulatory information that has been supplied through public contact
- Immediately notify BLM LEOs if threats have been made against, or assaults or batteries have been committed upon, any volunteer, non-law enforcement employee, or public land user.
- **Request BLM LEOs provide or obtain local training for volunteers and non-law enforcement employees in public contact safety in the areas of crime awareness, effective contact communication, and imminent signs of danger.**

If I am a non-law enforcement employee or volunteer, what actions should I avoid because they put me at greater risk of assault?

- Avoid making threats or inferences about issuing citations, making arrests, or statements about calling the authorities. This may elevate the hostility of the contact. In most cases, a quiet withdrawal and notification to appropriate authorities without the knowledge of the subject is the safest alternative.
- Avoid letting your anger or emotions dictate your actions. Attempt to communicate in a calm and precise manner. Do not raise your voice or shout at any person. If your emotions get the best of you, withdraw from the contact immediately and make proper notifications.
- Avoid issuing written warnings or any other written form that may be interpreted to be a criminal accusatory instrument. Administrative actions, such as notices of trespass and/or notices of non-compliance, are certainly appropriate within the scope of duties of certain personnel (i.e., range management, realty, minerals, etc.) However, if you expect hostility in carrying out such actions, please ask for a BLM LEO to accompany you when making the contact.
- Avoid asking for or demanding a person's identification in connection with a contact concerning a potential violation. If you lack the proper law enforcement authority and the necessary level of proof, this action would also constitute an unwarranted invasion of privacy.
- Avoid confusing any authority you may have to conduct law enforcement activities given to you by a State or another Federal agency (i.e., reserve police or deputy sheriff) with your duties as a BLM volunteer or employee, and/or authorizing such volunteers or employees to take any law enforcement action.
- Avoid physically touching, laying hands upon, or striking any person.
- Avoid carrying, wearing, or displaying firearms or other weapons (including OC "pepper" spray, sticks, batons, etc.) on your person when conducting BLM public contact duties.

RECOMMENDED ACTIONS UPON OBSERVING ILLEGAL ACTS ON BLM LANDS

If you encounter a crime scene make notes and take photographs from a distance to minimize potential loss of evidence. Do not touch or remove anything unless otherwise directed by law enforcement. If the violator is present, do not make contact. If you have any doubt as to your safety, leave the area. When safely away from the area immediately make notes of pertinent facts as outlined below and inform law enforcement. **If possible make note of:**

Who committed the crime?

Description of Violator:

- Gender
- Race/Ethnicity [White, Asian, Middle Eastern, Hispanic, African-American]
- Height [Compare the subject's height with a nearby object if necessary]
- Weight/Build [slim, heavy, muscular, etc.]
- Hair Color and Style [blond, brown, etc. and short, long, curly, etc.]
- Facial Features [clean shaven, mustache, beard, etc.]
- Clothing Type and Color [short sleeve, long sleeve, striped, solid, jeans, long shorts, etc.]
- Other Characteristics [tattoos, scars, glasses, etc.]
- Description of Vehicle:
 - Make [Chevrolet, Ford, etc.]
 - Model [Mustang, Impala, etc.]
 - Style [2 door, 4 door, wagon, hatchback, SUV, etc.]
 - Color
 - License Plate
 - Other Characteristics [body damage, bumper stickers, custom rims, etc.]

What crime was committed?

- A general description of what you observed

When was the act observed/committed?

- Is illegal activity in progress?
- If not in progress, when does it appear the activity may have occurred?

Where was the crime committed?

- BLM administered lands
- Township / Range / 1/4 Section
- G.P.S. coordinates
- Road, trail, river names and numbers
- Drainage or canyon names

Appendix 11 - Training and Duties for Confined Space Entry

Chapter 28

Entry Supervisor:

Will also require the same training as Entrants for entering permit spaces.

- Knows the hazards that may be faced during entry, including information of the mode, signs or symptoms, and consequences of the exposure.
- Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Terminates the entry and cancels the permit when:
 - The entry operations covered by the entry permit have been completed, or
 - A condition that is not allowed under the entry permit arises in or near the permit space.
- Verifies that rescue services are available and that the means for summoning them are operable.
- Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
- Ensures that whenever responsibility for a permit space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, the entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

Entrants:

- Knows the hazards that may be faced during entry, including information of the mode, signs or symptoms, and consequences of the exposure.
- Properly knows how to use and can demonstrate use of the following equipment, as required:
 - Testing and monitoring equipment,
 - Ventilating equipment,
 - Communications equipment,
 - Personal protective equipment,
 - Lighting equipment,
 - Barriers and shields,
 - Equipment needed for safe ingress and egress,
 - Rescue and emergency equipment, and/or
 - Any other equipment necessary for safe entry into and rescue from permit spaces.
- Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required.
- Alert the attendant whenever:
 - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
 - The entrant detects a prohibited condition.

- Exits from the permit space as quickly as possible whenever:
 - An order to evacuate is given by the attendant or the entry supervisor,
 - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
 - The entrant detects a prohibited condition, or
 - An evacuation alarm is activated.

Attendant:

- Knows the hazards that may be faced during entry, including information of the mode, signs or symptoms, and consequences of the exposure.
- Is aware of possible behavioral effects of hazard exposure in authorized entrants.
- Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants accurately identifies who is in the permit space.
- Remains outside the permit space during entry operations until relieved by another attendant.
- Attendants may be assigned to monitor more than one permit space provided they can effectively perform their duties for each permit space that is monitored. If multiple spaces are to be monitored by a single attendant, the permit program must include the means and procedures that will enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendant's duties.
- Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.
- Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:
 - If the attendant detects a prohibited condition,
 - If the attendant detects the behavioral effects of hazard exposure in an authorized entrant,
 - If the attendant detects a situation outside the space that could endanger the authorized entrants, and/or
 - If the attendant cannot effectively and safely perform all their duties.
- Summons rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.
- Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - Warn the unauthorized persons that they must stay away from the permit space,
 - Advise the unauthorized persons that they must exit immediately if they have entered the permit space, and
 - Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
- Performs non-entry rescues as specified by the rescue procedures.
- Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Rescue Team:

1. Properly uses personal protective equipment,
2. Properly uses rescue equipment,
3. Is trained as an authorized entrant,
4. Is trained to rescue from permit spaces,
5. Practices permit space rescues at least once every 12 months,
6. Is trained in basic first-aid, and
7. Is trained in cardiopulmonary resuscitation.

Testing and Monitoring Personnel:

- The testing and monitoring personnel should properly operate the testing and monitoring equipment.
- They should report any measurements outside of the acceptable range to the attendant, so the attendant may order evacuation.

Evaluation testing. The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data, and development of the entry procedure, should be done by, or reviewed by, a technically qualified professional (e.g., OSHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional, etc.) based on evaluation of all serious hazards.

Verification testing. The atmosphere of a permit space that may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

Duration of testing. Measurement of values for each atmospheric parameter should be made for at least the minimum response time of the test instrument specified by the manufacturer.

Testing of stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested a distance of approximately 4 feet in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

Appendix 12 - Reclassification of Permit Required Space

Chapter 28

This form may be used to document the reclassification of a permit space according to these procedures. *A qualified Confined Space Supervisor or other competent authority must complete this form, or an equivalent, before a Permit-Required Confined Space may be entered using Non-Permit Required Procedures*

IDENTIFICATION OF SPACE

No _____ Classification of Space: _____
(Local ID No) (Permit or Non-Permit)

Na _____ Loc _____
(HV maintenance hole, tank, vat, pit, etc.) (Building number, vehicle number, etc.)

IDENTIFICATION AND ELIMINATION OF HAZARDS

Original Hazards or potential hazards at time of classification as a Permit-Required Space (check all that apply):

- | | | |
|--|--|---|
| <input type="checkbox"/> Oxygen Deficient | <input type="checkbox"/> Oxygen Enriched | <input type="checkbox"/> Flammable Issues (LEL) |
| <input type="checkbox"/> Air Contaminants | <input type="checkbox"/> Corrosive Materials | <input type="checkbox"/> Engulfment Hazard |
| <input type="checkbox"/> Entrapment Hazard | <input type="checkbox"/> Mechanical Hazard | <input type="checkbox"/> Electrical Hazard |
| <input type="checkbox"/> Other (specify) _____ | | |
| <input type="checkbox"/> Other (specify) _____ | | |

Actions Taken to Eliminate These Hazards: _____

WORK LIMITATIONS AND PROTECTIVE MEASURES REQUIREMENTS DURING NON-PERMIT ENTRY

Specific Work Activity Allowed: _____

Work Limitations and/or Protective Equipment Requirements:

CERTIFICATION OF RECLASSIFICATION

I certify that I have physically checked this permit-required confined space and confirmed that ALL hazards were eliminated without entry into the space and that authorized work activities will not create a hazard that would require entry as a permit-required space.

The reclassification of this space to a "Non-Permit Required Confined Space" expires at:

 (Enter expiration time and date)

 Name of Confined Space Supervisor

 Signature of Confined Space Supervisor

 Date

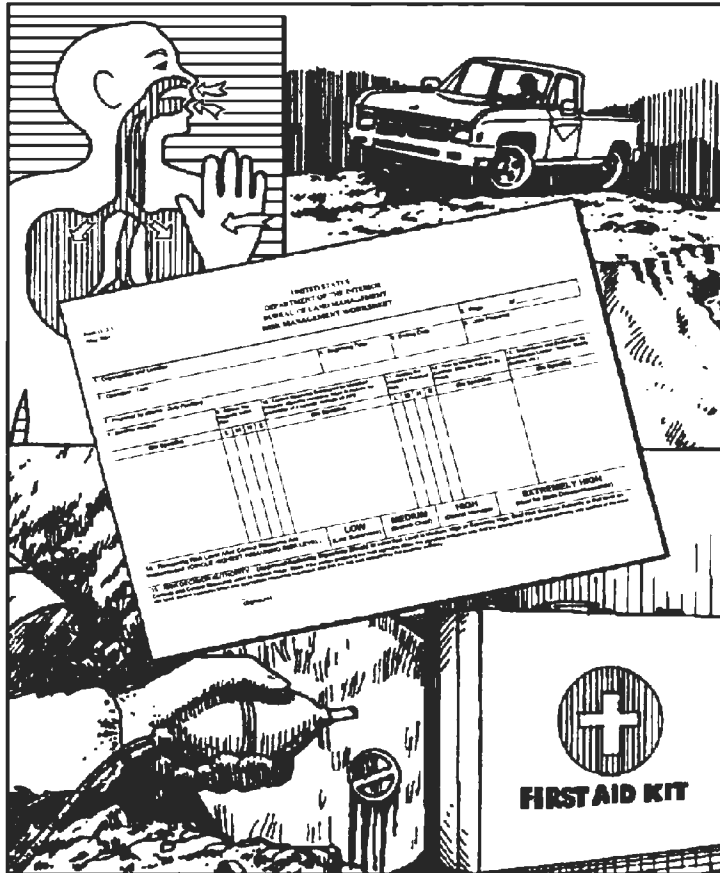
Appendix 13 - Confined Space Entry Permit

Chapter 28

Permit Space No./Location: _____ Permit Start Date: _____	
Description of Work to be Performed: _____	
Supervisor: _____ Permit Start Time: _____	
Name(s) of Entrant(s): _____	
Supervisor Authorizing Permit: _____	
Nature of Expected Hazards (check all that apply)	Required Equipment (check all that apply)
<input type="checkbox"/> Oxygen Deficient/Enriched <input type="checkbox"/> Flammable Gases, Vapors, or Dust <input type="checkbox"/> Hazardous Air Contaminants <input type="checkbox"/> Corrosive Materials <input type="checkbox"/> Engulfment / Entrapment <input type="checkbox"/> Mechanical Exposure <input type="checkbox"/> Electrical Exposure <input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Respiratory Protection Type: <input type="checkbox"/> Protective Clothing <input type="checkbox"/> Continuous Air Monitoring <input type="checkbox"/> Continuous Forced Air Ventilation <input type="checkbox"/> Lock-out / Tag-out <input type="checkbox"/> Guards / Fences <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Other (Specify)
Preparation Prior to Entry (check applicable items when complete)	Person Responsible for Preparation
<input type="checkbox"/> Affected Employees Notified	
<input type="checkbox"/> Tank Drained or Contents of Space Removed	
<input type="checkbox"/> Space Isolated	
<input type="checkbox"/> Energy Sources Locked-out and Tagged-off	
<input type="checkbox"/> Stored Energy Relieved (Zero Energy State)	
<input type="checkbox"/> Hot Work Permit Obtained from Supervisor (Attach Copy)	
<input type="checkbox"/> Area Around Confined Space Secured	
<input type="checkbox"/> Continuous Forced Air Ventilation	
<input type="checkbox"/> Air Monitoring Equipment Available and Calibrated	
<input type="checkbox"/> Employees Briefed on Hazards	
<input type="checkbox"/> Rescue Service Alerted and Available	

BLM

Safety and Health for Field Operations (Internal)



BLM Manual Handbook 1112-2

INTRODUCTION

This Manual Handbook was developed to complement BLM Manual Handbook H-1112-1. This Handbook lays the groundwork for incorporating occupational safety and health into the planning of all BLM work projects and tasks. This Handbook will assist supervisors in providing a safe and healthful workplace for BLM employees and volunteers. It will provide employees information on safe work practices, identification of hazards, and reporting of unsafe working conditions.

This Handbook is a tool designed to assist supervisors and managers in fulfilling the responsibility for safe work performance, safe behavior among employees, and integrating safe work procedures and practices in all BLM activities. Supervisors are responsible for recognizing and rewarding employees for outstanding performance in the area of occupational safety and health.

Every BLM supervisor, employee, and volunteer is responsible for following safe work practices and procedures, identifying and reporting unsafe conditions. The purpose of this Handbook is to provide assistance in carrying out those responsibilities.

All BLM employees and volunteers are responsible for familiarizing themselves with this Handbook and for utilizing safe work practices and procedures during performance of duties. For the purposes of this Handbook, BLM volunteers are considered to be employees.

Note: Volunteers are prohibited from participating in certain activities, as defined in BLM Manual 1114.

CHAPTERS

Chapter 1	Risk Management
Chapter 2	Training
Chapter 3	Field Work
Chapter 4	Motor Vehicle and Equipment Safety
Chapter 5	Heavy Equipment
Chapter 6	Aviation Safety
Chapter 7	Occupational Health Hazards/ Industrial Hygiene
Chapter 8	Personal Protective Clothing and Equipment
Chapter 9	Fire Safety
Chapter 10	Field Injury Prevention and First Aid
Chapter 11	Materials Handling and Storage
Chapter 12	Machines and Tools
Chapter 13	Electrical Systems and Equipment
Chapter 14	Watercraft Operations and Water Safety
Chapter 15	Wild Horse and Burro
Chapter 16	Explosives
Chapter 17	Firearms Safety
Chapter 18	Visiting Public Safety and Health
Chapter 19	Search and Rescue
Chapter 20	Contractor Safety and Health
Chapter 21	Concessionaire Safety and Health
Chapter 22	Radiation Safety
Chapter 23	Forestry
Chapter 24	Inspections and Abatements
Chapter 25	Employee Reports of Unsafe/ Unhealthful Working Conditions
Chapter 26	Accident/Incident Investigations
Chapter 27	Confined Space
Chapter 28	Toxic and Explosive Gas Protection
Appendix	Facilities Safety Inspection Checklist

CHAPTER 1 — RISK MANAGEMENT.....	2
1.1 References.....	2
1.2 Procedures	2
A. Field Risk Assessments	2
B. Formal Risk Assessments.....	2
1.3 Responsibilities.....	3
A. Conducting a Risk Assessment	3
B. Risk Decision Authority.....	4
C. Risk Management and Recordkeeping	4
CHAPTER 2 — TRAINING.....	8
2.1 References.....	8
2.2 Procedures	8
A. General Training	8
B. Mandatory Training Requirements	8
C. Documentation.....	8
2.3 Safety Training Table.....	9
CHAPTER 3 — FIELD WORK	15
3.1 References.....	15
3.2 Procedures	15
A. Risk Management (RM)	15
B. Check-Out/Check-In System	15
3.3 Field Attire	16
3.4 Foot Travel.....	16
3.5 Vehicle Travel.....	17
3.6 Winter Travel	17
3.7 Desert and Arid Areas	18
3.8 Mineral Examination and Mine Safety Practices	18
3.9 Remote Camp Safety and Sanitation	20
A. Gray Water.....	20
B. Potable Water	20
C. Toilet Facilities	21
D. Kitchen Tents	21
E. Propane Tanks	21
F. Generators.....	21
3.10 Camp Aviation Procedures	22

H-1112-2
Safety and Health for Field Operations

3.11	Lightning Storms	22
3.12	Horse Travel	23
A.	Inexperience with Horses	23
B.	Tips for Riding a Horse	23
3.13	Potentially Violent Personal Encounters.....	24
CHAPTER 4 — MOTOR VEHICLE AND EQUIPMENT SAFETY		27
4.1	References.....	27
4.2	Policy.....	27
4.3	Responsibilities.....	27
A.	Supervisory Responsibilities	27
B.	Operator Responsibilities	28
4.4	Qualifications	28
4.5	Authorization Process	28
4.6	Driving Limitations.....	29
A.	Maximum Driving Time Restriction	29
B.	Rest Requirement	29
C.	Other Limitations	29
D.	Fire and All Risk Incident Driving	29
E.	Contractors.....	30
4.7	Types of Operators	30
A.	Operators of Sedans and Light Trucks.....	30
B.	Full-Time Operators	30
C.	Operators of Specialized Equipment.....	30
D.	Poor Drivers/Unsafe Drivers	30
4.8	Equipment.....	30
A.	Defective Vehicle.....	31
B.	Disabled Vehicle.....	31
C.	Vehicle Inspections	31
D.	Seat Belts	31
E.	Fire Extinguishers.....	32
F.	Accident Reporting Kit.....	32
4.9	Vehicle Servicing and Repair.....	32
4.10	Trailers Less Than 10,000 lbs. GVW	33
4.11	Off-Road Vehicle Operation.....	34
CHAPTER 5 — HEAVY EQUIPMENT		41
5.1	References.....	41
5.2	Procedures	41

H-1112-2
Safety and Health for Field Operations

A.	Risk Assessment	41
B.	Operator's License	41
5.3	Basic Safety Rules	42
5.4	Equipment Maintenance and Repair	42
CHAPTER 6 — AVIATION		45
6.1	References	45
6.2	Procedures	45
6.3	Aviation Safety Training Requirements	46
A.	Flight Manager Airplane/Helicopter	46
B.	Passengers	47
6.4	Helicopter Operations	47
6.5	Accident/Incident Procedures	48
A.	Aircraft Accident	48
B.	Aircraft Incident	48
CHAPTER 7 — OCCUPATIONAL HEALTH HAZARDS/INDUSTRIAL HYGIENE		50
7.1	References	50
7.2	Procedures	50
A.	Health Hazards	50
B.	Routes of Entry	50
C.	Standards of Exposure	51
D.	Controlling, Reducing or Eliminating Employee Exposure	51
7.3	Respiratory Protection Program	53
A.	General Requirements	53
B.	Classification and Description of Respiratory Protective Devices	54
C.	Respirator Training	54
D.	Training and Exposure Records	55
E.	Facepiece Fit Testing	55
F.	Maintenance and Cleaning	56
7.4	Hearing Conservation Program	56
A.	General Requirements	56
B.	Identification of Exposed Employees	56
C.	Hearing-Protection Devices	56
7.5	Hazard Communication Program (HAZCOM)	57
A.	Manufacturers' Instructions	57
B.	Hazard Determination	57
C.	Material Safety Data Sheet (MSDS)	57
D.	Employee Training	58
E.	Hazard Communication Plan	58
F.	Waste Minimization	58
G.	Labeling	58

H-1112-2
Safety and Health for Field Operations

H.	Storage/Handling of Hazardous Materials	58
7.6	Hazardous Materials Management	59
7.7	Bloodborne Pathogens	60
7.8	Hantavirus.....	61
7.9	Ergonomics	63
CHAPTER 8 — PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT.....		66
8.1	References.....	66
8.2	Procedures	66
8.3	Eye and Face Protection	66
A.	Goggles and Glasses	66
B.	Care of Goggles	67
8.4	Head Protection.....	68
A.	Hard Hats.....	68
B.	Nonconductive Hard Hats	68
C.	Proper Fit and Care.....	68
8.5	Respirators	68
8.6	Hand Protection	68
8.7	Fall Protection	68
8.8	Procedures for the Purchase of Personal Protective Equipment.....	68
8.9	Out-of-the-Ordinary PPE	69
CHAPTER 9 — FIRE SAFETY.....		71
9.1	References.....	71
9.2	Procedures	71
A.	Detection Devices.....	71
B.	Fire Extinguishers.....	71
C.	Exits.....	71
9.3	Emergency Procedures and Evacuation Plans	72
9.4	Personal Safety for Fire Emergencies	72
A.	Emergency familiarization	72
B.	Elevators.....	72
C.	Hotel and Motel Rooms.....	72
D.	Fire event.....	73
E.	Key and flashlight	73

H-1112-2
Safety and Health for Field Operations

9.5	Vehicle Fires	73
9.6	Prescribed/Wildland Fire Safety	73
CHAPTER 10 — FIELD INJURY PREVENTION AND FIRST AID		75
10.1	References	75
10.2	Procedures	75
A.	Camp Safety	75
B.	Preventive Inoculations	75
10.3	Poisonous Plants	75
10.4	Poisonous Insects	77
A.	Bees, Wasps, Hornets	77
B.	Ticks	78
C.	Lyme disease	79
D.	Rocky Mountain Spotted Tick Fever	79
E.	West Nile Virus	79
10.5	Poisonous Snakes	81
A.	Snake Characteristics	81
B.	Safe Field Behavior	81
C.	First Aid for Snake Bites	81
10.6	Cold Injuries	82
A.	Frostbite	82
B.	Hypothermia	83
10.7	Heat Injuries	84
A.	Heat Cramps	84
B.	Heat Exhaustion	85
C.	Heat Stroke	85
10.8	Lightning-Strike Injuries	86
10.9	Altitude-Related Problems	86
CHAPTER 11 — MATERIALS HANDLING AND STORAGE		89
11.1	References	89
11.2	Procedures	89
A.	Lifting Heavy Loads	89
B.	Lifting in a Proper Manner	89
C.	When Two or More Persons Lift	90
D.	Equipment	91
11.3	Powered Industrial Trucks and Tractors (Forklifts, etc.)	91
A.	Minimum Forklift Operation Requirements	91
B.	Basic Safety Rules for Operating Forklifts	91
11.4	Storage Yards	94

H-1112-2
Safety and Health for Field Operations

11.5	Warehouse Storage	95
11.6	Storage and Handling of Hazardous Materials	98
CHAPTER 12 — MACHINES AND TOOLS.....		101
12.1	References.....	101
12.2	Procedures	101
12.3	Portable Hand Tools	101
A.	Chopping Tools (Axe, Pulaski, etc.)	101
B.	Chipping Tools	102
C.	Wrenches.....	102
D.	Screwdrivers	102
E.	Hammers	102
F.	Picks.....	102
G.	Files.....	102
H.	Handsaws.....	102
I.	Air Tools.....	102
J.	Chain Saws	103
12.4	Portable Electric Tools	103
12.5	Radio Equipment.....	105
12.6	Fixed Machines	105
12.7	Compressors	106
12.8	Portable Air Tanks (PAT).....	106
12.9	Welding and Cutting	107
12.10	Spray Painting	107
CHAPTER 13 — ELECTRICAL SYSTEMS AND EQUIPMENT.....		110
13.1	References.....	110
13.2	Procedures	110
13.3	Electrical Safety Requirements	110
13.2	Inspections of Electrical Equipment.....	110
13.3	Other Electrical Appliances and Equipment	111
A.	Approved Electrical Outlets.....	111
B.	Electric Space Heaters	111
C.	Extension Cords	111
13.4	Electrical Work at BLM Facilities.....	112

H-1112-2
Safety and Health for Field Operations

13.5	Electrical Safety	112
A.	Breaker Box Switch Index.....	112
B.	Loose Wires	112
C.	Damp Locations.....	112
D.	Periodic Testing.....	112
E.	Fuse Replacement.....	112
F.	Overloaded Circuits.....	112
13.6	Electrical Equipment.....	112
13.7	Ground Fault Circuit Interrupter (GFCI).....	112
13.8	Wet Locations.....	113
A.	GFCI.....	113
B.	Stationary Portable Equipment.....	113
C.	Substitute Equipment.....	113
13.9	Battery Charging	113
13.10	Power Lines	113
13.11	Lockout/Tagout (LO/TO).....	113
A.	Sequence of Lockout/Tagout System Procedure.....	114
B.	Restoring Equipment to Normal Operation	114
C.	Multiple Lockout/Tagout Procedures	114
D.	Shift or Personnel Change.....	115
E.	Outside Contractors.....	115
F.	Glossary of Terms.....	116
CHAPTER 14 — WATERCRAFT OPERATIONS AND WATER SAFETY		118
14.1	References.....	118
14.2	Procedures	118
A.	Motorized Watercraft Under 26 Feet in Length (Class A and I Boats)	118
B.	Motorized Watercraft over 26 Feet in Length (Class II and III Boats)	119
14.3	Non-Motorized Watercraft	120
14.4	Operations Aboard All Watercraft.....	120
14.5	Loading and Unloading from Watercraft.....	121
14.6	Personal Protection	121
14.7	Emergencies.....	122
14.8	Safety of Watercraft and Equipment.....	123
14.9	Fording Streams.....	123
14.10	Vehicle Water Crossings.....	124
14.11	Swimming	124

CHAPTER 15 — WILD HORSE AND BURRO	127
15.1 References	127
15.2 Procedures	127
A. Gathering by Horseback.....	127
B. Census and/or Gathering by Helicopter.....	128
C. Wild Horse/Burro Handling and Care	128
CHAPTER 16 — EXPLOSIVES	131
16.1 References.....	131
16.2 Procedures	131
16.3 Responsibilities.....	131
16.4 Transportation.....	132
16.5 Local Requirements.....	132
16.6 Blaster Qualifications	133
16.7 Options to BLM's Blasting Needs	133
16.8 Blaster Certification and Training	133
16.9 Wildfire Fireline Explosives	133
16.10 Explosives Storage	134
CHAPTER 17 — FIREARMS SAFETY	136
17.1 References.....	136
17.2 Procedures	136
A. Expiration of Firearms Authorization	136
B. Seasonal or Part-Time Employees	136
17.3 Equipment.....	136
17.4 Firearms Certification for Non-Law Enforcement Personnel	137
A. Classroom Component, Firearms Training Course.....	137
B. Shooting Proficiency, Firearms Training Course	137
17.5 Use of Firearms	139
A. Firearms in Camp	139
B. Taking Game in Defense of Life or Property	139
C. Rabid or Infected Animals	139
D. Reporting Requirements	139
17.6 Firearms and Ammunition Storage	139

H-1112-2
Safety and Health for Field Operations

CHAPTER 18 — VISITING PUBLIC SAFETY AND HEALTH	142
18.1 References.....	142
18.2 Procedures	142
18.3 Inspections	142
18.4 Accident Reporting.....	142
18.5 Coordination with other BLM Programs.....	142
18.6 Coordination with Outside Agencies.....	143
CHAPTER 19 — SEARCH AND RESCUE.....	145
19.1 References.....	145
19.2 Procedures	145
A. Coordination with Other Organizations	145
B. Skills and Training to Participate in Search and Rescue.....	145
19.3 Search and Rescue (SAR) Assistance.....	145
A. BLM Involvement in SAR	145
B. Response to Search Requests.....	146
19.4 Search Procedures for Lost, Overdue, or Missing Employees.....	146
19.5 Planning	147
19.6 Search and Rescue Equipment	148
CHAPTER 20 — CONTRACTOR SAFETY AND HEALTH.....	150
20.1 References.....	150
20.2 Procedures	150
A. Contracting Officer (CO).....	150
B. Contractor Requirements	150
C. Multi-Employer Worksites.....	151
20.3 Contracts	151
20.4 Records.....	151
A. Safety and Health Deficiencies	151
B. Accidents	152
CHAPTER 21 — CONCESSIONAIRE SAFETY AND HEALTH	154
21.1 References.....	154
21.2 Procedures	154

H-1112-2
Safety and Health for Field Operations

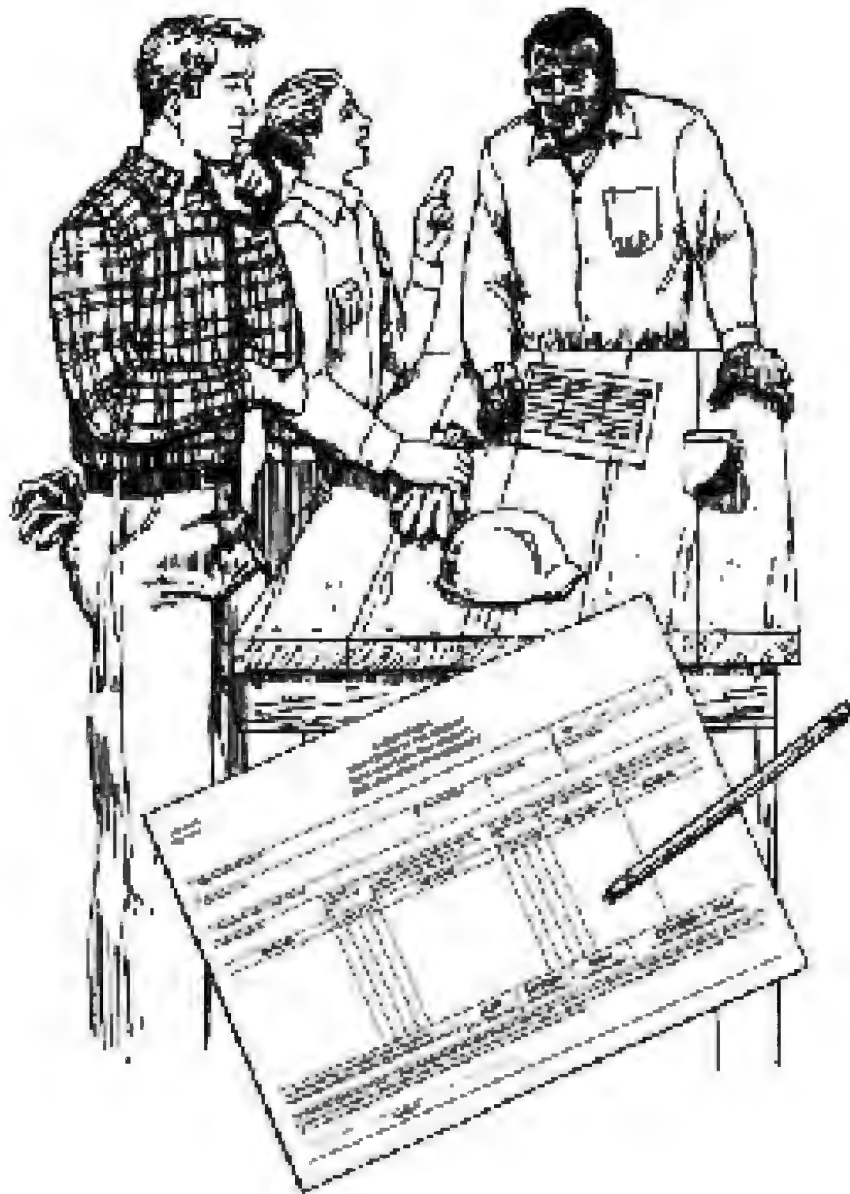
A.	Concessionaires' Safety Program	154
B.	Review of Concessionaires' Safety Program	154
CHAPTER 22	— RADIATION SAFETY	156
22.1	References	156
22.2	Procedures	156
A.	Components of a Radiation Safety Program	156
B.	Nuclear Devices	156
CHAPTER 23	— FORESTRY	161
23.1	References	161
23.2	Procedures	161
23.3	Field Attire	161
23.4	Environmental Conditions	161
A.	Weather	161
B.	Danger Trees	161
C.	Steep and/or Brushy Terrain	161
D.	Poison Oak, Poison Ivy, etc.	162
E.	Bees, Snakes, etc.	162
F.	Tree Climbing	162
CHAPTER 24	— INSPECTIONS AND ABATEMENTS	164
24.1	References	164
24.2	Procedures	164
A.	Routine Inspections	164
B.	Formal Inspections	164
C.	Annual Inspections	164
D.	Inspection Checklists	164
24.3	Responsibilities	164
24.4	Hazard Abatement Plans and Risk Assessment Codes (RAC)	164
CHAPTER 25	— EMPLOYEE REPORTS OF UNSAFE/UNHEALTHFUL WORKING CONDITIONS	166
25.1	References	166
25.2	Procedures	166
A.	Employee Rights	166
B.	Reports to OSHA	166
25.3	Responsibilities	166
A.	Supervisor Responsibilities	166

H-1112-2
Safety and Health for Field Operations

B.	Safety Manager Responsibilities.....	167
C.	Management Responsibilities.....	167
25.4	Workplace Violence	167
CHAPTER 26 — ACCIDENT/INCIDENT INVESTIGATIONS.....		171
26.1	References and Required Forms.....	171
26.2	Procedures	171
A.	Obtaining Medical Treatment	172
B.	OWCP 1500/HCFA Form 1500, Health Insurance Claim Form.....	172
C.	Agency-Provided Medical Care.....	172
D.	Electronic Accident/Incident Report (SMIS).....	172
E.	Supervisor's Investigation	173
F.	Requested Forms and Timeframes.....	173
G.	Critical Incident Management/Serious Accident/ Fatality	174
26.3	Motor Vehicle Accidents	174
26.4	Visitor Accidents.....	175
26.5	Other Accidents	175
CHAPTER 27 — CONFINED SPACE.....		177
27.1	References.....	177
27.2	Procedures	177
27.3	Confined Space.....	177
A.	Confined Space Definition	177
B.	Permit-Required Confined Space	178
C.	Confined Space Program Elements	178
27.4	Caving	179
27.5	Inactive/Abandoned Mines.....	179
CHAPTER 28 — TOXIC AND EXPLOSIVE GAS PROTECTION		181
28.1	References.....	181
28.2	Procedures	181
A.	Buddy System Procedure (Toxic Gases).....	181
B.	Tank Gauging Inspections.....	182
C.	Meter Calibration Inspections	182
D.	Entering Buildings and Enclosed Structures	183
E.	Drilling Operations	183
F.	Plugging, Abandonment, and Other Oil and Gas Operations	183
G.	Surface Compliance Inspections	183
H.	All Other Field Activities or Inspections.....	183
I.	Procedures in Explosive Gas Areas (Methane)	183

H-1112-2
Safety and Health for Field Operations

28.3	Personal Protective Equipment (PPE)	184
A.	Multi-Gas Monitors	184
B.	Self-Contained Breathing Apparatus (SCBA).....	184
28.4	Training	185
28.5	Medical Evaluation	186
A.	Medical Questionnaire	186
B.	Additional Medical Evaluations.....	186
APPENDIX: FACILITIES SAFETY INSPECTION CHECKLIST		187



Chapter 1

Risk Management

Chapter 1 — Risk Management

1.1 References

- A. BLM Manual Handbook 1112-1, Chapter 2, Risk Management
- B. 29 CFR 1910.132(d), Hazard Assessment and Equipment Selection

1.2 Procedures. Risk Management is a continuous, five-step systematic process for identifying and managing the risks associated with any BLM operation. The five steps are:

- 1) Identify hazards
- 2) Assess risk
- 3) Develop control measures and make risk decisions
- 4) Implement control measures
- 5) Supervise and evaluate

Employees and supervisors should work together in the development of the risk assessment to ensure that all aspects of the operation and tasks are addressed, that all hazards identified are eliminated or mitigated, and the risks associated with the tasks are as low as possible.

Risk assessments may be accomplished deliberately in the planning stage of an operation using the Risk Assessment Matrix (Illustration 1-1) and the Risk Management Worksheet (Illustration 1-2), or in the field using only the Risk Assessment Matrix.

A. Field Risk Assessments. Field risk assessments are used when a formal Risk Management Worksheet is not necessary or there is no time to accomplish one. Small projects and routine recurring work are examples of this. Supervisors and work leaders will mentally go through the same five-step process to eliminate or mitigate hazards. This can be done at the start of the day or in a tailgate session before the project starts. The objective is to eliminate or mitigate hazards and reduce risk to the lowest level possible. All personnel at the worksite will be briefed on the hazards and mitigating measures to be taken.

B. Formal Risk Assessments.

Formal written risk assessments will be accomplished for:

- 1) Anticipated new, non-routine, or hazardous tasks.
- 2) Jobs that may require employees to use personal protective equipment (PPE) not routinely used in their jobs.

- 3) Changes in equipment, work environment, conditions, practices, policies, or materials.
- 4) Workplace hazard assessments required to justify the purchase of personal protective equipment (PPE).

1.3 Responsibilities. Supervisors shall ensure that risk management worksheets are prepared, reviewed, and approved, prior to beginning any operation where a formal risk assessment was accomplished or required. Supervisors shall discuss the risk assessment with employees prior to beginning work and discuss ways to eliminate or mitigate hazards and reduce risk.

Employees are required to follow the guidance provided by supervisors and the risk assessment.

A. Conducting a Risk Assessment. In order to prepare a risk assessment, the operation, job, or task to be evaluated is broken down into basic steps by the supervisor and the employee(s) assigned to perform the job. BLM Form 1112-5, Risk Management Worksheet (Illustration 1-2) will be used to prepare a formal risk assessment (block by block instructions are on the back of the form).

The five-step risk assessment process will be used to assess risk.

- 1) **Identify the Hazards.** Break down the operation into the essential tasks; identify the hazards associated with each task.
- 2) **Assess the Risks.** Analyze each hazard and assess the risk using the Risk Assessment Matrix (Illustration 1-1)
- 3) **Develop and Implement Control Measures.** Develop control measures that eliminate or reduce the hazard and its risk. As control measures are developed, reevaluate hazards until all risks are reduced to a level where benefits outweigh potential cost. The level of risk remaining after controls have been identified and selected is the residual risk. The decision to accept or reject the residual risk(s) associated with an action must be made at the appropriate level.
- 4) **Implement Control Measures.** Put controls in place that eliminate the hazards or reduce their risks to an acceptable level.
- 5) **Supervise and Evaluate.** Enforce use of selected controls. Evaluate the effectiveness of controls and adjust or update as necessary.

B. Risk Decision Authority. After the risk assessment is complete and the risk associated with the operation or task is understood, a decision to either accept or reject the risk must be made at the appropriate level in the chain of command. The four risk levels and leadership approval levels are:

- 1) **Extremely High Risk (E).** Death or permanent disability, total system loss, major property damage. Requires State Director or Associate State Director approval.
- 2) **High Risk (H).** Permanent partial disability, temporary total disability in excess of 3 months, major system damage, significant property damage. Requires Field Office Manager or equivalent approval.
- 3) **Medium Risk (M).** Minor injury, lost workday accident, compensable injury/illness, minor system damage, minor property damage. Requires Branch Chief or equivalent approval.
- 4) **Low Risk (L).** First aid or minor medical treatment, minor system damage. Requires Line Supervisor or work lead approval.

The goal of risk management is to reduce the risk of the operation or task, by eliminating or mitigating identified hazards, to a point where it is assigned a Low Risk and the lowest level supervisor can approve the operation or task.

C. Risk Management and Recordkeeping

- 1) Supervisors are responsible for maintaining risk assessments.
- 2) Risk assessments developed to justify the purchase of PPE will be approved by the Safety Office; and reviewed periodically, at least every three years, to assure that they reflect the latest, safest, and most efficient way to perform the task.
- 3) Risk assessments developed for operational tasks should be maintained by the supervisor for reference and used as an example only when a similar task is proposed. Formal risk assessments are generally operation-specific and cannot be used without modification for a different task or operation.

Safety Risk Assessment Codes						
		HAZARD PROBABILITY				
		Frequent	Likely	Occasional	Seldom	Unlikely
		A	B	C	D	E
SEVERITY	Catastrophic	I	RAC 1 State Director		RAC 2 Field Manager	
	Critical	II	EXTREMELY HIGH			
	Marginal	III	HIGH	RAC 3 Branch Chief		RAC 4 Line Supv
	Negligible	IV	MEDIUM		LOW	

Illustration 1-1, Risk Assessment Matrix

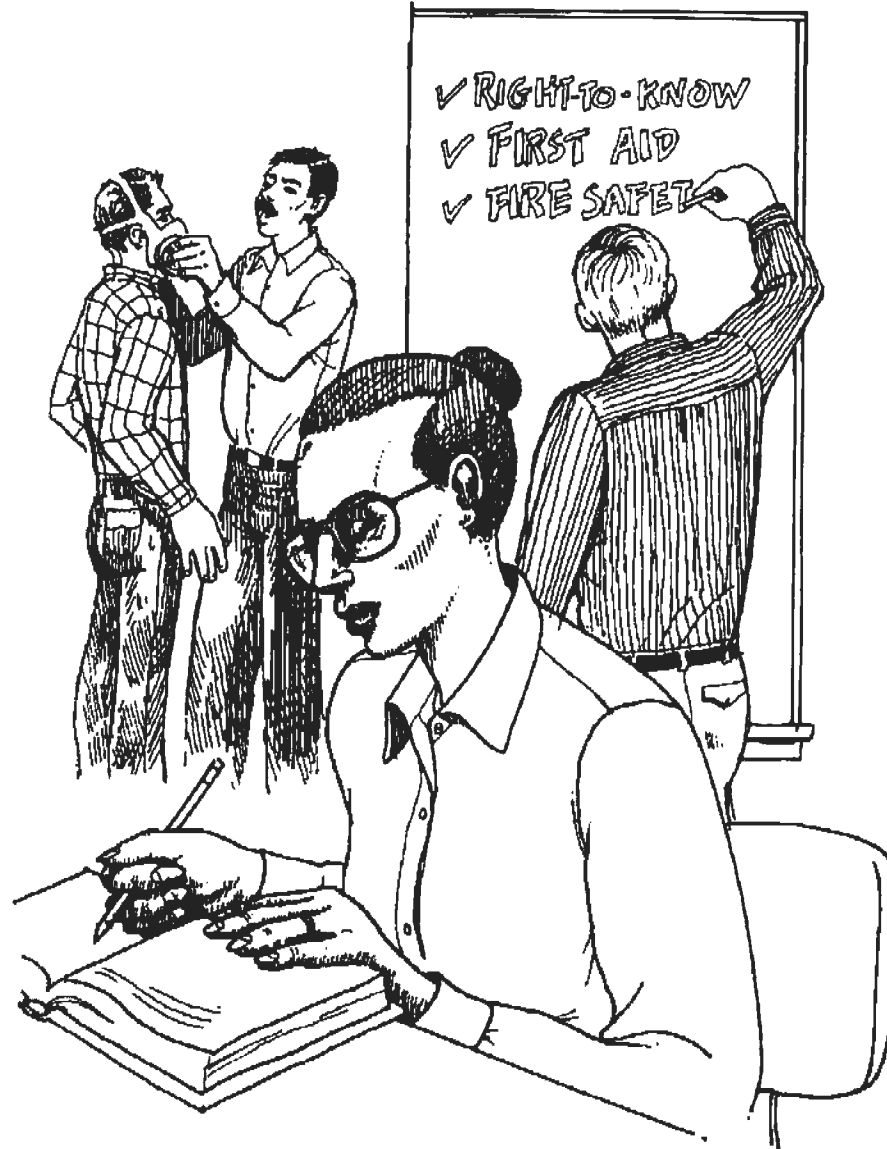
H-1112-2
Safety and Health for Field Operations

Form 1112-5
(May 2001)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
RISK MANAGEMENT WORKSHEET

1. Organization and Location					2. Page _____ of _____									
3. Operation / Task				4. Beginning Date		5. Ending Date		6. Date Prepared						
7. Prepared by (Name / Duty Position)														
8. Identified Hazards (Be Specific)	9. Assess the Hazard's Initial Risk				10. Control Measures Developed for Identified Hazards (Specific measures taken to reduce the probability of a hazard) Include all PPE				11. Assess the Hazard's Residual Risk		12. How to Implement the Controls (May Be Filled in By Hand)		13. Supervisors and Evaluation by (Continuous Leader Checks, Buddy System, etc.)	
	L	M	H	E	(Be Specific)				L	M	H	E	(Be Specific)	(Be Specific)
14. Remaining Risk Level After Control Measures Are Implemented: (CIRCLE HIGHEST REMAINING RISK LEVEL)					LOW (Line Supervisor)		MEDIUM (Branch Chief)		HIGH (District Manager)		EXTREMELY HIGH (Must be State Director/Associate)			
15. RISK DECISION AUTHORITY: (Approval/Authority Signature Block) (If Initial Risk Level is Medium, High or Extremely High, Brief Risk Decision Authority at that level on Controls and Control Measures used to reduce risks) (Note: if the person preparing the form signs this block, the signature indicates only that the appropriate risk decision authority was notified of the initial risk level, control measures taken and appropriate resources requested, and that the risk was accepted by the decision authority.)														
(Signature)														

Illustration 1-2
BLM Form 1112-5, Risk Management Worksheet



Chapter 2 Training

Chapter 2 — Training

2.1 References

- A. BLM Manual Handbook 1112-1, Chapter 5, Training
- B. 485 DM 13, Safety and Health Training
- C. 29 CFR 1960, Subpart H, Training

2.2 Procedures.

It is the supervisor's responsibility to ensure the quality and timeliness of safety training and to ensure the proper use and care of personal protective equipment (PPE) and BLM property in accordance with training standards.

Supervisors may obtain assistance for developing and conducting safety training from qualified and competent employees, District or Field Office safety personnel, Safety Managers, private industry, OSHA, Environmental Protection Agency (EPA), etc.

- A. General Training.** It is imperative that all Bureau employees be provided safety training prior to assignment and throughout the course of their employment.
- B. Mandatory Training Requirements.** Numerous jobs throughout the Bureau require training and/or certification prior to performing certain tasks. Supervisors are advised to check with appropriate safety personnel (e. g., local Safety Manager/Specialist, CDSO, State Safety Manager) if a subject is not covered.
- C. Documentation.** Mandatory safety training must be documented.

2.3 Safety Training Table. The following table describes safety training programs and training frequency. The list is not all inclusive. Consult with local safety personnel or safety training specialist for specific requirements.

Position/Task	Authority	Frequency
Safety Training for Managers	29 CFR 1960.54 H-1112-1.5	Once
Safety Training for Supervisors	29 CFR 1960.55 H-1112-1.5	Once
Safety Training for Collateral Duty Safety Officers (CDSOs)	29 CFR 1960.58 H-1112-1.5	Within six (6) months of appointment
Safety Training for Safety Specialists	29 CFR 1960.56 H-1112-1.5	Commensurate with Core Competencies and Individual Development Plan (IDP)
Safety Orientation for Employees	29 CFR 1960.59 H-1112-1.5	Once ALL employees
Safety Committee Training	29 CFR 1960.58	Within 6 months of appointment
Anhydrous Ammonia	29 CFR 1910.111	As determined by Risk Assessment (RA)
Arc Welding	29 CFR 1910.254 29 CFR 1926.351	Once, then as determined by RA
Arctic-Subarctic Survival		As determined by RA
Asbestos	29 CFR 1910.1001	As determined by RA
ATV Operation	H-1112-1.14	Prior to initial assignment and every 3 years thereafter

H-1112-2
Safety and Health for Field Operations

Position/Task	Authority	Frequency
Aviation Safety Training	Aviation Management Directives H-1112-1.13 H-1112-2.6	Passengers (between Public Use Airports or Controlled Helibases/ Helispots) — standard Briefing by the Pilot or Fixed-Wing or Helicopter Manager Resource Project Aircrew Member — training requirement varies, contact local or State Aviation Manager
Blaster's Certification and Training	H-1112-1.22	24 hours initial training, CDL pre-requisite 8 hrs yearly refresher
Bloodborne Pathogens	29 CFR 1910.1030 H-1112-1.16 H-1112-2.10	Annually for employees at increased risk due to assigned duties. Once – awareness level for employees not at increased risk
Chain Saw Certification	29 CFR 1910.266	Prior to initial assignment. S-212 or equivalent
Commercial Driver's License (CDL)	49 CFR 383-395	5 years, as determined by RA
Confined Space	29 CFR 1910.146	Prior to assignment; prior to change in permit space operations
Dangerous Animal Encounters	H-1112-1.5	As determined by RA
Defensive Driving	H-1112-1.14 H-1112-2.4	Prior to operating a motor vehicle for official purposes; once every 3 years
Desert Survival	H-1112-1.5	As determined by RA

H-1112-2
Safety and Health for Field Operations

Position/Task	Authority	Frequency
Emergency Medical Training (EMT)	29 CFR 1910.151	As determined by RA
Epinephrine (Bee Stings)	29 CFR 1910.151	As determined by RA
Ergonomics	H-1112-1.5	As determined by RA
Evacuation/Fire Drill	29 CFR 1910.38	Upon initial employment and annually thereafter
Fall Protection -Towers -Telecommunication	29 CFR 1926.500 29 CFR 1910.29 29 CFR 1910.268	Prior to assignment
Firearms Safety (Proficiency Test) Firearms Training	H-1112-1.25 H-1112-2.17	Annually — as identified in H-1112-2 and in RA
Fire Extinguisher	29 CFR 1910.157	Annually if use is required by the facility occupant emergency plan
First Aid/ Cardiopulmonary Resuscitation (CPR)	26 CFR 1910.151 H-1112-1.5 H-1112-2.10	First Aid — every 3 years or per certifying authority CPR — annually or per certifying authority
First Responder Awareness Level (HAZMAT)	29 CFR 1910.120	Upon initial employment and annually thereafter
Forklift Safety	29 CFR 1910.178 H-1112-1.14	Prior to operating forklift
Gas Welding	29 CFR 1910.253 29 CFR 1926.350	Once, then as determined by RA
Hazard Communication (HAZCOM) “Employee Right-to-Know”	29 CFR 1910.1200	Prior to initial assignment and whenever a new chemical, physical, or health hazard is introduced to work area

H-1112-2
Safety and Health for Field Operations

Position/Task	Authority	Frequency
Hazard Tree Evaluation	29 CFR 1910.266	As determined by RA.
Hazardous Waste Operations and Emergency Response (HAZWOPER)	29 CFR 1910.120(e)	8/24/40 hours initially depending on duty assignment. Annual refresher as determined by RA
Hearing Conservation	29 CFR 1910.95	Prior to exposure to noise at or above 8 hr. time-weighted average of 85 decibels or higher and annually, thereafter
Horse Safety	H-1112-1.5	As determined by RA
Lifting (Manual) Techniques	H-1112-1.5	As determined by RA
Lockout/Tagout	29 CFR 1910.147	Once. Retraining as determined by RA when job assignment, machines, equipment or processes change
Mine Inspection Safety Procedures	BLM Manual 3809.36	As determined by policy and RA
Motorized Watercraft	H-1112-1.19 H-1112-2.14	Prior to Operation. Motorboat Operator Certification Course: Initial training, 24 hrs. Refresher training, 8 hrs. every 5 years
Non-motorized Watercraft	H-1112-1.19 H-1112-2.14	Prior to initial assignment
Nuclear Gauge Operators	NUREG 1556 H-1112-2.22	Prior to initial assignment, then once every 5 years
Nuclear Gauge - Radiation Safety Officer	NUREG 1556 H-1112-2.22	Prior to initial assignment, then once every 3 years

H-1112-2
Safety and Health for Field Operations

Position/Task	Authority	Frequency
Oil and Gas Inspection Safety Procedures	BLM Manual 3110	As determined by RA
Power-Operated Hand Tools	29 CFR 1926.302	Once, then as determined by RA
Personal Protective Equipment (PPE) Personal Protective Measures (PPM)	29 CFR 1910.132 29 CFR 1926.21	As determined by RA
Respiratory Protection	29 CFR 1910.134	Prior to initial assign- ment, then annually
Risk Management	H-1112-1.2	Once. Periodically commensurate with duties
Safety Sign and Tag Recognition	29 CFR 1910.145	Once, then as determined by RA
Snowmobile Operation	H-1112-1.14	Prior to initial assignment, then every 3 years
Swiftwater Rescue	H-1112-1.5	As determined by RA
Welding, Cutting, Brazing	29 CFR 1910.252	Once, then as determined by RA
Wilderness Trauma Care	29 CFR 1910.151	As determined by RA
Wildland Firefighting	BLM Manual 9215 Referencing National Wildfire Coordinating Group's PMS 310-1: Wildland Fire Qualification Subsystem Guide	As determined by position requirements
Winch Operation	H-1112-1.5	As determined by RA
Woodworking Tools	29 CFR 1910.213 29 CFR 1926.304	Once, then as determined by RA



Chapter 3 Field Work

Chapter 3 — Field Work

3.1 References

- A. 29 CFR 1910.142, Temporary Labor Camps
- B. 29 CFR 1910.151, Subpart K, Medical and First Aid
- C. 29 CFR 1960.8, Agency Responsibilities (General Duty Clause)

3.2 Procedures. Bureau activities sometimes require employees to travel and work in remote areas or under hazardous field conditions. Examples include extreme climate conditions, water-based activities, rugged terrain, or areas disconnected from a road network.

Whenever possible, two employees will be assigned to perform such field work, and all employees will use a dependable, established communications procedure.

A. Risk Management (RM). Assessing field hazards is a continual task and the risk management process assists both supervisors and employees in identifying and eliminating hazards and minimizing risk. BLM Form 1112-5, Risk Management Worksheet facilitates the RM and should be used at every tailgate session.

A safety orientation is mandatory for all employees involved in field activities.

Activities sometime require employees to travel and work in remote areas or under hazardous field conditions. Examples of field work hazards include, but are not limited to, extreme climate conditions, water-based activities, rugged terrain, or areas disconnected from a road network. Whenever possible, two employees will be assigned to perform such work, and always with dependable, established communications.

A safety orientation consistent with the risk assessment is mandatory for all employees involved in field activities.

B. Check-Out/Check-In System. Employees traveling to the field must follow check-out/check-in procedures established for that facility. Minimum required information should include:

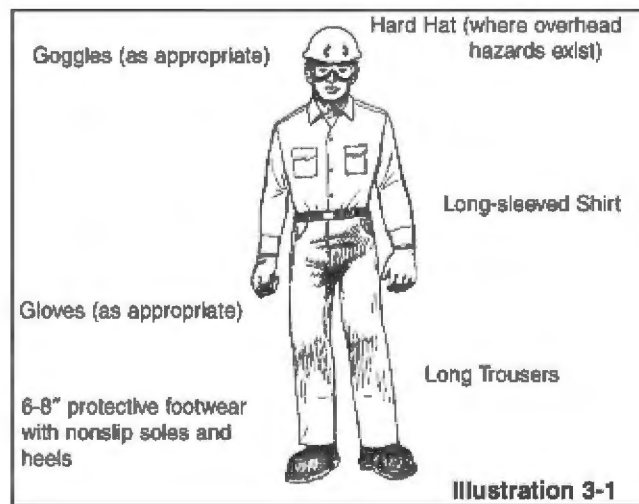
- Itinerary
- Name of employee
- Work area
- Estimated time of return

- Miscellaneous information such as names of other crew members, etc.

Workers in the field must also contact their workplace to inform them of any departure from their original itinerary.

In the event an employee does not return or contact the office at the designated times, search and rescue procedures shall be initiated. All workplaces must have established communications to request assistance.

- 3.3 Field Attire.** Safe field attire will be determined by management through the risk management process or as required by the specific field activity. For general working conditions, appropriate field attire includes: 6- to 8-inch protective footwear with non-slip soles and heels, long trousers, and long-sleeved shirt (Illustration 3-1). Outerwear appropriate to seasonal weather conditions should be readily available.



- 3.4 Foot Travel.** Always notify other workers of intended route and destination, and work close enough to them to permit a quick response to a call for assistance.
- A. Avoid travel, resting, or camping in snag or high windfall areas when windy weather or lightning may endanger life and property.
 - B. Have secure footing at all times. Do not use rotten or loose-barked logs as foot logs over creeks or gullies. Logs, rocks and other objects can move unexpectedly and should not be used as a walking surface. Rocky slopes, especially slide rock and steep country, can be treacherous. Have one hand free to

protect against falls or obstructions. Carry hand tools on lower side when walking along contours or slopes.

- C. Always be on guard against injury from falling trees, snags, limbs, rolling logs, or rocks. Don't run blindly from a falling rock, log, or tree. Determine its falling direction, get out of its path, and alert others.
- D. Guard against twigs or branches striking face, and protect co-workers from similar whiplashes by maintaining adequate spacing between crew members.
- E. When possible, detour around hazardous areas such as rock slides, lava flows, rim rocks, sand dunes, steep or undercut river banks, quicksand, dense brush, deep gullies, canyons, bear dens, hornet nests, poison ivy or poison oak, etc.

3.5 Vehicle Travel. In case of a disabled or stuck vehicle, stay with the vehicle. The vehicle can be more easily seen from the air than a person can alone, and it also provides shelter from the sun or the cold. If lost and without radio contact, sweep the horizon during the daytime with the light beam of a signal mirror. This beam is visible over a great distance and might be seen by someone. Flash vehicle headlights (three rapid flashes) at night, especially if aircraft can be heard.

3.6 Winter Travel. Always follow check-out/check-in procedures and ensure that you have adequate winter survival equipment. To minimize the hazards associated with winter driving; both the vehicle and the driver must be prepared in advance. Always drive at a speed appropriate for visibility, traffic, and road conditions.

- A. To see and be seen by others requires the driver to clean all snow and ice from the entire vehicle — hood, roof, trunk, lights, and windows. Snow left on any of these areas increases the possibility that visibility will be affected when the vehicle is in motion.
- B. Follow manufacturers' recommendations when equipping vehicles with studded tires or chains.
- C. Snow tires are recommended, but chains provide the best starting and stopping performance in severe snow and on icy surfaces.
- D. If your vehicle breaks down and you are stranded, it is best to stay with your vehicle. You should only run the engine for heat about 10 minutes every hour to conserve fuel. Make sure the exhaust pipe is clear of snow. Open a window every once in a while to let in fresh air.

- 3.7 Desert and Arid Areas.** Never go into the field without first informing someone of your destination, your route, and when you will return (use proper check-out/check-in procedures).
- Stick to your plan and notify your office or workplace before making any changes to the plan.
- A. Carry at least 1 gallon of water per person per day of your trip. Plastic jugs are handy and portable.
 - B. Complete a pre-trip vehicle inspection to ensure your vehicle is in good condition.
 - C. Keep an eye on the sky. Thunderstorms may cause flash flooding even though it may not rain where you are.
 - D. If your vehicle breaks down, stay near it. It is easier for search and rescue crews to find and your emergency supplies are with the vehicle.
 - E. If water is limited, keep your mouth closed and breathe through your nose to reduce water loss and drying of mucous membranes. Do not talk, eat, smoke, drink alcohol, or take salt.
 - F. Do not sit or lie directly on the ground. It may be 30 degrees warmer than the ambient air.
 - G. Desert clothing should be lightweight, light colored, and cover the whole body. Eyewear with UV protection should be worn to protect eyes from damaging sun glare.
 - H. Jackets, blankets or other items for warmth should be part of your emergency supplies as desert nights can be very cold.

- 3.8 Mineral Examination and Mine Safety Practices.** Before going underground, all employees must have completed the Mine Safety and Health Administration (MSHA) "Mine Safety Equipment and Survival Training" and have a completed and approved risk assessment. This ensures that personnel recognize hazards and informs them of approved survival gear and how it is used in the event of an emergency.

Employees will not enter underground mine workings or deep open cuts unless accompanied by a qualified person and have assigned duties in the location.

Mine Safety

BLM personnel must be aware of their personal safety at all times, even though they may be accompanied by the operator or a representative of the operator. Inexperienced personnel must not be taken underground until fully informed of the associated dangers. Experienced BLM personnel should pay special attention

to their colleagues until they have gained confidence and knowledge of proper behavior and procedures. Personnel must be familiar with the use and maintenance of safety equipment. In addition to hard hats, steel-toe shoes, and safety glasses, a mine belt, earplugs, and both types of self-rescuers, as appropriate, should be used for inspection of underground mines. Know the areas of active mining and reclamation, blasting, and other activities on-site that may involve equipment that could pose a danger to an individual. Care must be taken at all times around any mechanized equipment operating in the vicinity of the inspection.

- 1) In underground mine situations, personnel must have training in the use of self-rescuers and be aware of the following dangers:
 - a) Gas and dust conditions and emergency mine escape procedures. The atmosphere in old or idle mines must be tested prior to entry to determine if it is oxygen deficient or methane contaminated.
 - b) Unstable roof and rib conditions. Do not enter any section of the mine that has not been properly supported. Entry into areas marked "Danger" is expressly prohibited except by MSHA personnel or those company personnel authorized by the operator to correct the hazard.
 - c) If a mine uses electrical equipment such as electric locomotives, be aware of high-voltage cables.
 - d) Keep limbs and clothing away from conveyor belts, drive wheels, idlers, and other operating equipment and their haulage routes. Be familiar with hazards and procedures associated with blasting, and obtain a blaster's certification if you are responsible for inspecting mines in which explosives are used regularly.
- 2) When inspecting surface facilities, employees should be accompanied by a company official whenever possible. Adhere to "No Smoking" signs posted by the operator. These facilities, which include mills and processing plants, present dangers that include:
 - a) Machinery with moving parts can snag loose items. Clothing should not be loose-fitting; long hair should be secured and confined under a hard hat; and all jewelry should be removed.
 - b) Chemicals and fuel. Be aware of storage areas, obey company rules regarding these areas, and know emergency procedures to be taken after accidental exposure or contact with these substances. Extreme care must be taken in

HAZMAT storage facilities (e.g., holding ponds at cyanide operations).

- 3) Personnel responsible for inspection of exploration activities will receive training in the use of 4-wheel-drive vehicles and ATV/snow machine, if appropriate since exploration may involve off-road driving.

Reference: Federal Mine Safety and Health Act of 1977

- 3.9 Remote Camp Safety and Sanitation.** All sites used for camps must be adequately drained. They shall not be subject to periodic flooding, nor located within 200 feet of swamps, pools, sinkholes, or other surface collections of water, unless mosquitoes can be controlled on such still-water surfaces.

The camp must be located so the drainage from and through the camp will not endanger any domestic or public water supply. All sites must be graded, ditched, and rendered free from depressions in which water may become a nuisance.

All sites must be adequate in size to prevent overcrowding of necessary structures. The principal camp area where food is prepared and served and where sleeping quarters are located must be at least 500 feet from any area in which livestock are kept.

Reference: 29 CFR 1910.141-142.

- A. Gray Water** disposal pits shall be constructed to permit leaching within 24 hours. If leaching does not occur because of water table, a series of shallow small canals shall be constructed for evaporation and leaching. Gray water disposal area will be located at least 50 feet down gradient from water source.
- B. Potable Water.** Transported potable water must be obtained from a treated source whenever possible. If obtained from a non-treated source, it must be treated with chlorine bleach at a ratio of ½ teaspoon bleach per five gallons of water, standing for 30 minutes. Treated water must be kept pure and free from contamination through proper handling and storage procedures. Canteens, if not in use, must be emptied, disinfected, and dried.

- C. Toilet Facilities.** Approved toilet facilities adequate for the capacity of the camp must be provided and must be located 200 feet or more from any water source. A description of toilet facilities requirements is stated in 29 CFR 1910.142(d).
- D. Kitchen Tents.** Keep kitchen tents clean and orderly and keep foodstuffs away from cleaning supplies. Two fire extinguishers should be present and ready.
- 1) Store foodstuffs in rodent and pest proof containers. Manage food storage and garbage so as to minimize attracting bears, wild animals, and insects to the camp.
 - 2) Soiled food service items should be first washed with soap and water, then sanitized; either chemically (by adding 1 tablespoon of bleach to each gallon of rinse water) or thermally (by soaking 5 minutes in rinse water that is too hot to place hands in, >180°F). Pots and pans should be inverted, and utensils covered, to prevent recontamination of clean food service items.
 - 3) Freezer temperature should be set at zero or below; refrigerators should be set at 40 degrees Fahrenheit. If using ice chests, freeze as many items as possible to increase safe storage period.
- E. Propane Tanks** will be properly anchored and protected from damage. Propane tanks and other fuel storage containers should be stored at least 50 feet away from camp and properly posted with “No Smoking” signs. All 20 lb. or smaller propane tanks must be equipped with Overfill Protection Devices (in accordance with CGA standards). Tanks equipped with overfill protection devices can be identified by their triangular shaped valve handle. Tanks with any other handle cannot be refilled or used and must be properly disposed of.
- F. Generators** should be located downwind of sleeping and eating areas, with engine noise controlled, e.g. with plywood or foam board panels or even a parked vehicle. Electrical circuits will be GFCI protected, either at the generator outlet or in the power cord being used. Extension cords must be undamaged, appropriately sized to the amperage drawn, not plugged into one another and UL approved for outdoor use. Permanent seasonal camps or camps with fixed structures should install hard-wired electrical distribution systems, with panel boxes, circuit protection devices, and appropriately rated buried or elevated cables. All generators will be equipped with spark arrestors.

3.10 Camp Aviation Procedures. Camp fueling storage sites must be equipped with secondary containment in case of a spill or leak. The daily fuel log must be kept current. “No Smoking” signs must be posted and visible at any approach to the site. Smoking is prohibited within 50 feet of fueling site. Fuel source must be grounded and bonded through machinery (filters, pumps, etc.) and then to aircraft. The site must be located a minimum of 100 feet from personnel quarters and must be kept clean and orderly with no loose articles allowed in area that might be blown into helicopter rotors or aircraft propellers.

- A. A windsock shall be installed in accordance with Aviation Management Directorate (AMD) Heliport Specifications.
- B. The fuel tank pump will be equipped with a remote emergency shutoff switch.

3.11 Lightning Storms. Lightning seeks the path of least resistance and the human body can offer that path. The hazard of lightning occurs in two ways, either as a direct hit or as a ground current.

General guidelines during lightning storms:

- A. Seek shelter inside a building.
- B. Wear fiberglass or plastic hard hat rather than metal hat.
- C. Don't work on fences, electrical lines, pipelines, or structural steel fabrication.
- D. Don't use metal objects like fishing rods, soil augers, logging equipment, etc., that are in contact with the ground.
- E. Automobiles provide a safe shelter because the metal body creates a pathway for the lightning around your body. Avoid contact with metal objects in the car where your body could become a pathway.
- F. Lightning tends to strike the highest electrically conductive object in the area - peaks, ridges, towers, trees, isolated sheds (especially with metal roof or siding), wire fences, etc. For protection, seek areas lower in elevation than the general surroundings.
- G. Avoid streams and lakes. If in a low area, be cautious of flash floods and sloughing off of earthen or rock materials from above.
- H. Sit on some insulating material if possible, such as coiled rope, a wooden pack board, a folded sleeping bag, a wool shirt, etc.
- I. A crouched position—sitting on your feet with the knees drawn up and feet close together—seems best to minimize the

distance spanned by your contact points. Avoid any position with a hand, shoulder, or head touching a surface.

- J. Do not use landlines (telephones) for communication during lightning storms or use machinery or electric motors.
- K. Handheld radios and cellular phones can be used without increased risk.

3.12 Horse Travel. Only trained and experienced personnel should ride, handle, saddle, or pack horses. A demonstrated ability to ride on all types of terrain, handle, saddle, and pack horses is required. See Chapter 15 for special instructions for wild horse operations. Use of personally-owned horses and equipment must be authorized.

Reference: BLM Manual 1113, Official Use of Horses

A. Inexperience with Horses. Inexperienced personnel who must use horse transportation must at all times be supervised by experienced personnel and be provided with specific step-by-step instructions during each phase of activity.

Inexperienced personnel must not engage in any non-transportation horse activity (wrangling, roundup, etc.). Inexperienced personnel should consider the following guidelines:

- 1) Speak to animals upon approach. Avoid quick movements and coming up to them from the rear.
- 2) Lead animals around gently after saddling. Check cinch for tightness before mounting or packing; frequently when riding.
- 3) Never wrap reins or lead rope around hand.
- 4) Avoid carrying too much gear and equipment on a saddle horse. Balance the weight on both sides.
- 5) Avoid excess lead rope to prevent entanglement.
- 6) When tying an animal, avoid slack that might entangle person or animal. Never tie to a barbed wire or woven wire fence.
- 7) Always use a halter when tying an animal.
- 8) Tie animals to objects that they can't walk completely around. Take special precautions with animals that might panic easily.

B. Tips for Riding a Horse

All personnel should consider the following suggestions:

- 1) Don't wear shoes or boots that may hang up in the stirrup.
- 2) Wear snug-fitting clothing.
- 3) Use chaps when riding in brush.
- 4) Never beat or abuse an animal.
- 5) Always mount and dismount from the left side, keeping near rein tight. On slopes, mount from the upper side. Never wrap rein around saddle horn.
- 6) Don't gouge horse with spur or heel or surprise animal with erratic actions.
- 7) Dismount horse when lightning is near or overhead. A clap of thunder might stampede an unpredictable animal.
- 8) Avoid running a horse on pavement, frozen ground, or up and down hills.
- 9) Never shoot a firearm while on horseback.
- 10) Don't force an animal into impossible situations. Get off and lead the horse across areas where there is poor footing or clearance.
- 11) Picket or hobble animals only when necessary, but be aware of hazards such as mud holes, obstructions, other animals, etc.

3.13 Potentially Violent Personal Encounters

Employees need to be aware of the potential for personal violence that may be directed against them as representatives of a Government agency and they should keep alert for signs of aggression during encounters with the people they meet.

Employees must:

- A. Request permission in advance from landowners to ensure that they are not trespassing on private lands. If advance permission is not obtained from the landowner, an employee needs to find another way around the property or must wait until permission is granted.
- B. Be aware of the potential for criminal activities in remote areas of public lands, such as illegal dumping, clandestine drug labs, marijuana cultivation, etc. Persons engaged in such criminal activity can become hostile and violent if discovered.
- C. Leave such areas immediately and report the activity to a BLM Ranger or other appropriate law enforcement authorities. If an employee meets a member of the public who is hostile, the employee should be polite and non-threatening, leave the area

H-1112-2
Safety and Health for Field Operations

as soon as possible, and report the incident to his or her supervisor, as well as to law enforcement authorities, if appropriate.

The vast majority of public land users are courteous and friendly, and want to use public lands properly and legally. Most employees' contacts with them will be friendly and educational to both parties. However, there are exceptions to this rule, and employees should cultivate a situational awareness when they are out in the field. If an employee feels at all uneasy or uncertain about a situation in the field, he/she should not be embarrassed to leave the area. The job can always be completed with help at a later time.



Chapter 4

Motor Vehicle and Equipment Safety

Chapter 4 — Motor Vehicle and Equipment Safety

4.1 References

- A. BLM Manual Handbook 1112-1, Chapter 14, Motor Vehicle and Equipment
- B. 370 DM, Personnel Management
- C. 485 DM 16, Motor Vehicle Safety
- D. 5 CFR 930, Subpart A, Motor Vehicle Operators
- E. 49 CFR 383-395, Commercial Drivers License (CDL)
- F. 29 CFR 1926.601, Motor Vehicles
- G. Interagency Standards for Fire and Fire Aviation Operations (Redbook)
- H. 41 CFR 102-34.220 – 305, Motor Vehicle Management

4.2 Policy

- A. Seatbelts will be worn by all occupants prior to placing the vehicle in motion.
- B. During the performance of official business, employees and other authorized operators shall not operate a motor vehicle while under the influence of alcohol or drugs nor while sick or suffering from excessive fatigue or emotional stress.
- C. Drivers must observe all State and local traffic regulations.

4.3 Responsibilities

- A. Supervisory Responsibilities.** Supervisors are responsible for ensuring that employees can satisfactorily operate the vehicle/equipment for which they are authorized. Supervisors have the authority to restrict or terminate authorizations of poor or unsafe drivers.

Supervisors are responsible for educating the employee regarding BLM/Government policy on:

- 1) Mandatory seat belt use
- 2) Alcohol/drugs prohibition
- 3) Vehicle misuse
- 4) Official passengers

B. Operator Responsibilities

- 1) Inspect the vehicle prior to use (i.e., oil and wiper fluid levels, tire inflation, wiper blades, lights...). Drive safely. Operate the vehicle within its mechanical limits. Drive appropriately for existing road and weather conditions. Ensure that all passengers, including themselves, have safety belts fastened before the vehicle is put in motion.
- 2) Inform supervisors of any physical, mental, or emotional condition that might impair their ability to safely drive a motorized vehicle or operate machinery.
- 3) Have a valid BLM identification card in their possession while driving a Government-owned vehicle.
- 4) Notify supervisor immediately if their license is suspended, revoked, or expires without renewal.
- 5) Consistently observe all State and local traffic regulations.
- 6) Complete driver improvement training as required.

4.4 Qualifications

- A. Every employee operating a Government-owned or –leased motor vehicle, or a private vehicle on official duty, must possess a valid State operator’s license issued by the State in which the employee is domiciled or principally employed. The employee must have the proper endorsements for the size and class of vehicle being driven.
- B. Non-fire personnel, who are required to have a commercial driver’s license (CDL), must be at least 21 years old.
- C. Fire personnel, operating a fire engine that requires the driver to have a CDL, must be at least 18 years old with 1 year driving experience to operate fire engines 26,000 GVWR or greater for intrastate driving – that is driving within the state that the license was issued. For interstate driving the operator must have a valid CDL and be at least 21 years old.
- D. Driver improvement training is required for all employees whose job duties require the use of a motor vehicle. Training must be completed prior to operating a vehicle and repeated every 3 years.

4.5 Authorization Process

- A. When an employee requests authorization to operate a motor vehicle for official business, the employee will complete Form DI-131 (Application for U.S. Government Motor Vehicle Operator’s Identification Card) and Form OF-345 (Physical

Fitness Inquiry for Motor Vehicle Operators) to obtain driving authorization. Individual office forms equivalent to the DI-131 and OF-345 are acceptable. Authorization to drive on official business must be renewed at the time the state driver's license is renewed, or a minimum of every three years.

- B. Driving records will be validated through the State and/or National Driver Register for each new employee, employees who operate a commercial motor vehicle, or whenever management deems it advisable to review.
- C. Form OF-346 card (U.S. Government Motor Vehicle Operator's Identification Card) is an optional form that may issue to employees who do not receive an agency identification card. It may be issued to full-time vehicle operators and operators of specialized equipment to identify the types of equipment they are authorized to use.

4.6 Driving Limitations

- A. Maximum Driving Time Restriction.** Employees will not exceed 8 hours of driving time (behind the wheel) during a 16-hour duty period. This 8-hour period includes rest and meal breaks.
- B. Rest Requirement.** At least eight consecutive hours of rest, without duty, are required prior to each duty period that requires driving. Breaks of 15 minutes are recommended every two hours when driving continuously.
- C. Other Limitations.** Management/employees may place further limitations on the above hours of duty and/or driving time due to safety factors (e.g., fatigue, weather, distance, illness).
- D. Fire and All Risk Incident Driving**

- 1) Support, Mobilization and Demobilization Driving. All driving in support of fire and all risk incidents; including mobilization and demobilization, will be limited to 10 hours of driving time (behind the wheel) during a 16 hour duty day.

Multiple drivers in a single vehicle may drive up to the duty-day limitation provided that no driver exceeds the individual driving (behind the wheel) time limitation of 10 hours in a 16 hour duty day.

- 2) Incident Operations Driving. Refer to Interagency Standards for Fire and Fire Aviation Operations.

E. Contractors operating Government commercial motor vehicles must comply with the hours of service for drivers as required by the U.S. Department of Transportation (DOT).

4.7 Types of Operators. An incidental operator is any employee who is required to operate a motor vehicle in order to properly carry out his/her assigned duties but whose principal duties are not operating a motor vehicle and his/her position is not classified as a motor vehicle operator.

A. Operators of Sedans and Light Trucks. Employees are required to have a valid state driver's license in their possession at all times while driving on official business.

15 Passenger Van Operators

Supervisors will assign only experienced drivers to operate 15 passenger vans. Operators must be specifically authorized to operate these vehicles. The rental or leasing of 15 passenger vans is prohibited. Rear seats of 15 passenger vans must be removed; the rear area must be properly screened to prevent objects from becoming projectiles.

B. Full-Time Operators. Employees operating any motor vehicle with a GVWR of 26,000 pounds or more, towing a vehicle 10,000 pounds GVWR or more, hauling hazardous material requiring the vehicle to be placarded, or transporting 16 or more persons, including the driver, must possess a valid Commercial Drivers License (CDL) with all applicable endorsements.

Employees with CDLs shall comply with the necessary health monitoring requirements for a CDL. Authorization must be noted in the personnel file on Form DI-131 or equivalent.

C. Operators of Specialized Equipment. Authorization to operate specialized equipment (e.g., 4x4, dump trucks, front-end loaders, dozers, forklifts, backhoes, tracksters, skid-steer equipment, snowmobiles, all-terrain vehicles (ATVs), boats, etc.) must be noted in the personnel file or maintained following local recordkeeping procedures.

D. Poor Drivers/Unsafe Drivers. Unsafe drivers will not drive on official business. Any driver who has a poor accident record, is careless, uses poor judgment at the wheel, or has numerous driving violations may have his or her driving privileges suspended or revoked even though he or she possesses a valid state driver's license.

4.8 Equipment

Government-owned or Government-leased vehicles will be maintained in good mechanical condition.

- A. Defective Vehicle.** Vehicle defects identified by the operator or during safety inspections shall be immediately reported to the supervisor and fleet manager. Defective vehicles shall be removed from service until repaired.
- B. Disabled Vehicle.** The operator may make only authorized emergency repairs to a government vehicle. The operator shall have it towed, if necessary. (Refer to the vehicle book and check with your local fleet manager for guidance on repairs).
- C. Vehicle Inspections.** Operators are responsible for pre-trip inspections. Monthly vehicle inspections shall be performed and documented by the vehicle operator or designated person. The inspection shall include checking vehicle lights (brake, tail, and backup), mirrors, wipers, washers, defroster, gauges, brakes, fluids, and belts. Operators will ensure emergency equipment (first-aid kit, reflectors, jack/lug wrench) is in the vehicle. Inspect fire extinguishers monthly and annually if they are carried in the vehicle. Information on how to check tire pressure can be found at:
<http://web.wo.blm.gov/wo850/am/Fleet/tirefactors.htm>
- D. Seat Belts** must be available and used in Bureau motor vehicles.
- 1) Without exception, seat belts must be worn at all times by motor vehicle operators and passengers, regardless of the distance to be traveled or the time involved. Failure to wear seatbelts may result in disciplinary action.
 - 2) All heavy, self-propelled equipment fitted with rollover protective structures must have a seat belt for the operator. Seat belt use by the operator is mandatory.

- E. Fire Extinguishers.** Approved fire extinguishers are required in buses, ambulances, fire engines, fire trucks, heavy motorized mobile equipment, special use vehicles, and as required by Department of Transportation (e.g., hauling of hazardous materials, such as gasoline, explosives, chemicals, etc.). Fire extinguishers (ABC type) are not required in other vehicles, except by order of the State Director. If installed, they must always be properly maintained and inspected annually.
- F. Accident Reporting Kit.** All Bureau-owned or -operated motor vehicles, including off-road vehicles and special-use equipment, will carry a packet containing all accident report forms and other information needed by the driver in case of an accident or other emergency. These packets will be General Services Administration (GSA) or BLM Motor Vehicle Accident Reporting Kits and include:
- 1) SF-91 Operator's Report of Motor Vehicle Accident
 - 2) SF-94 Statement of Witness
 - 3) SMIS Accident Reporting Offline Worksheet
 - 4) CA-1 Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation (in case of injury)

4.9 Vehicle Servicing and Repair. Maintain and operate vehicles as recommended by the manufacturer. Comply with GSA and BLM requirements on use, care, maintenance, and inspections contained in the loose-leaf vehicle book in each vehicle. BLM-owned motor vehicles and equipment must have an annual inspection by a qualified mechanic. Offices with GSA-owned fleet vehicles will be notified when periodic maintenance is due on these vehicles.

Additionally all drivers should:

- A. Turn in receipts to the local fleet manager for repairs and inspections. Fleet managers will maintain records for vehicle repairs and maintenance.
- B. Notify the local fleet manager to replace a tire when the tread depth of any tire on the front steering wheels of any vehicle exceeding 10,000 GVWR falls below 4/32 inch.
- C. Keep interior and exterior of vehicle clean at all times and free of trash and loose items.
- D. Have maintenance done by a qualified mechanic. Always check items repaired before driving vehicle away from repair shop.
- E. Comply with local laws on studded tire use.

- F. Secure emergency equipment and tools carried inside vehicles.
- G. Securely anchor weight ballasts in pickup trucks, if needed. Do not use rocks or boulders for ballast.
- H. If vehicles or equipment to be used or transported are equipped with hydraulic lifts, ensure that they are secured in place with safety locks or other devices to prevent accidental lowering.
- I. Before adjusting the chassis of a dump truck with the dump box in an elevated position, ensure that it is properly locked out (secured) to prevent accidental lowering.
- J. Use only OSHA compliant and DOT approved safety cans for storage and transportation of gasoline and other flammable liquids. All gas cans should be filled while on the ground avoid the buildup or release of a static charge.

4.10 Trailers Less Than 10,000 lbs. GVW. All drivers towing trailers must be trained and authorized.

- A. Vehicles towing trailers must comply with local, State, and Interstate Commerce Commission (ICC) regulations concerning size and weight of towing vehicle. Towing vehicles must have sufficiently heavy brakes and be heavy enough to ensure complete braking control in stopping and holding trailer.
- B. Before driving, make sure your vehicle and trailer maintenance is current. This is very important because towing puts additional stress on the tow vehicle.
 - 1) Check and correct tire pressure on the tow vehicle and trailer. All trailer tires should be same type, size, and construction.
 - 2) Be sure the hitch, coupler, draw bar, and other equipment that connect the trailer and the tow vehicle are properly secured and adjusted.
 - 3) Check that the wiring is properly connected—not touching the road, but loose enough to make turns without disconnecting or damaging the wires.
 - 4) Ensure all running lights, brake lights, turn signals, and hazard lights are working.
 - 5) Verify that the brakes on the tow vehicle and trailer are operating correctly.
 - 6) Check that all items are securely fastened on or in the trailer.
 - 7) Be sure the trailer jack, tongue support, and any attached stabilizers are raised and locked in place.

- 8) Check load distribution to make sure the tow vehicle and trailer are properly balanced front to back and side to side.
 - 9) Check side- and rear-view mirrors to make sure you have good visibility.
 - 10) Check routes and restrictions on bridges and tunnels.
 - 11) Make sure you have wheel chocks and jack stands.
 - 12) All trailers shall be equipped with suitable warning devices (i.e., reflective triangles) for use in emergency situations.
- C. All horse and similar trailers shall be equipped with trailer jacks or loading gear.
- D. Trailers, having 1,500 pounds gross trailer weight and over must be equipped with brakes adequate to stop and hold the trailer.
- E. Breakaway switches are required on trailers with brakes.

4.11 Off-Road Vehicle Operation. Properly completed and approved risk assessments will be completed for all ORV operations.

- A. Manager/Supervisors are responsible for all off-road vehicle activities, including compliance with local and national off-road vehicle policies.
- B. The program will include:
- 1) Operator training
 - 2) Personal protective equipment (PPE) requirements
 - 3) Vehicle selection, maintenance, and inspections
 - 4) Job specific risk assessments for all ORV operations
- C. Training
- 1) All employees who ride ATVs will complete the ATV Safety Institute (ASI) "ATV Rider Course" and any required BLM Supplemental Modules. Training will be completed prior to any work assignment requiring the use of an ATV.
 - 2) Operators of other ORVs must successfully complete courses specific to each vehicle class (i.e., snowmobiles, motorcycles) .
 - 3) Refresher training is required every 3 years for all ORV operators. Refresher training consists of a field check ride at a minimum.
 - 4) All ATV training will be conducted by an ASI certified instructor.
- D. Risk Assessments
- 1) Formal risk assessments will be completed and approved by the supervisor prior to operation of any ORV.

- 2) The formal written risk assessment will address:
 - a) Rider experience/training
 - b) Maintaining reliable communications
 - c) Weather
 - d) Operator tasks
 - e) Vehicle capabilities
 - f) Check-out/check-in procedures
 - g) Terrain
 - h) Operator tasks
 - i) Personal protective equipment requirements
- 3) Field risk assessments:
 - a) A field risk assessment will be completed in case of change (weather, terrain, circumstance, activity, etc.).
 - b) The hazards identified must be mitigated and the level of risk must be "low" for the employee to continue without supervisor approval.

E. Personal Protective Equipment

- 1) ATV Operators will wear, at a minimum:
 - a) DOT approved helmet with face shield or impact resistant goggles
 - b) Helmets will be securely fastened below the chin
 - c) Long pants/shirts, full fingered gloves, over the ankle leather boots
- 2) Off Highway Motorcycle Operators (OHM) will wear, at a minimum:
 - a) DOT approved helmet with face shield or impact resistant goggles
 - b) Long pants/shirt, full fingered gloves, knee pads, shin pads, over the ankle leather boots
- 3) Snowmobile Operators will wear, at a minimum:
 - a) DOT approved helmet permitted for snowmobile use
 - b) Safety glasses or face mask with UV protection
 - c) Gloves, appropriate outerwear and footwear
 - d) Remote locators if traveling in avalanche country

F. Safe Operation. Operators will not engage in the following activities:

- 1) Hauling unsecured tools or equipment
 - 2) Transporting passengers unless the vehicle is designed for passengers
 - 3) Modifying the ORV in any way that would void the manufactures warranty
 - 4) Riding alone unless authorized by supervisor and addressed in the risk assessment
- G. Loading Ramps may be plastic, aluminum or steel. If aluminum or steel they must be of welded construction. Plastic ramps may be used if commercially designed and manufactured for ATV loading. Ramps may be one or two piece, rigid or folding. Hinges must be factory installed. Ramp surface (driving surface) should have closely spaced cross members or mesh construction with high traction surface. Plastic ramps must have traction blocks molded into drive surface. Under no circumstances will wooden ramps be used.
- 1) Ramps must have a minimum rated capacity of 1000 pounds. For ATV's 500 cc and larger, or if the ATV has any type of external spray tank or other bolt-on accessories, ramps must have a minimum rated capacity of 1500 pounds.
 - 2) One piece, bi- or tri-fold ramps must be a minimum of 46 inches wide when extended for loading. One piece ramps must be wider than the distance between the ATV's tires as measured from the outside of the left tire to the outside of the right tire. For two-piece ramps, each ramp must be a minimum of 10 inches wide. Ramp length must be a minimum of 84 inches (7 feet) long when extended for loading.
 - 3) All ramps must have chains or straps to secure the ramps to the vehicle tailgate. Use of ramp chains or straps during loading is mandatory. These chains or straps prevent rearward movement of the ramps during loading.
- H. Transporting ORVs. The preferred method of transporting ORVs is by trailer.
- I. When necessary to transport in the bed of a pick-up truck the following guidelines will be strictly followed:
- 1) Only pickup trucks or larger vehicles that have room for all four wheels of the ATV to rest on the bed of the truck will be used to transport ATVs. Gross Vehicle Weight Rating (GVWR), suspension weight capacity and tire load ratings may not be exceeded.

- 2) Pickup trucks may transport only one ATV loaded in the bed and all four ATV wheels/tires must be in contact with the bed surface.
 - 3) Transport vehicles should be equipped with front-end header boards (headache racks) if possible.
 - 4) All vehicles must have a flat bed surface, wide enough between wheel wells that the ATV may be rolled on the bed without riding over the wheel wells. Under no circumstances will an ATV be loaded into a vehicle when the ATV must be driven over the wheel wells.
 - 5) Tie downs sufficient to secure the ATV to the vehicle must be available. Eyebolts installed in the vehicle must be capable of holding 1000 pounds. Stake pocket tie downs, available at many auto or trailer retail stores, are an alternative to eyebolts. Stake pocket tie downs must have a 1000-pound capacity.
- J. Vehicle/Ramp Position. The ramp angle from vehicle to ground has the largest influence on risk when loading/unloading ATV's. If the ramp angle is reduced, and all other conditions remain the same, risk is reduced. The truck should be positioned to take advantage of any terrain features that will help reduce the ramp angle. Therefore, the operator should consider the following methods to reduce the ramp angle.
- 1) The use of a loading wall, if available, or positioning the rear of the truck near a berm will reduce the ramp angle from truck bed to ground. If the loading wall is the correct height, it may eliminate the need for ramps and allow roll-on/roll-off loading.
 - 2) The truck may be positioned with the rear wheels in a depression (for example, a ditch) to reduce the ramp angle. This lowers the bed of the truck and allows the ramps to be located on higher ground on the far side of the depression.
 - 3) Loading ramps must be secured to the truck bed with chains or straps designed for that purpose. When in position for loading, the chains or straps must be taut with no slack or sag.
 - 4) Two-piece loading ramps must be positioned parallel and spaced so the ATV tires are centered on the ramps. One-piece ramps must be centered on the truck bed and the ATV driven up the center of the ramp.
 - 5) Loading ramps should be positioned so the ends in contact with the ground are level or at the same height. Uneven ramps may cause the ATV to tip over sideways during loading/unloading.

- K. Loading Technique. Any ATV's racks should be unloaded before transporting. Any heavy cargo must be removed and/or spray tanks emptied. If heavy cargo or tanks cannot be removed, sandbags or other heavy objects should be secured to the opposite cargo rack to help balance the ATV. The only safe method of loading an ATV that has a loaded spray tank or other heavy load on the back is to winch the ATV into the bed of the pick-up.
- 1) Padding should be placed at the front of the vehicle's bed to protect both vehicles and help absorb impact during loading. An old tire (minus the rim) works well for this.
 - 2) When preparing to drive the ATV into the bed of a vehicle, the operator should be seated, with feet positioned on the ATV's footrests, and leaning forward. This keeps the operator's weight low over the ATV's center of gravity.
 - 3) The ATV should be loaded with the front of the ATV toward the front of the vehicle. In cases where the ATV must be loaded with a tank or other load on the ATV rear, it may be safer to load the ATV with the rear facing the truck bed, placing the center of gravity further forward and reducing the probability of the ATV tipping backward off the ramp.
 - 4) The operator should apply throttle smoothly and climb the ramp at low speed. Too much or sudden increases in throttle will cause the ATV to be harder to control and may cause the ATV to impact the front of the vehicle bed or over-turn.
 - 5) As the ATV starts up the ramp the operator should lean toward the uphill direction, i.e. toward the ramps, to help keep the ATV balanced.
 - 6) The safest method of unloading is to push the ATV down the ramps, carefully braking to ensure control of the ATV. When riding down, the operator should apply only enough throttle to start the ATV down the ramps, then allow the ATV to roll backwards using light pressure on all the brakes to control speed.
 - 7) For transport, ATV's with manual transmissions should be left in first gear. ATV's with automatic transmissions should be in the Park position. The ATV's ignition key should be turned off and removed, the parking brake set, the run/stop switch in the stop (or off) position and the fuel lever turned to the off position.
- L. Secure Load. Blocking devices must be installed in the front, back, and on both sides of the wheels to keep it from rolling. This block is

strictly an additional safety precaution and in no way obviates the need for strapping the ATV in securely.

- 1) One-inch wide nylon straps, with metal hooks on the ends and ratchet buckles, with a rated capacity of 1500 pounds, must be used to secure the ATV to the vehicle. The metal hooks must either have a deep enough throat to ensure that the strap cannot come loose or have a safety latch. These tie down straps are available at most automotive or department stores and from local ATV dealers. Cam action, non-ratcheting buckles are not permitted. Rope tie downs are not permitted.
- 2) A minimum of three tie downs will be used to secure the ATV to the vehicle. One tie down must be used to secure the front of the ATV to the vehicle. Two tie downs must be used to secure the rear of the ATV to the vehicle. Four tie downs are preferred and are required if vehicle tailgate will not close with ATV in bed.
- 3) Hooks on one end of the tie-downs must be attached to the ATV's frame tubing, not the racks. Hooks on the other end must be attached to vehicle cargo anchors. If using one tie-down to secure ATV's front, pass the strap around tubing on the front bumper and secure hooks on both ends to vehicle cargo anchors.

M. Inspections

- 1) Operators are responsible for pre-trip inspections as outlined in the manufactures operators manual
- 2) Routine and necessary maintenance and repair will be performed and documented. Each office will establish procedures to ensure that repairs, recalls, and maintenance are being performed and documented

N. Operators may decline to operate unsafe equipment or carry out unsafe tasks.



Chapter 5 Heavy Equipment

Chapter 5 — Heavy Equipment

5.1 References

- A. 29 CFR 1926.600, Equipment
- B. 29 CFR 1926.602, Material Handling Equipment
- C. 29 CFR 1926.604, Site Clearing
- D. 29 CFR 1926.1000, Rollover Protective Structures (ROPS) for Material Handling Equipment
- E. 29 CFR 1926.1001, Minimum Performance Criteria for Rollover Protective Structures for Designated Scrapers, Loaders, Dozers, Graders, and Crawler Tractors
- F. 29 CFR 1926.1002, Protective Frame (ROPS) Test Procedures and Performance Requirements for Wheel-Type Agricultural and Industrial Tractors Used in Construction
- G. 29 CFR 1926.1003, Overhead Protection for Operators of Agricultural and Industrial Tractors
- H. 49 CFR 383/395, Commercial Drivers License

5.2 Procedures

- A. Risk Assessment.** Prior to authorizing use of any heavy equipment, a risk assessment completed in accordance with Chapter 1 of this handbook will be completed as required by BLM Manual Handbook 1112-1, Chapter 2. The Risk Management Worksheet will be completed jointly by the supervisor and employees and approved at the appropriate level.
- B. Operator's License.** Bureau operators of Government-owned or -leased heavy equipment must have a valid state driver's license, completed training, and have supervisors written authorization to operate the equipment. Prior to supervisor's authorization, operators must complete training and study and comprehend the operator's manuals for the equipment they will be authorized to operate.

In some locations, a U.S. Government Motor Vehicle Operator's Identification Card (OF-346) may be required, e.g., selected Service First (joint BLM and U.S. Forest Service) facilities may require an operator to present a valid OF-346 form.

5.3 Basic Safety Rules

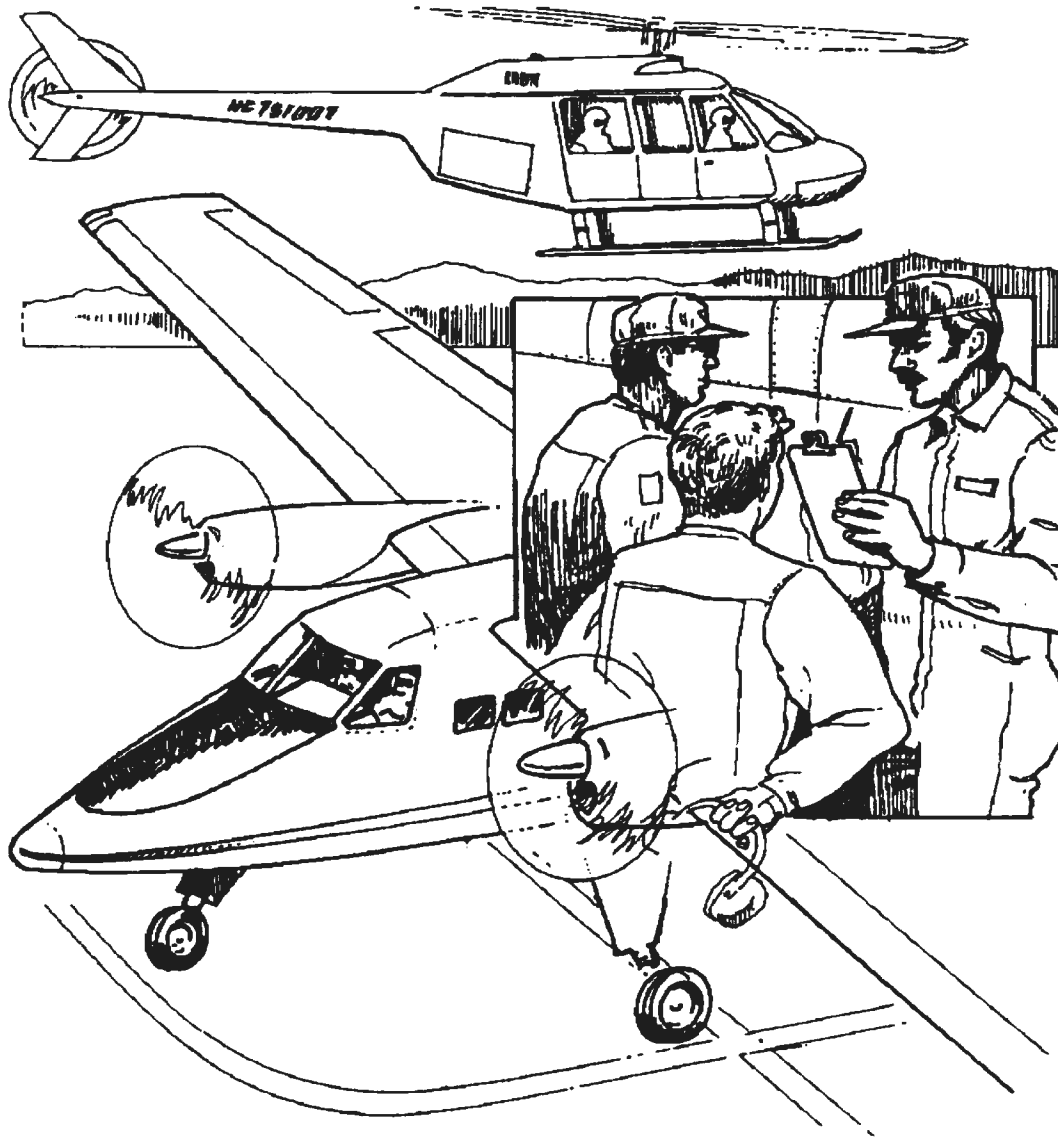
- A. Never mount or dismount moving equipment until it has come to a complete stop and all attachments have been lowered and/or secured.
- B. Check route of travel for hazards such as insufficient overhead and side clearance, bridges, high-tension lines, etc.
- C. Don't stand directly in front of or in back of a self-propelled machine while it is being started.
- D. Don't go under or around equipment without notifying operator. Look out for hazards.
- E. Rope off area of swing to provide ample clearance for a person between any solid material and tail swing of a dragline, shovel, or crane.
- F. Always leave machines with movable parts that are lowered by gravity, such as shovels, buckets, and skip loaders, resting on the ground while not operating.
- G. Don't operate vehicles or heavy equipment in enclosed areas except in cases where the equipment is specifically designed for indoor use (such as electric or propane forklifts)
- H. Investigate and correct hazards before moving machines into operating positions.
- I. When working in quarries and gravel pits, use caution in areas of instability.

5.4 Equipment Maintenance and Repair

- A. Turn off all engines before refueling.
- B. When filling a fuel tank, keep nozzle or funnel in contact with tank to prevent static charge. Provide grounding as appropriate.
- C. Never fill tank over a hot engine.
- D. When replacing glass in shields, cabs, or enclosures on heavy equipment, use safety glass designed for that purpose.
- E. Install nonskid materials on operating platforms on foot walks, ladders, steps, handholds, guardrails, and toe boards before operating machine.
- F. All gears, sprockets, shafts, augers, drive belts or chains, pulleys, drums, gears, fans, or other hazardous moving parts must have guards. Replace guards after any repairs are completed.

H-1112-2
Safety and Health for Field Operations

- G. Provide suitable protection for the operator against falling objects, swinging loads, and similar hazards.
- H. Required Lockout/Tagout procedures must be followed when doing maintenance on heavy equipment.



Chapter 6

Aviation Safety

Chapter 6 — Aviation

6.1 References

- A. BLM Manual 9400 - 9430, Aviation Management
- B. Interagency Standards for Fire and Fire Aviation (Redbook), Chapter 17, Aviation Operations/Resources
- C. 112 DM 12, AMD Manual Organization
- D. 350 - 354 DM, Aviation Management
- E. 485 DM 15, Aviation Safety
- F. AMD Operational Procedures Memoranda

6.2 Procedures. The Pilot-in-Command (PiC) is responsible for the safe operation of the aircraft and the safety of passengers while on board. The PiC has the authority to postpone, change, or cancel flights when impending conditions make them unsafe. Passengers/Flight Managers can and should terminate a flight when they feel it is not safe.

Every employee is responsible to prevent accidents, whether in the air or on the ground. The AMD, FAA, operator, pilot, ground crew, aviation personnel, and passengers are all responsible for making the flight safe, and efficient. All special-use flights, as defined in 351 DM 1.7, must be approved by the designated manager as defined in BLM 1203 Delegation of Authority Manual or National/State Aviation Management Plan.

Flight Plans are required on all flights. The pilot normally performs this function. However, the individual in charge (Flight Manager) must ensure that flight plans are filed appropriately with the FAA or BLM using Form 9400-1a (Reference: 351 DM 1.4).

- 1) All pilots used by Bureau employees must be approved by AMD/Forest Service for the type of aircraft they are operating and the mission they are flying. The card must be carried at all times and shall be made available for review prior to any flight.
- 2) During project work, wear, or have available, clothing suitable for survival in the worst terrain you will be flying over.
- 3) Transportation of hazardous materials or waste is strictly controlled by DOI regulations in any aircraft (Reference 351 DM 1.6B and OPM 55). Check with the State/Unit Aviation Manager before attempting to transport questionable hazardous materials or waste.

- 4) Flight-following is required for all flights and procedures will be established prior to the flight. A copy of the flight plan will be left with a unit on the ground.
- 5) At a minimum, Flight Managers responsibilities are to:
 - a. Check Pilot and Aircraft approval documents.
 - b. Brief pilot on mission, frequencies, flight routes, hazards, flight following, passenger briefing requirements, and any other related information including weather and scheduling requirements.
 - c. Ensure that flights are safety conducted and do not deviate from flight plans or mission profiles, including contingencies, without prior coordination with the flight manager.
 - d. Initials the flight invoices and routes them according to procedures specified in the contract/agreements.
 - e. Ensure that agency is advised of their passenger's arrival at their destination(s).

6.3 Aviation Safety Training Requirements. OPM-4 prescribes aviation training for BLM employees engaged in aviation activities. Bureau managers must evaluate their individual programs to identify unique training needs.

A. Flight Manager Airplane/Helicopter. Employees who participate in special-use flights function as a flight crew member.

- 1) Training. Basic helicopter and/or fixed-wing safety training is required (approximately 4-6 hours every 3 years). This training includes items listed in the Five Steps To a Safe Flight card (NFES 1399):
 - Pilot/Aircraft Data Card – Approved & Current
 - Flight Plan/Flight Following Initiated
 - PPE in Use When Required
 - Pilot Briefed on Mission & Flight Hazards
 - Crew & Passenger Briefing to Include:
 - Aircraft Hazards
 - Seat Belt & Harness
 - ELT & Survival Kit
 - First Aid Kit
 - Gear & Cargo Security (Not Under Seats)

Fire Extinguisher

Fuel & Electrical Shut-off

Oxygen Equipment

Emergency Egress

Smoking

Normal Operation of Aircraft Doors and Windows

2) Personal Protective Equipment (PPE)

(a) All crew members and passengers shall wear the following appropriate PPE for all helicopter flights:

Aviator's protective helmet (SPH-4 or SPH-5)

Fire-resistant clothing (Nomex or equivalent)

Leather boots

All leather or leather and fire-resistant gloves

(b) Nylon, Dacron, or polyester (i.e., synthetic or other materials with low temperature-melting characteristics) garments or undergarments should not be worn beneath the authorized flight clothing. Wear cotton or wool under fire resistant clothing.

(c) The only authorized exceptions to PPE requirements, such as hard hats with chin straps for transporting fire crews, are found in 351 DM 1.7 B.

B. Passengers. All other employees who use aircraft as a passenger, will receive a passengers' briefing that will include items listed on the five step to a safe flight card (NFES 1399)

6.4 Helicopter Operations. All air operations are subject to the procedures outlined in Paragraph 6.2 of this section. Helicopters used in BLM operations are subject to the standards outlined in 351 DM 1.7 Special Use.

General Safety Precautions:

Always approach and depart helicopters with caution. Keep below and away from the rotor blades. Stay in full view of the pilot at all times and approach from the front or side in crouching stance. Do not go near the tail rotor.

When entering or exiting a helicopter, do so only under the direction of the pilot. In mountainous terrain, enter from the downhill side, avoiding the rotor blades. Assign specific crew responsibility to ensure any cargo transported in the external racks is secured. Ensure all equipment and miscellaneous gear is secured to keep

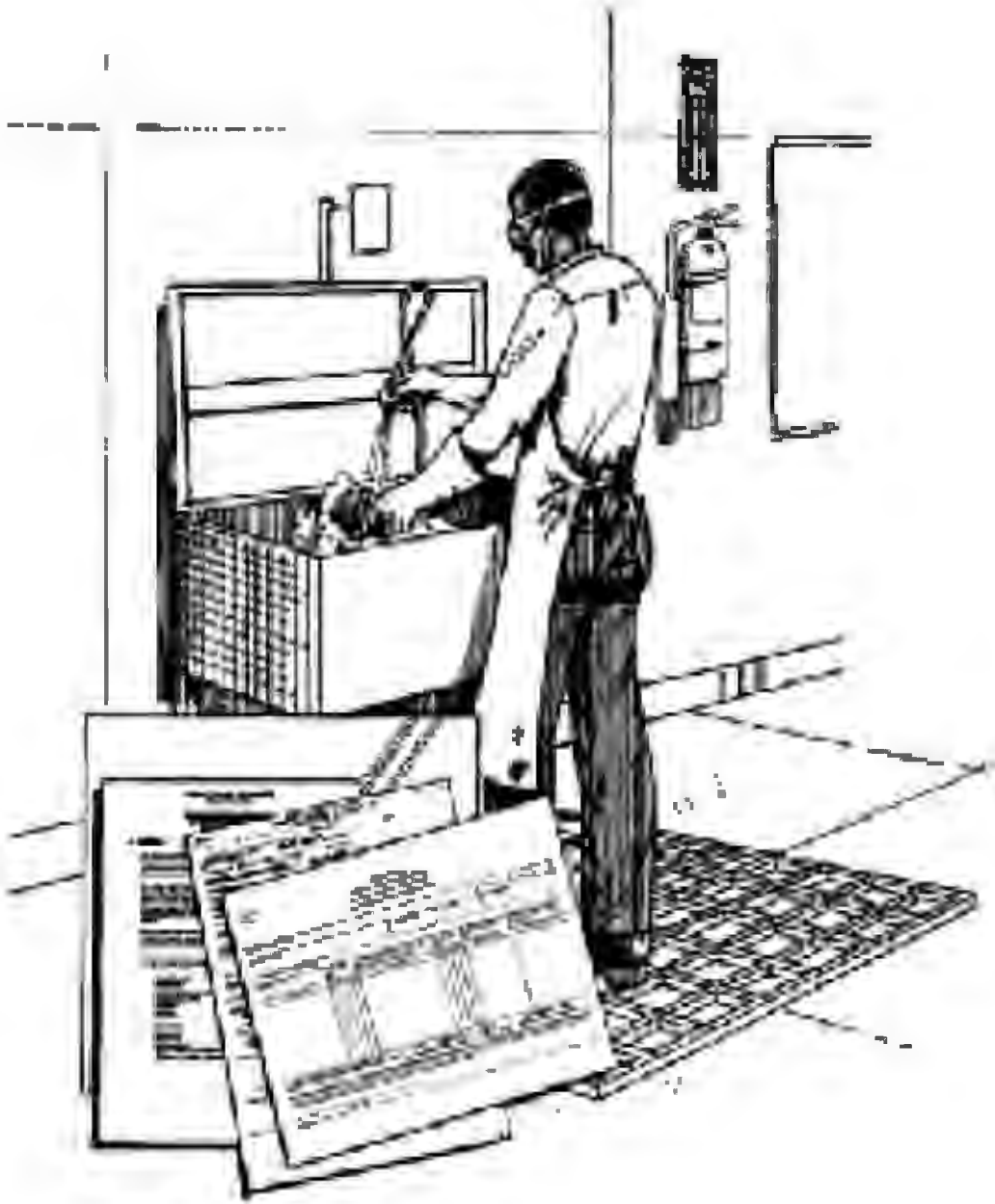
them from flying up into the main rotor. If equipment is taken aboard the aircraft, always keep it parallel to the ground or make sure the item(s) will not reach the main rotor blades. Do not put items under occupied passenger seats.

6.5 Accident/Incident Procedures. Notify the Chief, Aviation Safety and Training Manager, State Aviation Manager and AMD Safety whenever a flight irregularity occurs or whenever an aviation mishap involves property damage or injury. Use the AMD/USFS Aviation Safety Hotline number, 1-888-464-7427.

A. Aircraft Accident. An accident is defined as an unplanned event that does substantial damage or causes serious injury or death when associated with the operation of the aircraft. Form SAFECOM (OAS- 34/FS5700-14) is to be completed and submitted in accordance with 352 DM 6.5. A SMIS electronic Accident/Incident Report (<http://www.smis.doi.gov>) shall be completed and submitted. The narrative description and corrective action portions of the accident/incident report should be left blank, and only the words "Aircraft Mishap" should be entered.

B. Aircraft Incident. An incident is an unplanned event that results in deviation from standard operating procedures, with the potential of resulting in personal injury and/or property damage. Form SAFECOM (OAS-34/FS5700-14) is a DOI system of reporting any observed condition or act that affects, or may affect, the safe operation of DOI, contractor, charter, rental aircraft, associated equipment, or facilities.

The SAFECOM form is available online at (www.safecom.gov) and can be filed electronically to AMD Safety and BLM Safety.



Chapter 7

Occupational Health Hazards/Industrial Hygiene

Chapter 7 — Occupational Health Hazards/Industrial Hygiene

7.1 References

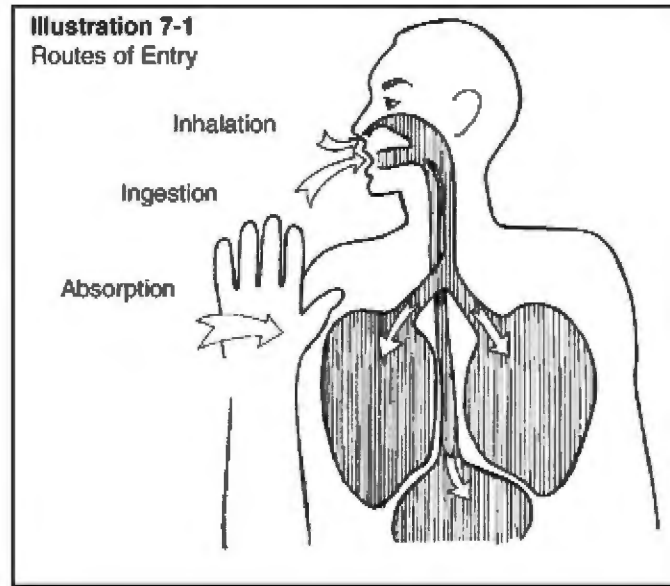
- A. 370 DM 792.7, Medical Surveillance Program
- B. 485 DM 17, Occupational Health (Industrial Hygiene) Program
- C. 29 CFR 1910.95, Occupational Noise Exposure
- D. 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response
- E. 29 CFR 1910.134, Respiratory Protection
- F. 29 CFR 1910.1000, Air Contaminants
- G. 29 CFR 1910.1020, Access to Employee Exposure and Medical Records
- H. 29 CFR 1910.1030, Bloodborne Pathogens
- I. 29 CFR 1910.1200, Hazard Communication
- J. 29 CFR 1910, Subpart H, Hazardous Materials
- K. 29 CFR 1960, Subpart C, Standards

7.2 Procedures. Workplaces should be designed to protect employees from physical, health, or ergonomic hazards. It is important to ensure that designs and conditions are planned and prepared in a manner that ensures the safety and health of the visiting public.

Employee exposure and medical records will be appropriately maintained.

A. Health Hazards. Two main forms of airborne contaminants are of chief concern: particulates, and gases or vapors. Particulates, including dusts, fumes, gases, mists, smoke, vapors, and aerosols, are classified by size and chemical makeup, and sometimes by shape.

B. Routes of Entry. Employees may be exposed to health hazards in the following ways: absorption, inhalation, and ingestion through poor work practices. (Illustration 7-1)



C. Standards of Exposure. To safeguard workers against health hazards, there are specific standards and permissible exposure limits (PELs) for each type of exposure. The limits sometimes have very strict boundaries between what is safe and unsafe. The safety manager or industrial hygienist should be consulted concerning standards of exposure.

D. Controlling, Reducing or Eliminating Employee Exposure. Once an industrial hygiene evaluation or risk assessment has been conducted and a hazardous exposure has been identified, immediate action must be taken to reduce the exposure.

There are three basic control methods: engineering controls, administrative controls, and personal protective equipment.

1) **Engineering Controls** engineer out the hazard in the design of the workplace. The most effective and inexpensive engineering controls are designed into the facility or process before construction. For existing construction, administrative controls or personal protective equipment (PPE) may be required as an interim measure until engineering controls are implemented.

a) **Ventilation Controls.** Ventilation is the classic method, and the most powerful tool used in safety engineering to control environmental airborne hazards. Proper use of ventilation as a control mechanism can assure that workplace air remains free of potentially hazardous levels of airborne contaminants. Ventilation works in two ways, by physically removing the contaminated air from the

workplace or by diluting the workplace atmospheric environment to a safe level by the addition of fresh air.

- 1) Local exhaust ventilation installed in an enclosure, or as close as possible to the point of contaminant generation, is much more effective and provides better protection than general or building ventilation.
 - 2) Ventilation systems frequently are ineffective if adequate make-up air is not provided.
 - 3) For information regarding lab safety, refer to 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, or consult the safety manager.
 - 4) Many well-designed systems fail to protect employees because maintenance is minimal or nonexistent after installation. Regularly scheduled testing and maintenance of environmental control systems must be provided to ensure continued employee health protection.
- b) Substitution/Isolation. Eliminate or minimize, to the extent possible, hazardous materials, equipment, or processes by replacing all or part of the hazardous elements. Carefully investigate all substitutions to ensure that new uncontrolled hazards are not introduced. Hazardous processes may be isolated or enclosed to eliminate employee contact.
2. **Administrative Controls.** Administrative controls attempt to limit the worker's exposure to hazards. Time exposure limitation is achieved by rotating jobs or by reducing work periods. Administrative controls should only be used for brief periods until engineering corrections can be implemented.
- a) Work Methods as Controls. Safe work practice, proper equipment, and good housekeeping will minimize unnecessary exposure to spilled substances. A housekeeping program must be established at each facility to clean up any spills of nontoxic substances promptly, and for regular cleanup and maintenance.
 - b.) Vacuuming. Vacuum cleaning is the most efficient method of collecting settled dust particles without causing appreciable re-entry into the workplace air. Blowing settled dust particles with an air hose should never be done.
 - c.) Wet Cleanup. When vacuum cleaning equipment is not available, wet methods, such as using water and/or other

wetting agents to remove dust particles on floors, may be done to minimize airborne dust caused by sweeping.

d.) **Cleaning Up Liquid Spills.** Follow the facility spill prevention plan and contact the Hazardous Materials Program Coordinator in the event of a chemical or toxic spill.

3. **Personal Protective Equipment (PPE).** As a hazard control method, PPE should only be used when other methods fail to reduce or eliminate the hazard. Some operations are not amenable to engineering or administrative controls, so PPE may be the only practical way to limit employee exposure.

PPE may also be used for brief periods during repair of engineering controls and/or to ensure greater personal protection. It is essential that PPE be fitted to the individual employee and that the employee is carefully trained in the use, care, and limitations of the equipment.

PPE provides some personal protection, but does not substitute for safe work practices.

- 7.3 Respiratory Protection Program.** This program applies to all BLM personnel whose duties require wearing respiratory protective equipment. It is intended to prevent exposure to airborne contaminants greater than permissible exposure limits (PELs) established by OSHA standards.

The primary objective of industrial hygiene programs in industry is the control of airborne contaminants by accepted engineering control measures. When effective controls are not feasible, or while they are being instituted, appropriate respirators shall be used, pursuant to the requirements of 29 CFR 1910.134.

Respiratory protection must not be considered a substitute for installing engineering controls to reduce hazardous conditions.

When required, OSHA mandates that an effective respiratory protection program must be in place, following OSHA guidelines and well planned and properly managed.

A. General Requirements. Assign respirators only to workers who have been determined by a physician to be physically able to perform the work and use the equipment. Additional medical evaluations shall be completed when:

- 1) Employee reports shortness of breath, dizziness, chest pains, wheezing.
- 2) Physician or supervisor recommends employee is reevaluated.

- 3) Observations during fit test indicate need for reevaluation.
- 4) Change occurs in workplace that could cause increase in physiological burden on employee.

A medical surveillance program will be instituted for all employees using respirators. User's medical evaluations will be reviewed on an annual basis by a medical provider.

Personnel in charge of operating activities must route all requests for the requisition of respirators through the safety manager for approval to ensure that the proper equipment is properly matched to the level of hazard and that the employee is included in a respiratory protection program. Acquisition of the equipment is the responsibility of the operating activity.

B. Classification and Description of Respiratory Protective Devices

Respiratory protective devices generally fall into these categories:

- 1) Air-purifying respirators remove contaminants from the atmosphere. This type of respirator cannot be used in oxygen-deficient atmospheres. Half-mask respiratory devices cover the nose, mouth, and chin, and do not afford protection against eye irritation from exposure to airborne contaminants. Full facepiece devices cover a larger facial area, including the eyes. Physician or supervisor recommends employee is reevaluated.
- 2) Air-supplying devices provide the user with breathing air and may be used in oxygen-deficient atmospheres, defined as less than 19.5 percent oxygen
- 3) Air-filtering masks are usually voluntarily worn by employees and not required for respiratory protection. Employees who voluntarily use dust masks must be given a copy of Appendix D to the respiratory standard. Dust masks must have an N-95 rating.

C. Respirator Training. Qualified personnel must conduct training for both supervisors and workers. Training must be documented and maintained by the local office. Minimum training includes the following:

- 1) Instructions on the nature of the hazards (whether acute, chronic, or both) and a description of what may happen if the respirator is not used.
- 2) A discussion of the respirator's capabilities and limitations, including recognition of the end of the service life of

cartridges/canisters or filters (e.g., tasting or smelling of contaminants), manufacturers' expiration date, or increased breathing resistance.

- 3) Classroom and field training to recognize and cope with emergency situations.
- 4) Instructions on cleaning, maintaining, and storing a respirator.

D. Training and Exposure Records. Records of respirator training, including fit testing, must be kept until the next training session and/or fit test.

Exposure records must be kept for the duration of employment plus 30 years.

E. Facepiece Fit Testing. Each respirator wearer must receive fitting instructions, including demonstrations and practice on how the respirator is to be worn, how to adjust it, and how to determine whether it fits properly.

- 1) Before initial use, each respirator must be properly fitted, and the facepiece seal tested.
- 2) Good facepiece-to-face seals cannot normally be obtained when the wearer has a beard, long sideburns, or a skull cap that projects under the facepiece. Facial deformities, such as scars, deep skin creases, prominent cheekbones, severe acne, and the lack of teeth or dentures can prevent a respirator from sealing properly. Individuals with any of these conditions should be precluded from using any respiratory protection devices.
- 3) Sealing tests for routine donning of respirators, which consist of both positive and negative pressure tests, must be performed each time the respirator is worn.
- 4) Warning properties. Odor, as well as eye and respiratory irritation, should alert the wearer that the respiratory protection is malfunctioning or inadequate. This may be the result of improper facepiece fitting, old/inappropriate cartridges or canisters, etc. The worker should leave the hazardous area and rectify the problem. The worker must notify the supervisor if the condition persists.

Caution! Some chemicals and substances have no warning properties. Exposed employees must ensure they understand the risks associated with the chemicals they are working with.

F. Maintenance and Cleaning. When respirators are issued to individuals, the responsibility for maintenance and cleaning of the respirator rests with the user. Equipment must be properly maintained, in accordance with manufacturers' specifications, to retain its original effectiveness.

7.4 Hearing Conservation Program. Prevention of noise-induced hearing loss is the primary and ultimate goal of all occupational hearing conservation efforts.

A. General Requirements. Implement hearing conservation programs at workplaces where noise exposures for an eight-hour time-weighted average (TWA) are 85 decibels measured on the A scale (dBA) or higher. The exposed employees must be provided with, and required to use, hearing protectors. Workplaces where exposure to noise equals or exceeds an eight-hour TWA of 85 dBA (permissible exposure during an eight-hour shift) must be identified and employees' hearing tested annually.

- 1) Warning signs indicating high noise levels and the requirement that hearing protectors must be worn shall be posted in work areas or on equipment where the noise level is 85 dBA or higher.
- 2) Audiometric test results will be maintained in the employee's medical folder for the duration of the affected employee's employment.
- 3) No employee will be exposed to noise levels without protection in excess of 115 dBA for one-fourth hour or in excess of 85 dBA eight-hour TWA.
- 4) Employees or their representatives will be provided noise measurements upon request. Audiogram results will be provided to tested employees.

B. Identification of Exposed Employees. A roster will be maintained at the local level of employees at risk to noise hazardous situations and revised as necessary. These employees must be included in all aspects of the hearing-conservation program.

C. Hearing-Protection Devices. Supervisors shall provide and replace, as necessary, a variety of hearing-protection devices (HPD) for all employees in a designated high-noise area. Hearing protection is required at 85 dBA.

- 1) Each employee will use and maintain the HPD as originally intended. Re-usable insert type HPDs should be disposed of or cleaned after each use and stored in a sanitary location.

- 2) Supervisors will evaluate the HPD for effectiveness in the particular environment in which it will be used.
- 3) Employees shall be trained in the selection, use, and maintenance of HPDs and shall be responsible for using them in designated high-noise areas.

7.5 Hazard Communication Program (HAZCOM). The Hazard Communication Program (Employee Right-to-Know) encompasses handling and storage of hazardous materials (products) in the workplace. The HAZCOM program does not apply to hazardous waste, tobacco or tobacco products, wood or wood products, articles, food, drugs, cosmetics, alcoholic beverages, or products/substances used in the workplace in the same manner as household use.

A. Manufacturers' Instructions. Manufacturers' instructions for safe handling and storage must be followed.

B. Hazard Determination. The manufacturer, supplier, or employer must evaluate chemicals to determine the hazards. Normally, this evaluation is done by the manufacturer and provided via a Material Safety Data Sheet (MSDS).

C. Material Safety Data Sheet (MSDS).

MSDSs must be available and include the following:

- 1) Name, address, telephone number of manufacturer, importer, or other responsible party
- 2) Chemical(s) and common name(s)
- 3) Physical and chemical characteristics (flashpoint, vapor pressure)
- 4) Physical hazards (fire, explosion, reactivity)
- 5) Health hazards
- 6) Primary routes of entry
- 7) Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV)
- 8) Precautions for safe handling and use
- 9) Carcinogenicity
- 10) Applicable control measures (engineering controls, safe work practices, PPE)
- 11) Emergency and first aid procedures

D. Employee Training. Supervisors shall ensure that employees using hazardous materials have been trained as mandated in 29 CFR 1910.1200 Hazard Communication Standard.

E. Hazard Communication Plan.

Each facility is required to have a written HAZCOM Plan which includes:

- 1) Site-specific policy
- 2) Nonroutine tasks
- 3) Employee information
- 4) Informing contractor employees
- 5) Inventory of hazardous materials
- 6) Waste minimization

F. Waste Minimization. It is essential that BLM employees, supervisors, and managers incorporate waste minimization practices into procurement, use, and disposal of hazardous substances.

Promote waste minimization through:

- 1) Substituting less hazardous products when feasible.
- 2) Minimizing the number and variety of products used.
- 3) Purchasing only the amount absolutely needed.
- 4) Controlling product storage and handling practices to reduce damage and loss.
- 5) Separating incompatible products during handling and storage and ensuring storage facilities are properly built, located, and equipped.
- 6) Planning work projects in a manner that prevents the acquisition of excess products and materials.

G. Labeling.

All products must be properly labeled to include:

- 1) Contents
- 2) Appropriate warning
- 3) Name and address of manufacturer
- 4) Cross-check with MSDS

H. Storage/Handling of Hazardous Materials. Storage/handling of flammable and combustibles shall be in compliance with 29

CFR 1910.106. This is outlined under Chapter 11, Materials Handling and Storage.

- 7.6 Hazardous Materials Management.** The BLM is required to comply with all Federal environmental and safety laws and regulations governing storage, handling, and use of hazardous materials, and governing disposal of hazardous waste. BLM must also comply with state hazardous materials laws and regulations, as required.

Hazardous Materials in the Field

Any employee may encounter hazardous materials situations in the field. Hazardous materials or waste may be found on public lands in a variety of forms, such as clandestine drug lab waste, mining wastes, midnight dumping, and transportation accidents. BLM employees who may encounter such situations in the field must be trained as mandated by OSHA 1910.120(q), First Responder Awareness Level, to recognize, retreat, and report any discovery.

- 1) **Clandestine Drug Lab Waste.** This waste material is often the result of illegal manufacturing of the drug commonly known as “methamphetamine” or “crank.” The waste may look like household garbage at first glance. Drug lab waste can be identified by the presence of gallon plastic jugs, large plastic bags, 5-gallon buckets, and various laboratory equipment (beakers and tubes). Drug lab waste may contain any number of chemical combinations and should be considered dangerous. Employees shall retreat from the area immediately, and report to the program manager (i.e., Supervisor, HAZMAT, Law Enforcement Ranger, or Special Agent). Do not examine, investigate, touch, smell, or taste such waste for any reason.
- 2) **Midnight Dumping.** The presence of barrels or other containers, discoloration of land, plants, or water, and the presence of dead vegetation or animals may recognize a midnight dumping on public lands. Upon discovery of midnight dumping waste, retreat from the area immediately and report to the program manager (i.e., Supervisor, HAZMAT, Law Enforcement Ranger, or Special Agent). If you discover a midnight dumping site, remember that self-protection is your primary responsibility.
- 3) **Transportation Accidents.** Truck, rail, or pipeline accidents on public lands may result in danger to life, property, or resources. When encountering such an accident, take steps to protect yourself by retreating from the area and reporting to the District/Field Office Hazardous Materials Coordinator.

7.7 Bloodborne Pathogens

General Requirements: BLM will provide maximum protection for employees who may be occupationally exposed to human bloodborne pathogens. Employee protection shall be provided through:

- 1) Training will be provided upon initial assignment, and annually thereafter, to employees with tasks where occupational exposures may occur. All training will be documented and maintained for a minimum of 3 years. Employees with little or no potential for occupational exposure will receive awareness training upon initial employment.
- 2) Engineering Controls and Safer Work Practices are established for the protection of employees working in an uncontrolled environment, with potential exposure through blood and other potentially infectious materials. These consist of first aid/CPR practices, use of resuscitation, sanitation and disinfectant procedures and use of resuscitation masks. Controls and practices will be evaluated on a regular basis to ensure effectiveness.
- 3) Personal Protective Equipment (PPE) will be provided to employees to reduce the risk of exposure. BLM will train employees in the proper selection, use and maintenance of PPE, decontamination and disposal. Examples of PPE are gloves, goggles, recommended attire when handling potentially infectious materials and pocket mouth-to-mouth resuscitation masks. BLM will make body fluid barrier kits accessible to employees.
- 4) Housekeeping Practices will be such that BLM facilities will be kept free of blood or other potentially infectious materials. Contaminated surfaces shall be cleaned and disinfected, and contaminated sharps shall be disposed of properly in puncture resistant, closable, and leak proof containers.
- 5) Hepatitis B Vaccinations will be provided to all employees who have occupational exposure at no cost to the employee.
- 6) Post exposure evaluation and follow-up shall be available to employees who have had an exposure incident at no cost and at a reasonable time and place.
- 7) Following an exposure incident, BLM will evaluate the incident to determine route(s) of exposure and the circumstances under which the exposure incident occurred.

7.8 Hantavirus. Hantavirus is a respiratory disease caused by a virus carried by the deer mouse and other rodents, such as squirrels, rats, and chipmunks. Humans acquire the infection after exposure to rodent excreta, especially after it dries and becomes airborne and is directly introduced into broken skin, eyes, nose, mouth, or possibly ingested with contaminated food or water. Employees who enter gas-metered houses, work in the renovation of old buildings, or clean up existing areas that may have rodent excreta may be at risk of the disease. All rodents should be treated as if they carry the virus.

A. General Precautions. Avoid direct contact with rodents (live or dead), their droppings, urine, saliva, nests, or other items that may be contaminated by them. Do not feed mice, chipmunks, or other rodents. Preventive measures should be taken to eliminate rodents from buildings by reducing the availability of food sources, nesting sites, and access routes into a building.

B. Elimination of Rodents Inside Buildings and Reducing Rodent Access. Rodent infestation can be determined by direct observation of animals, from the presence of feces, and from evidence that rodents have been gnawing at food. If rodent infestation is detected inside a building, rodent-abatement measures should be undertaken.

- 1) Prior to any cleanup, ventilate closed buildings or areas inside buildings by opening doors and windows for at least 30 minutes. Use an exhaust fan or cross-ventilation if possible. Leave the area until airing-out period is completed.
- 2) Seal, screen, or otherwise cover all openings into the building that have a diameter of one-fourth inch or greater, because rodents can enter through holes this small. Pay special attention to openings where pipes and wires enter the building. It is best to plug holes with sheet metal or metal screening material.
- 3) Trap rodents using spring-loaded traps. Traps should be placed on a newspaper, along suspected paths like baseboards, or near the corner of a room. Do not use live traps.

Rodenticide should only be considered for rapid knockdown of heavy rodent infestations and elimination of rodents in areas of known Hantavirus.

C. Cleanup of Rodent-Contaminated Areas. Areas with evidence of rodent activity should be thoroughly cleaned to reduce the likelihood of exposure to Hantavirus-infected materials. Cleanup procedures must limit the potential for

aerosolization of dirt or dust from potentially contaminated surfaces and household goods. A risk assessment must be completed and approved prior to any cleanup activity.

- 1) Employees involved in a cleanup must comply with the risk assessment. Rubber or plastic gloves must be worn when handling rodents or their nests, or cleaning infested areas. In heavily rodent-infested areas, workers shall wear coveralls, rubber boots or disposable shoe covers, and protective goggles. When removing rodent nests or rodents from traps, and cleaning up infested areas, workers should wear a half-face air-purifying respirator or powered air purifying respirator equipped with High Efficiency Particulate Air (HEPA) filters. Respirator use practices should be in accordance with a respirator program and should be supervised by a knowledgeable person.
- 2) Spray dead rodents, rodent nests, excreta, and foods or other items that have been tainted by rodents with a general-purpose household disinfectant or a prepared disinfectant (10%) bleach solution and/or using 3 tablespoons or capfuls of household bleach in 1 gallon of water. Soak the contaminated items thoroughly and place in a plastic bag. When cleanup is complete (or when the bag is full), seal the bag, then place it into a second plastic bag and seal. Dispose of the bagged materials by burying them in a 2- to 3-foot-deep hole. If burying is not possible, contact the local or state health department about other appropriate disposal methods.
- 3) After the above items have been removed, disinfect all floors, countertops, cabinets, and other durable surfaces with a solution of water, detergent, and disinfectant. Do not sweep with a broom or vacuum until the area has been soaked with disinfectant. Launder contaminated bedding and clothing with hot water and detergent.
- 4) After cleanup is completed and when removing gloves, wash gloved hands in a disinfectant and then in soap and water. Thoroughly wash hands with soap and water after removing the gloves. Do not reuse rubber or plastic gloves. They should be disposed of in the plastic bags containing the rodent carcasses, nests, and/or feces.

D. Symptoms of Hantavirus. Early treatment is crucial. Symptoms may appear one to six weeks (usually two to three) after contact and include fever, nausea, headache, muscle aches, cough, and increasingly acute respiratory trouble. Seek

prompt medical attention if you suspect you have been exposed to Hantavirus.

7.9 Ergonomics is the study of the relationship between the worker and the work environment. It recognizes that work methods, equipment, facilities, and tool design all influence the worker's fatigue, motivation, productivity, and the likelihood of sustaining an occupational injury or illness.

A. Principles of Ergonomics. The objective of ergonomics is to adapt the job and workplace to the worker by designing tasks, workstations, controls, displays, safety devices, tools, lighting, and equipment to fit the worker. Some jobs expose workers to excessive vibration and noise, eye strain, heavy lifting, and repetitive motion. Also, workplace temperature extremes may aggravate or increase ergonomic stress.

B. Types of Injuries. Pulled or strained muscles, ligaments, tendons, and disks are the most common back problems. The majority of workplace back disorders result from chronic or long-term injury to the back rather than from one specific incident. Back disorders are frequently caused by excessive or repetitive twisting, bending, and reaching; carrying, moving, or lifting loads that are too heavy or bulky; staying in one position for too long; poor physical condition; and poor posture.

Cumulative trauma disorders (CTDs) are disorders of the musculoskeletal and nervous systems that are caused or made worse by repetitive motions or prolonged activities. Other risk factors for cumulative trauma and back disorders include:

- 1) Forceful exertions, usually with the hands
- 2) Pinch grips
- 3) Prolonged static postures, either sitting or standing
- 4) Awkward postures of the upper body, including reaching above the shoulders or behind the back
- 5) Excessive bending or twisting of the wrist
- 6) Continued elevation of the elbow
- 7) Inappropriate or inadequate hand tools
- 8) Restrictive workstations and inadequate clearances
- 9) Vibration from power tools
- 10) Improper seating or support
- 11) Poor body mechanics

12) Lifting heavy or awkward objects

C. Hazard Prevention and Control. Ergonomic hazards are prevented primarily by the effective design of a job or workplace and the tools or equipment used in that job. Based on information obtained in an analysis of the workplace, procedures can be established to correct or control ergonomic hazards using the following methods:

1. Engineering Controls. Workstations should be designed to accommodate the full range of required movements of the workers who are actually using them to perform the job. Attention should be given to prolonged or sustained exertion of a body part, proper work activity height, the reach at which tasks are performed, and the force requirements. Other factors to look at include hard or sharp edges, contact with thermally conducting work surfaces, proper seating, work-piece orientation, lighting, and layout of the workstation.

2. Administrative Controls. Key elements include instruction in proper work techniques, employee training and conditioning, regular monitoring, feedback, adjustments, modification, and maintenance. For example, after employees are trained in a particular work activity, such as proper lifting, workers should be monitored to ensure that they continue to use proper techniques. Improper practices should be corrected to prevent injury.



Chapter 8

Personal Protective Clothing and Equipment

Chapter 8 — Personal Protective Clothing and Equipment

8.1 References

- A. Interagency Standards for Fire and Fire Aviation Operations (Redbook)
- B. 370 DM, Personnel Management
- C. 29 CFR 1910, Subpart D, Walking and Working Surfaces
- D. 29 CFR 1910, Subpart I, Personal Protective Equipment
- E. 29 CFR 1910, Subpart Q, Welding, Cutting, and Brazing
- F. 29 CFR 1910.1030, Bloodborne Pathogens
- G. 29 CFR 1926.501, Subpart M, Fall Protection

8.2 Procedures. Supervisors shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE).

A. Complete a risk assessment to determine PPE

requirements. The risk assessment process is used to identify and mitigate hazards. (See Chapter 1: Risk Assessment.) Risk assessments that require the use of any PPE must be reviewed by the local safety manager.

B. Mandatory use of PPE. When job tasks require the use of PPE, it is mandatory for the employee to use and maintain such equipment in accordance with their training. Should an employee fail to do so, it is the supervisor's responsibility to take the necessary steps to ensure compliance, including appropriate disciplinary action within the guidelines of 370 DM.

8.3 Eye and Face Protection. Protective eye and face shields shall be required when there is a reasonable probability of injury that can be prevented by use of such equipment. Eye protection shall meet ANSI Z87.1.

A. Goggles and Glasses

Use goggles, safety glasses, face shields, or welder helmets when subjected to the following:

- 1) Small flying particles when cutting, drilling, scaling, and grinding metals; cutting, chipping, or dressing stone and brick; woodworking; overhead pruning; brushing; and machine plating.
- 2) Flying objects when hand drilling, chipping, caulking, riveting, quarrying, rock cutting and crushing, or when using a cyclone seeder or brush cutter.
- 3) Concentrations of cement or other dust, or dust and sand when sandblasting.

- 4) Hot metal when handling babbitt or pouring lead joints, or shaping metal on an anvil.
- 5) Gases, fumes, and liquids when handling acids and caustics such as sulfuric or muriatic acids, ammonia or creosote.
- 6) Injurious radiant energy and flying hot particles.
- 7) Wear goggles, glasses, or face shields at all times when using grinders or buffer wheels.
- 8) Appropriate eye protection shall be worn for all welding operations.
- 9) In field situations where eye injury hazards such as brush, twigs, and limbs exist, appropriate eye protection will be worn.

B. Care of Goggles

- 1) Keep goggles in protective containers. A plastic bag works for this.
- 2) Wipe the lenses frequently with a clean cloth or soft tissue.
- 3) Keep goggle frames, including side screens, free from dust and grit.
- 4) Change headband frequently, keeping the webbing flat.
- 5) Treat lenses to prevent fogging when necessary, or use goggles ventilated around the lenses.
- 6) Replace goggles when they become scratched, pitted, or otherwise damaged in a way that inhibits visibility.

8.4 Head Protection. Protective headgear shall be required where there is a reasonable probability of injury, which could be prevented by use of such equipment.

A. Hard Hats. Hard hats must be worn when working in all construction activities, working in confined spaces, or engaged in active fire suppression work. Hard hats must be worn if there is danger from falling or flying objects or in timber areas due to danger of falling loose bark, limbs, or weak tops.

B. Nonconductive Hard Hats. Wear electrically insulated hard hats, if working near electrical conductors.

C. Proper Fit and Care. Adjust headband and hammock to fit snugly, with an air space of one-half inch or more between the head and top of crown of hat. Wear hard hat evenly centered to protect head properly. Clean and sterilize headband and hammock regularly. Integrity of head protection is essential; therefore, head protection shall be replaced when it becomes dented or damaged (some paints weaken integrity).

8.5 Respirators. Use of respirators shall be required when there is a reasonable probability of exposure that could be prevented by use of such equipment. Respirators must provide adequate protection against the particular hazard for which they were designed and must be approved by the National Institute for Occupational Safety and Health (NIOSH). Refer to Chapter 7 of this Handbook.

8.6 Hand Protection. Use of hand protection shall be required when there is a reasonable probability of injury that could be prevented by use of such equipment. Appropriate hand protection will be provided for the task. It is especially important when working with chemicals to ensure that the appropriate glove is selected for the chemical being used.

8.7 Fall Protection

A. Required Use. Employees must use appropriate fall protection required by the task or as determined by the risk assessment.

B. Inspection of Fall Protection Equipment. Inspect fall protection equipment for worn, dry, hard leather; pliability; worn or broken stitching; cuts; cracks; loose rivets; worn buckles, snaps, rollers, tongues, D-rings, etc. Check safety ropes and nets frequently for broken fibers. Twist the strands back to check. Never weaken fall protection equipment by punching extra holes in them.

8.8 Procedures for the Purchase of Personal Protective Equipment

Use the following procedures to document the purchase of PPE:

- 1) The employee or his/her supervisor initiates requests for PPE.
- 2) The supervisor and the employee(s) shall work together to develop a risk assessment that identifies job hazards and proper abatement procedures. PPE will sometimes be part of this hazard abatement. The risk assessment will be reviewed by the safety manager or specialist to ensure compliance with OSHA standards, BLM policy, and ensure that PPE meets appropriate standards.
- 3) The supervisor is responsible for providing the servicing procurement office with the signed requisition and a copy of the risk assessment for acquisition. Where credit cards are used, the risk assessment will be attached to the monthly statements.

8.9 Out-of-the-Ordinary PPE

The selection of appropriate out-of-the-ordinary PPE, such as safety boots, prescription eyewear, etc., must be made in consultation with local safety managers/specialists and be in accordance with local policy.



Chapter 9 Fire Safety

Chapter 9 — Fire Safety

9.1 References

- A. BLM Manual Handbook 1112-1, Chapter 17, Fire Safety
- B. 485 DM 19, Fire Safety
- C. Interagency Standards for Fire and Fire Aviation Operations (Redbook)
- D. 29 CFR 1910.35-38, Subpart E, Exit Routes, Emergency Action Plans and Fire Prevention Plans
- E. 29 CFR 1910, Subpart L, Fire Protection
- F. 29 CFR 1926, Subpart F, Fire Protection and Prevention
- G. NFPA 101, Life Safety Code
- H. International Building Code (formerly Uniform Building Code)

9.2 Procedures. The responsible Bureau official must ensure that buildings and facilities are inspected annually by qualified safety inspectors.

A. Detection Devices. All Bureau facilities used to house employees and their families on a year-round basis must be equipped with approved smoke-detection devices. Trailers and other facilities used as sleeping quarters by field crews must be similarly equipped.

B. Fire Extinguishers. The employer shall provide portable fire extinguishers and shall mount, locate, and identify them so that they are readily accessible to employees without subjecting the employees to possible injury.

1) Place approved and appropriate fire extinguishers inside repair shops and storage areas, or near oil or gas dispensers and other potential hazard areas.

2) Fire extinguishers are to be mounted outside flammable storage buildings.

3) Fire extinguishers need to be placed near doors or other areas that have quick accessibility and in a position that does not endanger personnel when a fire emergency arises.

C. Exits. Every building designed for human occupancy must be provided with a sufficient number of exits to permit the prompt escape of occupants in case of emergency.

1) One- and two-family dwellings are to have a secondary means of escape in accordance with NFPA 101.

- 2) Exits and the paths of approach and travel from exits must be maintained so that they are unobstructed and are accessible at all times.
- 3) All exits must discharge directly to the street or other open space that gives safe access to a public way.
- 4) Exits must be marked by readily visible or suitably illuminated exit signs.

9.3 Emergency Procedures and Evacuation Plans. Every BLM business facility for employees, volunteers, or other personnel that is leased or BLM-owned must have an Emergency Procedures and Evacuation Plan that is current and posted on-site.

The plan shall address emergency and evacuation procedures for fire and other emergencies such as bomb threats, chemical spills, earthquakes, sabotage, public demonstrations, and civil disobedience. The plan shall be updated annually.

The plan shall include the following:

- 1) Building evacuation routes.
- 2) Procedures to account for evacuated employees.
- 3) Special duties such as rescue, medical assistance for persons with special needs, and names of designated personnel.
- 4) Proper reporting procedures.
- 5) Names and job titles of emergency procedures personnel.

9.4 Personal Safety for Fire Emergencies

A. Emergency familiarization. Become familiar with emergency exits, evacuation routes, fire extinguishers, fire alarms, emergency telephone numbers, first-aid supply locations, etc.

B. Elevators. Do not use elevators during fire emergencies.

C. Hotel and Motel Rooms

- 1) Take notice of what is outside the window and make sure it can be opened. Make sure there is a smoke detector and that it appears to be operational.
- 2) Count the number of doors to the emergency exit.
- 3) Take your room key with you in case you have to return to the room to await rescue.

D. Fire event. If there is a fire, or a suspected fire, feel the door and knob BEFORE opening the door. If they are hot, do not open the door. Close vents and cover cracks around doors with wet towels to keep smoke out of the room.

E. Key and flashlight. Get in the habit of placing your room key and a flashlight where you can grab them on your way out of the room. Always take the key with you. You should close the door behind you to keep smoke and heat out of the room; you may find conditions in the hall to be unbearable and need to re-enter the room. The key is vital.

9.5 Vehicle Fires. The inherent danger from a vehicle fire is explosion, burns, and asphyxiation. Immediate response may be the key to your survival. Getting away from the fire is in your best interest.

A frequent cause of vehicle fires has been ignition of dry grass by hot parts of vehicle exhaust systems — such as catalytic converters. If there is time, the following actions can be taken:

1. Turn off ignition
2. Exit the vehicle
3. Exit the vehicle and use a fire extinguisher, if available. Use sand, dirt, blanket, or coat to smother flames if no extinguisher is available.
4. Avoid smoke
5. Remember that smoke from vehicle fires may be toxic

9.6 Prescribed/Wildland Fire Safety. BLM employees shall be trained, qualified, and carded to participate in prescribed/wildland fire activities. Untrained and/or unqualified personnel are prohibited from taking wildland fire suppression action.

Notify supervisor, dispatch center, or local law enforcement agent of any discovered wildland fire. Detailed safety policy information is found in the Interagency Standards for Fire and Fire Aviation Operations (Redbook).



Chapter 10

Field Injury Prevention and First Aid

Chapter 10 — Field Injury Prevention and First Aid

10.1 References

- A. 29 CFR 1910.151, Medical Services and First Aid
- B. 29 CFR 1910.1030, Bloodborne Pathogens

10.2 Procedures. Employees, whose field work assignment makes it difficult to reach emergency medical care within 10 minutes, must be trained to render first aid and cardiopulmonary resuscitation (CPR).

A. Camp Safety. First-aid kits should be available in two central areas (i.e., kitchen, shop area, recreation tent, project leader's tent, etc.). Kits should be sufficient to accommodate the number of people in the crew.

B. Preventive Inoculations. Preventive inoculations may be obtained for Rocky Mountain Spotted Tick Fever, certain insect stings, poison oak, poison ivy, Hepatitis A and B, and other diseases.

Hepatitis A Virus is excreted or shed in feces. Direct contact with an infected person's feces or indirect fecal contamination of food, the water supply, raw shellfish, hands, and utensils may result in sufficient amounts of virus entering the mouth to cause infection.

Hepatitis B Virus is spread through sexual contact, blood transfusions, contaminated needles, or contact with body fluids.

Preventive inoculations may be obtained at Bureau expense when determined necessary by local policy.

- 1) Inoculations may be administered if it can be shown that potential conditions warrant preventive inoculations, and are necessary for the protection of employee health.
- 2) Employees whose official duties categorize them at high risk should be offered preventive inoculation. Employees declining inoculation should fill out a waiver which should be placed in their personnel file.
- 3) Employees should refer to their local exposure control plan for further information.

10.3 Poisonous Plants. All employees subject to potential exposure to poisonous plants should be instructed on how to identify these plants, i.e., poison sumac, poison oak, and poison ivy. (Illustration 10-1)

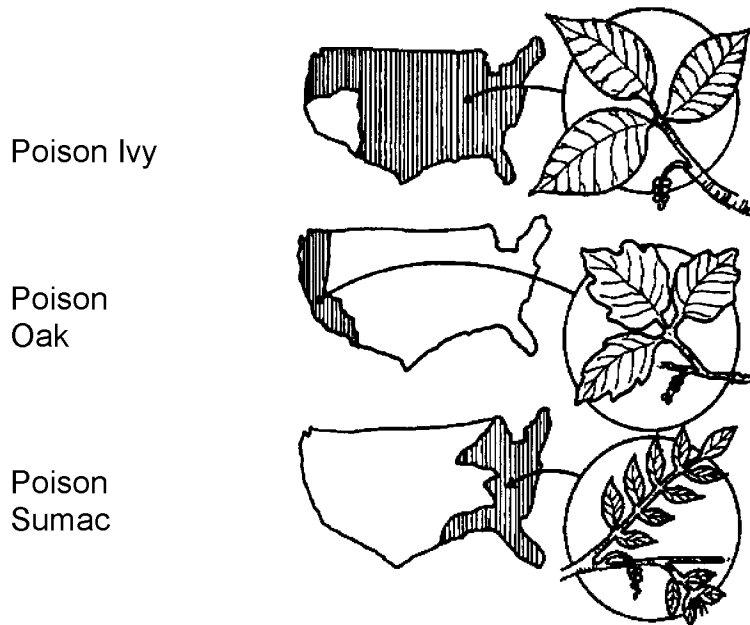


Illustration 10-1: Poisonous Plants

Take extra precautions with persons known to be highly sensitive to poisonous plants. If practical, consider not having them work in poisonous plant areas.

Basic Safety Precautions:

- 1) Wear proper field attire. (See Chapter 3: Field Work). Because dried poison oak resin on clothing can cause a rash if it touches the skin, wash clothing daily.
- 2) Wash your hands. While the palms of the hands rarely are affected, poison oak resin can be transferred from your hands to other parts of your body. The plant resin can be removed by rinsing affected areas with water. **Always** wash your hands before and after urinating. Use caution when wiping sweat from your face or around your eyes.
- 3) Wash tools. Tools can also become contaminated with plant resin. Rinse tools with water.
- 4) **Do not** use unidentified leaves as emergency toilet paper.
- 5) **Do not** attempt to desensitize yourself by eating the leaves. This can cause severe lesions in the mouth, and around the rectum, and can cause kidney damage.

- 6) **Do not** stand in the smoke of fires made of brush as it may contain unburned particles of poison oak.
- 7) **Do not** use a leaf mulcher in areas with poison oak unless your legs and arms are covered and you are wearing a face shield.

10.4 Poisonous Insects. Employees assigned to areas of heavy insect infestation (e.g., ticks, chiggers, spiders, scorpions, bees, wasps, yellow jackets) should do the following:

- 1) Wear proper field attire. Additional protective clothing or equipment for specific activities will be determined by the risk assessment.
- 2) Secure trousers by tucking pant legs into socks to prevent insects from crawling up pant legs.

A. Bees, Wasps, Hornets. Bees are attracted to odors and bright colors. Hair spray and gels, sunscreen, scented lotions, perfumed toiletries, and suede or leather odors attract insects and should be avoided. Bright colors and bright metal objects, such as jewelry, belt buckles, etc., also attract bees.

Swatting or running may aggravate stinging insects. Shield your face with your arms and move slowly out of a danger zone, or lie face down on the ground if under attack.

Do not poke at bee or wasp nests!

People who are allergic to bee stings should carry a bee sting kit and alert co-workers that they are allergic to bee stings.

Symptoms. One or more of the following symptoms may occur at the sting site and may last from 48 to 72 hours: pain, redness, swelling, itching and/or burning.

Treatment. Care of the sting site and pain relief are the two main concerns.

- 1) **Bee Sting Kit/Epinephrine.** When a bee or wasp sting causes throat swelling, shortness of breath or difficulty breathing or signs of shock, the patient should immediately receive epinephrine. If one or more of these symptoms is present and a bee sting kit is not available, be prepared to administer CPR.
- 2) Remove the stinger with an outward scraping motion of a fingernail, credit card, knife blade, or a needle. Do not pinch the stinger between nails or tweezers because this action can squeeze the attached venom sac and worsen the injury.
- 3) The honeybee has a barbed stinger that could be left in the skin. The venom sac of the honey bee stinger may be

attached and continue to inject venom for some time after the bee has left.

- 4) Remove jewelry from the affected area
- 5) Wash the area, if possible
- 6) Apply ice or cold water to the sting site
- 7) Administer oral antihistamines

B. Ticks

When working in areas infested with ticks:

- 1) Tuck your pant legs into your socks
- 2) Tuck your shirt into your pants
- 3) Apply a tick repellent to your clothes
- 4) Perform a body check at the end of each work day. Pay particular attention to armpits, navel, behind the ears, and in the groin area.
- 5) At night, place clothing where ticks, spiders, or scorpions cannot get in them. Arrange bedding so that insects cannot crawl into it during the day and night.
- 6) Remove all ticks. If you find a tick on your body, the sooner you remove it, the better.

Tick Removal

- 1) Tweezers work best at removing ticks. If fingers are used, shield them with a piece of paper or medical gloves.
- 2) Grasp the tick as close to the skin surface as possible and pull outward with a steady, even pressure. Do not jerk or twist the tick, as you may cause the head of the tick to break off in the skin. Take care not to squeeze, crush, or puncture the body of the tick, as this may cause the injection of fluids from the tick to enter the wound.
- 3) After removing the tick, disinfect the area with alcohol or soap and water. You may want to keep the tick in a small jar for later identification in case you develop additional symptoms (see below.)
- 4) Caution! Folklore methods of tick removal, such as painting the tick with petroleum jelly, fingernail polish, or alcohol, or applying a hot match head do not work.

C. Lyme disease. Lyme disease is found in many parts of the United States and is transmitted by infected deer ticks. Deer ticks are small in size and black or reddish-brown in color.

Prevention: An infected tick must be attached to the skin for 12 to 24 hours in order to transmit the spirochete that causes Lyme disease, so prompt tick removal is a good safeguard against the disease.

Symptoms: Headache, rash at the bite site, stiff neck, fever, muscle ache, flu-like symptoms, and general malaise.

Symptoms can develop within a few days or after several weeks. In about 70% of Lyme disease cases, a “bull’s eye” rash or lesion appears.

Treatment: If these symptoms occur following tick exposure, seek prompt medical attention. If left untreated, Lyme disease can cause severe health problems. Prompt and accurate diagnosis is essential.

D. Rocky Mountain Spotted Tick Fever .Rocky Mountain spotted fever commonly found in the Rocky Mountains of the western United States, is transmitted by small, brown ticks with distinctive spots.

Prevention: During tick season, spray tick repellent on your clothing. Check your body daily for evidence of ticks. Prompt removal is the most effective method of prevention.

Symptoms: Symptoms normally appear within 2-14 days and are characterized by headache, fever, loss of appetite, rash which begins on the wrists and ankles and spreads over the entire body, swelling and muscle aches.

Treatment: Seek medical attention.

E. West Nile Virus. West Nile Virus (WNV) is a potentially serious illness that affects the central nervous system and is transmitted by mosquitoes. Experts believe that WNV is established as a seasonal epidemic in North America that flares up in the summer and continues into the fall.

Mosquitoes become carriers of the disease when they feed on infected birds. Infected mosquitoes spread WNV to humans and other animals when they bite. WNV is not spread through casual contact such as touching or kissing a person with the virus.

Prevention: The easiest and best way to avoid WNV is to prevent mosquito bites.

1) When you are outdoors, use insect repellents containing DEET and use as directed.

- 2) Wear light-colored clothing so you can easily see mosquitoes that land on you.
- 3) Avoid outdoor activities at dusk and at dawn. Because mosquitoes are most active at dusk and dawn, be sure to use insect repellent and wear long sleeves and pants during these periods. You may choose to stay indoors during these hours.
- 4) Get rid of mosquito breeding sites by emptying standing water.

Symptoms: Humans typically develop WNV symptoms between 3 and 14 days after they are bitten by an infected mosquito.

No Symptoms in Most People. Approximately 80 percent of people who are infected with WNV will not show any symptoms at all.

Mild Symptoms in Some People. Up to 20 percent of the people who become infected will display symptoms which can include fever, headache, and body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Symptoms can last for as short as a few days, though even healthy people have been sick for several weeks.

Serious Symptoms in a Few People. About one in 150 people infected with WNV will develop severe illness such as: high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent.

Treatment: There is no specific treatment for WNV infection. With mild symptoms, fever and aches normally pass on their own and it is not necessary to seek medical attention though some choose to do so.

If you develop symptoms of severe WNV illness, such as unusually severe headaches or confusion, seek immediate medical attention. Severe WNV illness usually requires hospitalization where patients may receive supportive treatment including intravenous fluids; help with breathing, and professional medical care.

Pregnant women and nursing mothers are encouraged to talk to their doctor if they develop symptoms that could be WNV.

10.5 Poisonous Snakes. Not all snakes are poisonous; however, it is safest to avoid contact with all snakes, when possible.

A. Snake Characteristics. Snakes are temperature sensitive. At cool to cold temperatures, snakes are slow and lethargic; at hot temperatures, snakes are quick, but uncomfortable and will normally seek cool shelter. On a cool morning, a snake may be sunning on a warm ledge; in the heat of the day, a snake may be under a rock or brush where it is cool.

- 1) Snakes have excellent camouflage and are difficult to see.
- 2) Don't underestimate the speed and agility of a snake. Rattlesnakes can strike over a distance of at least one-half their length and can strike faster than you can jump.
- 3) Snakes do not need to be coiled to strike, so give them a wide margin. Some snakes swim, so be alert near water.

B. Safe Field Behavior. Assume that all snakes are poisonous and avoid contact whenever possible.

- 1) Wear appropriate field clothing and boots.
- 2) Be alert when walking in back country, especially if the ground is obscured by foliage.
- 3) Walk on clear paths as much as possible. A walking stick can be useful.
- 4) Be particularly careful around logs and fallen trees.
- 5) Watch where you are putting your feet and hands at all times.
- 6) Don't pick up rocks or other objects that might conceal a snake. Use a tool to turn the rock over first.

C. First Aid for Snake Bites

If medical help can be secured within one hour, no first-aid measures are necessary. However, if medical help is further away, do the following:

- 1) Keep still; avoid panic.
- 2) Move away from the snake. Snakes usually stay within twenty feet of the incident.
- 3) Apply a constricting band, 2-inches wide, above the bite site.
- 4) Immobilize the affected extremity.
- 5) Do not take/give aspirin.
- 6) Seek medical help. Do not wait until symptoms develop as the onset of symptoms may be delayed for up to six hours.

- 7) Caution! No ice packs or ice water immersion, no tourniquets, no incisions and suction, and no electrical current in the treatment of snake bites.

10.6 Cold Injuries. Hypothermia and frostbite are the two most common types of cold injuries. Frostbite is an external injury whereas hypothermia is internal. Field attire appropriate for the weather conditions is the most effective method of prevention.

A. Frostbite. Frostbite is local cooling, an external cold injury. Most commonly affected are the ears, nose, hands, and feet. When a part of the body is exposed to intensely cold air or liquid, blood flow to that particular part is limited by the constriction of blood vessels. When this happens, tissues do not receive enough warmth to prevent freezing and ice crystals can form in the skin. There are three degrees of frostbite: frostnip, superficial frostbite, and deep frostbite.

- 1) Frostnip

Symptoms: Frostnip is the first stage of frostbite and is brought about by direct contact with a cold object or exposure of a body part to cold air. Wind chill and water chill also can be major factors. This condition is not serious. Frostnip develops slowly, and often a person is not aware of the condition until someone calls attention to it. The affected part blanches, or becomes discolored or pale. As the cooling process continues, numbness replaces any sensation of cold or discomfort.

Treatment. A person with frostnip usually cares for the problem by gently warming the affected body part, holding it in their bare hand, blowing warm air on it, or, if fingertips are involved, holding them in the armpits. If for some reason a person is unable to do this alone, another person can take the same steps. Transfer the person to a medical facility if it appears they have suffered more than a mild case of frostnip.

- 2) Superficial Frostbite

Symptoms: If frostnip goes untreated, it can become superficial frostbite. The outer and inner layers of skin become involved. The affected body part(s) become discolored and pale and feel frozen to your gentle touch. However, when the skin is gently pressed, it will feel soft and pliable beneath the frozen area. Superficial frostbite is what is most commonly called "frostbite".

Treatment: Gently handle and cover the affected body part. If transportation to a hospital is delayed, apply steady

warmth by submerging the body part in warm water. The skin turns purple during thawing and can be painful. The person should receive follow-up medical care.

3) Deep Frostbite

Symptoms: The inner and outer layers of the skin and the deeper structures of the body are affected and muscles, bones, deep blood vessels, and organ membranes can become frozen. The affected part becomes a mottled or blotchy blue or gray. The tissue feels frozen to the touch, without the underlying resilience that is characteristic of superficial frostbite.

Treatment: Deep frostbite requires emergency care and immediate transportation to a hospital. Dry clothing will help prevent further injury. Do not rub the frostbitten body part(s) and do not apply ointment or cover frostbitten parts with snow. If the tissue is frozen, keep it frozen until care can be initiated. Also, never initiate thawing procedures if there is any danger of refreezing - keeping the tissue frozen is less dangerous than risking chance of refreezing. If blisters appear, do not open them.

B. Hypothermia, a condition where the body temperature drops to a subnormal level, is an internal cold injury. Hypothermia is caused by exposure to cold but not necessarily freezing temperatures. Improper or inadequate clothing and alcohol are the most common causes of hypothermia.

When the body temperature drops, it impairs a person's ability to think and act rationally and can, in extreme cases, cause death. Hypothermia is accelerated by wet or damp clothing, wind, exhaustion, or sudden contact with cold water.

Prevention: The best defense against hypothermia is to avoid exposure. Recognize hypothermia-producing weather and dress appropriately. Choose clothing that will keep the body dry and warm. Check weather conditions and be familiar with the area before trips. Prepare and pack a survival kit to be carried by each person.

Symptoms: Watch for these symptoms of hypothermia in yourself as well as in others whenever you are outdoors.

- 1) Uncontrollable spells of shivering or continuous shivering or rigid muscles.
- 2) Fatigue and numbness.

- 3) Lack of coordination, stumbling lurching gait, slurring and slowing of speech, poor judgment, drowsiness, impairment of memory, and loss of awareness.
- 4) Unconsciousness, slow pulse and respiration, dilated pupils.
- 5) Changes in heart rhythm.

Treatment: Hypothermia, if untreated, can develop into a life-threatening emergency. Rescuer(s) must prevent further heat loss.

- 1) Get the patient out of wind and weather.
- 2) Handle the patient gently and remove wet and cold clothing, if possible.
- 3) Insulate the patient from the ground.
- 4) Add heat to the environment and/or surround the patient with body heat (effectively transferred through direct skin to skin contact).
- 5) If the patient can drink and eat, give warm drinks, but no alcohol. Offer foods obtaining simple sugars (hot chocolate, candy bars).
- 6) If the rescuer(s) is certain that the patient is not breathing, watch for one minute and if no pulse is felt for at least one minute, perform CPR.
- 7) Be aware and monitor the rescuer(s) condition as well and watch for signs of hypothermia,

10.7 Heat Injuries. Heat injuries are not restricted to elevated ambient temperatures. Heat is generated as a result of the constant chemical processes within the body. A certain amount of this heat is required to maintain normal body temperature. Any heat that is not needed for temperature maintenance must be lost from the body or hyperthermia, an abnormally high body temperature, will ensue. If allowed to go unchecked, it can lead to death.

A. Heat Cramps. Symptoms: severe muscle cramps, usually in the legs or abdomen, brought about by dehydration and exhaustion, and sometimes accompanied by dizziness and periods of faintness.

Treatment. Move the person to a nearby cool place. Give the person water to drink, or half-strength commercial electrolyte fluids. Massage the cramped muscle(s) to help ease the person's discomfort.

B. Heat Exhaustion

Symptoms: rapid and shallow breathing, weak pulse, cold and clammy skin, heavy perspiration, total body weakness, and dizziness that sometimes leads to unconsciousness.

Treatment: Move the person to a nearby cool place. Keep the person at rest. Remove enough clothing to cool the person without causing chills (watch for shivering). Fan the person's skin. Give the person salted water or half-strength commercial electrolyte fluids. Do not try to give fluids to an unconscious person. At this stage, treatment at a medical facility is essential.

C. Heat Stroke. Heat stroke is a life-threatening, heat-related emergency that may require CPR.

Prevention: Immediately reduce activity levels and seek a cooler environment. Stay in the shade. Keep food intake, especially intake of protein, to a minimum if sufficient water is not available, since protein increases metabolic heat production and water loss.

- 1) Keep clothing on, including shirt and hat. Clothing slows the evaporation rate of perspiration and prolongs the cooling effect in addition to providing protection from the sun.
- 2) Drink water to prevent dehydration.
- 3) Do not sit or lie on hot ground. It can be up to 30 degrees hotter on the ground than it is just one foot above the ground. To avoid skin burns, avoid sitting on metal surfaces unless material is placed between skin and place of contact.

Symptoms: deep breaths followed by shallow breathing, then a rapid, strong pulse, followed by rapid, weak pulse. The skin becomes hot and dry. The person may lose consciousness and seizures or muscular twitching may occur.

Treatment: Cool the person rapidly in any manner. Move the person out of the sun or away from the heat source. Remove the person's clothing and wrap them in wet towels and sheets. Pour cold water over these wrappings. Body heat must be lowered rapidly or brain cells will die.

- 1) If cold packs or ice bags are available, wrap them and place them in the person's armpits, behind each knee, on the groin, on each wrist and ankle, and on each side of the person's neck.
- 2) Transport the person to a hospital as soon as possible. Should transport be delayed, immerse the person up to the face in a tub or container of cool (not cold) water. Constantly watch the person so that they do not drown.

10.8 Lightning-Strike Injuries. The passage of electricity through the body can either burn tissues or cause only muscle spasms or contractions. Vital nerve centers may be blocked, causing the heart or breathing to stop. Immediate revival should be attempted using CPR techniques. A lightning struck person can be touched without any risk of shock to you.

A. Observe the 30/30 rule. If you see lightning and hear thunder claps within 30 seconds, seek protection and do not resume work until 30 minutes after storm activity has passed.

B. Do not stay on ridge tops, in wide open areas, near ledges or rock outcroppings, and don't group together.

C. Do not operate land line telephones, machinery, or electric motors. Hand-held radios and cellular phones can be used.

D. Motor vehicles provide good protection against lightning strikes.

10.9 Altitude-Related Problems

Most difficulties at high altitude are a direct result of the lowered concentration of oxygen in the atmosphere. High-altitude pulmonary edema (excessive fluid in the lungs), "altitude sickness", usually occurs in an unacclimatized individual who rapidly ascends to an altitude exceeding 6,600 feet, particularly if heavy exertion is involved.

Symptoms:

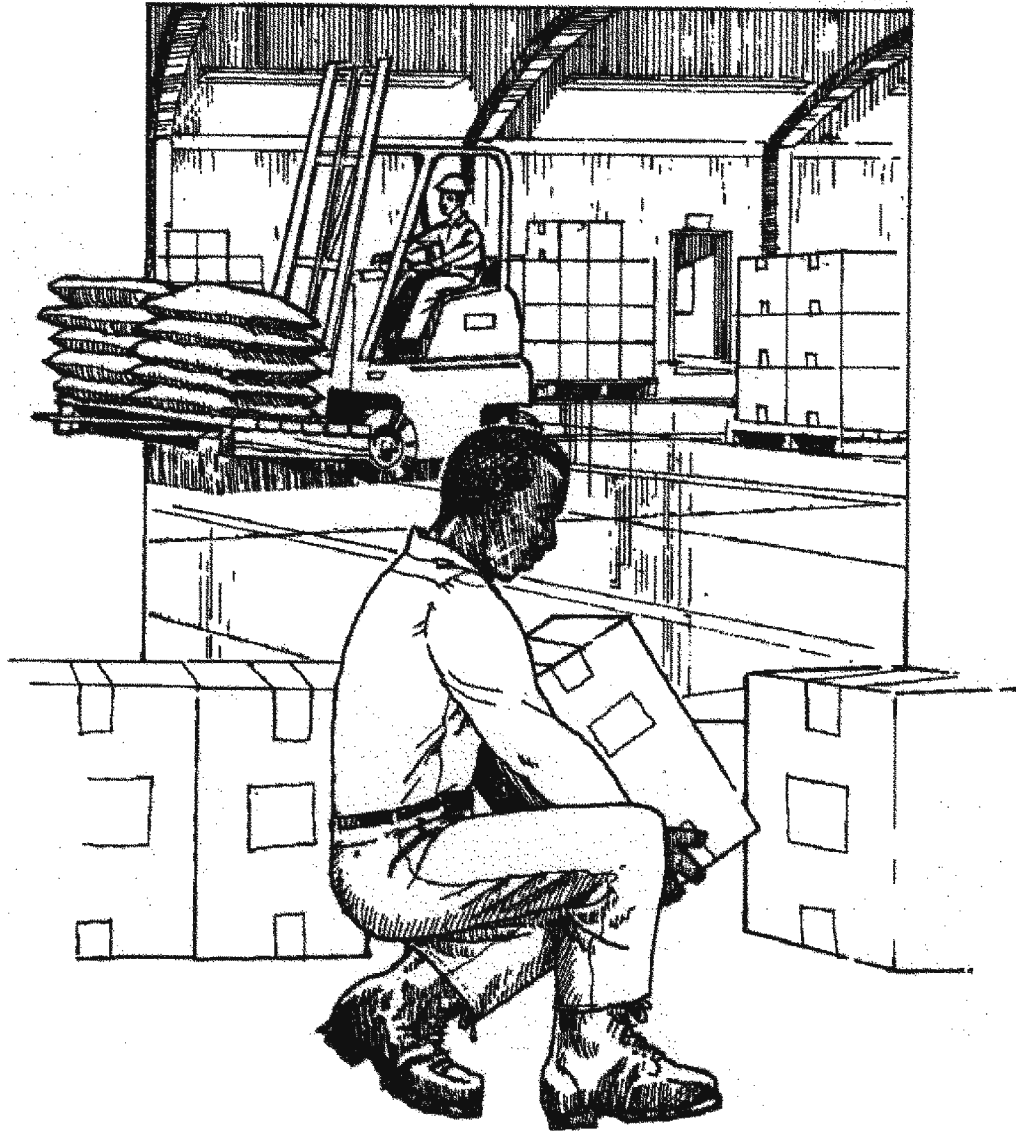
- 1) Headache
- 2) Fatigue
- 3) Mental disorientation
- 4) Rapid breathing
- 5) Restlessness
- 6) Vomiting and nausea
- 7) Hallucinations
- 8) Difficulty walking
- 9) Loss of consciousness

Treatment:

- 1) Monitor the person's airway, breathing, and circulation
- 2) Quiet and reassure the patient to conserve oxygen and energy
- 3) If auxiliary oxygen is available, allow patient to breathe air from this source

H-1112-2
Safety and Health for Field Operations

- 4) Keep the patient warm and at rest until symptoms subside and normal breathing returns
- 5) If the symptoms persist, move the patient to a lower elevation
- 6) Do not ascend to higher altitude when symptoms are present



Chapter 11

Materials Handling and Storage

Chapter 11 — Materials Handling and Storage

11.1 References

- A. 29 CFR 1910.132, Personal Protective Equipment
- B. 29 CFR 1910.176, Handling Materials - General
- C. 29 CFR 1926 Subpart H, Materials Handling, Storage, Use and Disposal
- D. 29 CFR 1926 Subpart N, Cranes and Derricks, Helicopter, Hoists, Conveyors, etc.
- E. 29 CFR 1926.602, Material Handling Equipment
- F. 29 CFR 1926.953, Materials Handling
- G. 29 CFR 1926.1000, ROPS, Protective Frames, Enclosures, etc., on Vehicles
- H. ANSI Z358.1-1998 Standard, Emergency Eyewash and Showers

11.2 Procedures. Observe established procedures and precautions when lifting, carrying, or otherwise handling heavy loads. Weight, shape, and size of objects determine limits of safe handling. Don't overexert. If help is needed, get it. Use required personal protective equipment (PPE), as appropriate.

A. Lifting Heavy Loads

- 1) Inspect ground or floor area immediately around object.
- 2) Inspect route of travel for clearance and tripping hazards.
- 3) Examine object to determine safest way to handle. Check for snags, burrs, splinters, greasy surfaces, etc.
- 4) Wear protective gloves and safety shoes as appropriate.

B. Lifting in a Proper Manner

- 1) Make a trial lift to be sure load can be handled safely.
- 2) Stand close to object, with feet solid and slightly apart.
- 3) Assume a crouching position close to load. Bend legs at knee.
- 4) Keep back as straight as possible without arching allowing leg and arm muscles to do the work.
- 5) Secure a firm grip on object. Lift by straightening legs.
- 6) To shift the load to shoulder height or higher, bend knees. Rest object on a bench or ledge. Shift your grasp to maintain

control of the object during lift and utilize your legs to leverage the object into position.

- 7) Never twist the torso when lifting or carrying heavy loads. Shift feet to turn body.
- 8) Carry the load as close to your body as practical: holding a load away from your body increases the torque on your back muscles and spine.
- 9) Make allowances for fatiguing effects of stairs and ramps.
- 10) Take precautions to avoid bruising, scraping or crushing hands and arms in narrow passageways.
- 11) Lower object in same manner in which it was raised. Take necessary precautions to keep fingers clear when placing object.

Illustration 11-1



C. When Two or More Persons Lift

- 1) Select persons of similar size and strength.
- 2) Station one person at rear to give predetermined signals or orders.
- 3) Carry long objects such as ladders, pipes, and lumber on shoulders on same side. Walk in step.
- 4) Handle packaged articles in boxes by grasping them at opposite top and bottom corners. Grasp sacked material by opposite corners.
- 5) Up-righting full drums is a minimum two-person job. When rolling a drum, push with hands on center of the barrel.

Secure drums with safety ropes or other tackle on inclines or skids.

- 6) Provide help for handling odd-shaped objects if combination of irregularities and weight makes them hazardous for one person.

D. Equipment

- 1) Provide a wide range of tools, fixtures, jigs, hooks, crowbars, cribbing, rollers, blocks and tackle, slings, hand trucks, dollies, etc., for safe handling of materials and equipment.

Mechanical lifting is always preferable to lifting with the body, and a wide range of powered lifting tables and stock pickers is available and should be used, particularly for warehousing operations.

- 2) Provide appropriate hand protection.
- 3) Inspect all tools and equipment prior to use to ensure safe operating conditions.
- 4) Tool boxes should be securely fastened when being transported. Fasten other materials securely so they don't shift and strike occupants or otherwise create a hazard in case of a vehicle accident.

11.3 Powered Industrial Trucks and Tractors (Forklifts, etc.) Each operator is responsible for the safe and careful handling of the equipment. Operators shall be trained and authorized to operate such equipment, and the authorization shall be noted on individual training records. Equipment and operators shall be in compliance with 29 CFR 1910.178 and ANSI B56.1-1969.

A. Minimum Forklift Operation Requirements

- 1) Falling Object Protective Structures (FOPS)
- 2) Backup alarm
- 3) Capacity stenciled or decaled
- 4) No passengers on forklift
- 5) No passengers on pallets or loads
- 6) Initial training and documentation
- 7) Seatbelts or harness (stock pickers)
- 8) Performance check every 3 years

B. Basic Safety Rules for Operating Forklifts

- 1) Before operating, check brakes, steering, horn, gas, oil, and water levels. For propane powered forklifts, check gas lines

and connections. Irregularities should be reported to supervisor.

- 2) Do not exceed the truck's rated capacity or the floor load limits. No modifications to forklift without manufacturer's approval.
- 3) Inspect the load before picking it up. Consider its weight and balance. If load appears unsafe, split load or use other equipment.
- 4) Pick up load squarely and do not make quick or jerky starts and stops.
- 5) Never bump or push the loads with the forks or the rear end of a truck.
- 6) Always face the direction the truck is moving and maintain clear vision of the way ahead.
- 7) Keep arms and legs inside truck. Do not put them between the mast's uprights nor outside the running lines of the truck.
- 8) Passengers are prohibited on forklifts and forklift loads.
- 9) If following other trucks, maintain safe distance.
- 10) On wet or slippery floors, slow down. Use low gear when descending ramps.
- 11) Be sure that adequate chocks are provided and that the wheels of highway trucks and trailers at loading docks are chocked.
- 12) Make certain that bridge plates into trucks are wide enough, appropriate for the load and secured.
- 13) Don't cut corners. Before passing a doorway or turning a blind corner, slow down and sound horn.
- 14) When entering main aisles, intersections, or roadways, come to a full stop; look and sound horn. Watch out for pedestrians.
- 15) Carry the loads of high-lift trucks 6 inches off the floor and tilted backward for better stability.
- 16) Always travel forward up ramps and in reverse down ramps.
- 17) When high-lift trucks are unloaded and in motion, keep their forks near the floor to prevent damage or injury.
- 18) Be careful in elevating loads. Watch out for overhead and wall obstructions, fire extinguishers, sprinklers, pipes, electrical conduits, switches, etc.

- 19) Use extreme caution in high tiering.
- 20) Do not use the fork of a high-lift truck as a personnel elevator, unless a safety platform specifically designed for lifting personnel is attached to the forks.
- 21) Lower loads slowly and stop gently. Never lift or lower when truck is in motion.
- 22) Park safely, without obstructing aisles. Before leaving a gas or diesel truck, turn off the engine.
- 23) Stop the engine when refueling.
- 24) Lock the truck or remove keys when not in service.
- 25) Observe fire prevention rules. Equip industrial trucks with a fire extinguisher, and make sure that drivers know how to operate it.
- 26) Use gas-, diesel-, or propane-fueled equipment in well-ventilated areas.
- 27) Forklift battery maintenance.
 - a) Always wear the proper personal protective equipment when servicing a battery: heavy duty rubber gloves and safety goggles at a minimum, with a face shield and rubber apron additionally recommended.
 - b) An eyewash or shower station must be in an accessible location that requires no more than 10 seconds to reach. The eyewash unit must be located on the same level as the hazard and the path of travel must be free of obstructions. For a strong acid or strong caustic, the eyewash should be immediately adjacent to the hazard.
 - c) Shut off the engine.
 - d) Do not smoke or have an open flame within 50 feet of the battery-changing area. The area must be signed "No Smoking or Open Flames".
 - e) Make sure the brake is set on the forklift before changing the battery.
 - f) Make sure the battery-lifting device is secure prior to lifting the battery.
 - g) Stand clear when moving the battery.
 - h) Make sure that the ventilation system is working properly before charging a battery.
 - i) Always add battery acid to water — never add water to battery acid.

- j) If charging the battery on the forklift, uncover the battery compartment to prevent the build-up of heat and hydrogen gas.
- k) Make sure that metal objects do not come in contact with the terminals on the battery.
- l) Make sure the charger is off before connecting it to the battery.
- m) Make sure the vent caps are not plugged.
- n) Make sure charger is properly connected to battery before plugging it into electrical outlet.

11.4 Storage Yards

Use a level, well-drained wareyard for storing materials, vehicles, equipment, etc. Storage yard should be secured with a vandal-proof fence.

- A. Provide adequate roadways and walkways for safe movement of personnel, trucks, lifts, and cranes, etc.
- B. To the extent possible, keep storage yards free of excess material and obsolete equipment that clutter the area.
- C. Provide and maintain approved types of fire extinguishers in storage yards.
- D. Maintain corridors inside and outside of perimeter fence to facilitate access and fire control.
- E. Keep storage area free of vegetation, debris, and rubbish.
- F. Use cribbing to prevent direct contact with the ground and provide bottom ventilation.
- G. Use tarpaulins to protect materials subject to weather and sun damage.
- H. Arrange heavy pieces and palletized material in a manner that will allow for mechanical handling.
- I. Block or nest round objects to prevent roll. If drums and kegs are piled on end, use planks between layers.
- J. Neatly stack piles of lumber for improved stability. Make the height of the pile no greater than the width.
- K. Use cross-binding methods when storing bagged material and masonry products.
- L. Store reinforcing steel and small-diameter pipe on racks. Make permanent separations to prevent pulling from the pile.

- M. Provide loading docks and hand trucks for moving heavy and bulky items.
- N. Label all barrels according to their contents and properly dispose of unneeded barrels as appropriate.
- O. Sign flammable storage areas as "No Smoking or Open Flames".
- P. Ensure that surface of storage yard is protected from contamination by stored liquid materials.

11.5 Warehouse Storage. Materials should be stored a safe distance from heating devices such as stoves, steam pipes, heating ducts, and radiators. Materials should be stored separately according to the hazard they represent. DO NOT defeat the effectiveness of fire sprinklers by placing stored materials within 18 inches of the sprinkler head.

- A. Provide adequate aisle space for handling heavy or bulky bounded, stacked, or racked materials. Clearly define aisles and passageways. Keep them free of obstacles and other materials to provide for safe egress.
- B. Combine like storage whenever possible. If numerous small items are stored, use bins for storage that are designed for use with a forklift. Use polyethylene wrap to secure multiple or oddly shaped items on one pallet.
- C. Plan storage to permit safe lifting and handling and prevent toppling. Don't load storage bins beyond safe capacity.
- D. Provide racks designed to hold stock of pipes and bars.
- E. Don't allow stored materials to exceed safe floor loads or rack/shelf storage limits. Keep floors clean and in good repair.
- F. Keep areas around warehouses and other buildings free of dry grass, vegetation, and debris. Take adequate fire prevention measures to prevent loss or damage of stored materials.
- G. Packing materials and rubbish shall be stored as to minimize fire hazards or present a housekeeping hazard. Never permit large amounts of waste material to accumulate in warehouse.
- H. Provide adequate illumination for storage and warehouse operations.
- I. Store compressed gas cylinders in cool, dry, well-ventilated places and ensure compatibility, e.g., oxygen and acetylene must be stored separately, 20 feet apart. Close valves tightly. Keep protective caps in place. Place cylinders upright and fasten securely approximately 6 inches below the shoulder.

H-1112-2
Safety and Health for Field Operations

Separate full and empty cylinders. See Illustration 11-2 for more information on compressed gas cylinders.

- J. Store corrosive and toxic liquids in a cool, dry, well-ventilated, isolated place, with concrete floors treated to reduce solubility.
- K. Segregate flammable materials or supplies from other items. Store flammable liquids, paints, oils, etc., in approved containers equipped with tight-fitting closures. Use flammable storage cabinets and safety containers for even small quantities of flammable liquids.
- L. Provide adequate ventilation in buildings where flammable liquids are stored. Where mechanical ventilation, heating, lighting, or exhaust systems are necessary, install them in accordance with electrical and fire code requirements.
- M. Prohibit smoking within 50 feet of areas in which flammable liquids are stored or handled. Post "No Smoking" signs in these areas. Be sure this rule is strictly observed. Don't store empty drums that have contained low-flash-point products (e.g., gasoline, acetone, alcohol, etc.) inside buildings.

THE SLEEPING GIANT

I AM A HIGH PRESSURE, COMPRESSED GAS CYLINDER

I stand 57 inches tall.

I am 9 inches in diameter.

I weigh in at 155 pounds when filled.

I am pressurized at 2,200 pounds per square inch (psi).

I have a wall thickness of about .25 inch.

I wear a regulator and hose when at work.

I wear a label to identify the gas I'm holding. My color is not the answer.

I transform miscellaneous stacks of material into glistening ships and many other things — when properly used.

I may transform glistening ships and many other things into miscellaneous stacks of material — when allowed to unleash my fury unchecked.

I can be ruthless and deadly in the hands of the careless or uninformed.

I am too frequently left standing alone on my small base without other visible means of support — my cap removed and lost by an unthinking workman.

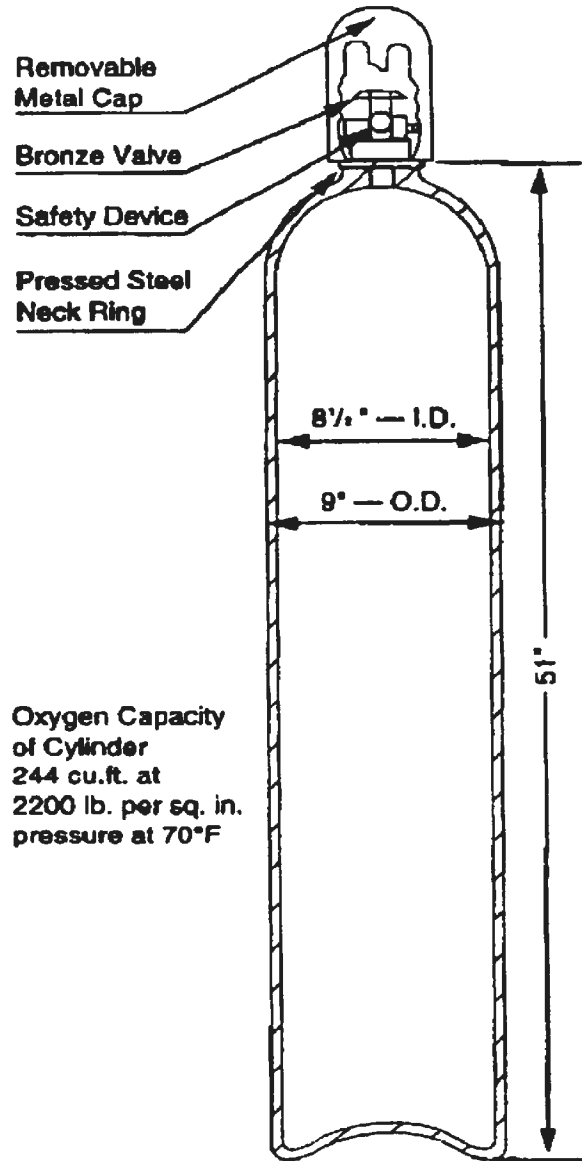
I am ready to be toppled over — when my naked valve can be damaged or even snapped off — and all of my power unleashed through an opening no larger than a lead pencil.

I am proud of my capabilities — here are a few of them:

- I have on rare occasions been known to jetaway — faster than any dragster.
- I might smash my way through brick walls.
- I might even fly through the air.
- I may spin, ricochet, crash and slash through any thing in my path.

You can be my master only under these terms:

- Full or empty — see to it that my cap is on, straight and snug.
- Never — repeat — never leave me standing alone. Secure me so that I cannot fall.



11.6 Storage and Handling of Hazardous Materials. Storing, handling, and transporting hazardous materials require specialized training. Ensure that all operations have oversight from the employees who have the training, expertise, and responsibility to provide for employee safety and regulatory compliance.

Flammable and Combustible Liquids

Flammable liquids are those that give off flammable or explosive vapors at or below 100°F (37.8C).

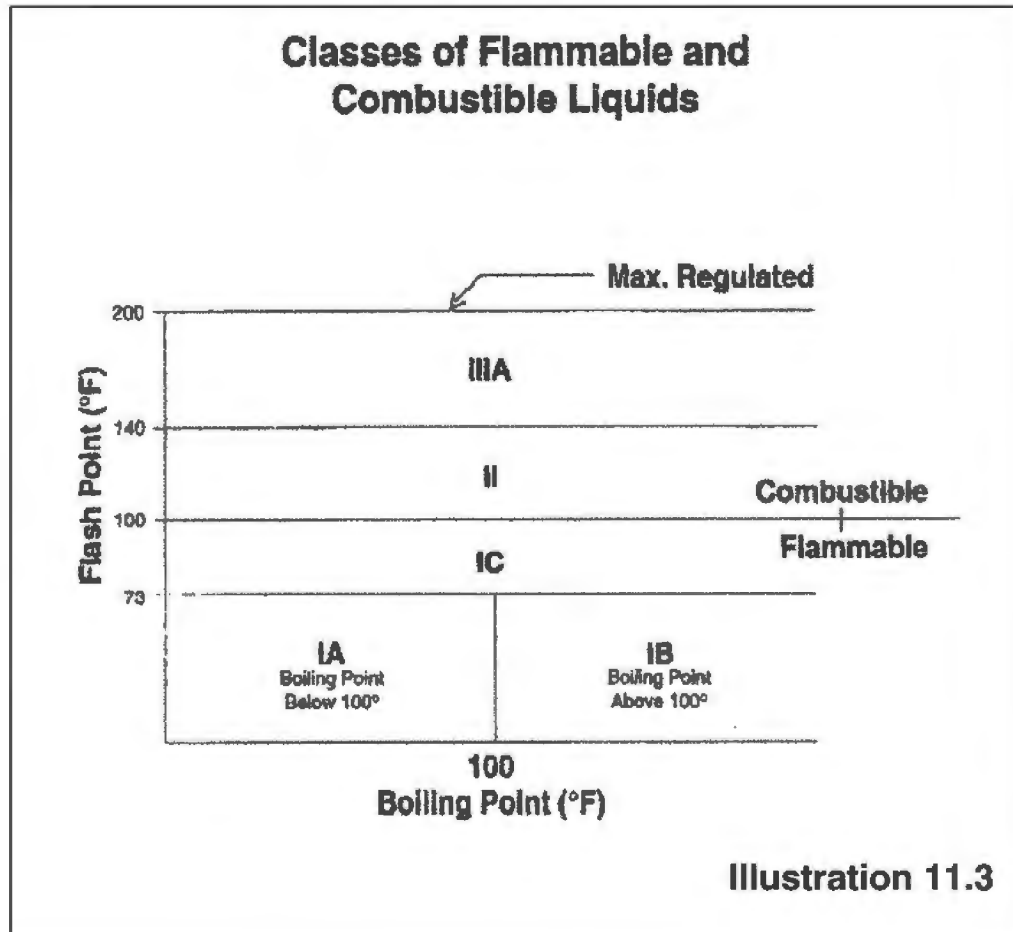
- 1) Flammable liquids (Class I) have a flash point below 100°F, such as:

Gasoline	49
Acetone	0
Lacquer	0 to 80
Shellac	40
Ether	45
Alcohol	52 to 90
Varnish	80 or less
Turpentine	95

- 2) Combustible liquids (Class II) that have flash points above 100°F and below 200°F include:

Diesel Fuel	100
Kerosene	150+
Stoddard Solvent	100+
Penetrating Oil	100+

- 3) Class III Liquids are those combustible liquids with flash points at or above 140°F, such as creosote oil, which is 165°F. (Illustration 11-3)





Chapter 12

Machines and Tools

Chapter 12 — Machines and Tools

12.1 References

- A. 29 CFR 1910 Subpart O, Machinery and Machine Guarding
- B. 29 CFR 1910 Subpart P, Hand and Portable Power Tools and Other Hand-held Equipment
- C. 29 CFR 1910.252, Subpart Q, Welding, Cutting, and Brazing, General Requirements
- D. 29 CFR 1910.268, Telecommunications
- E. 29 CFR 1926, Subpart I, Tools – Hand and Power
- F. 29 CFR 1926, Subpart J, Welding and Cutting
- G. NFPA 51B, Fire Prevention During Welding, Cutting and Other Hot Work

12.2 Procedures. Machines and tools shall be properly maintained, operated, stored, and inspected.

12.3 Portable Hand Tools

A. Chopping Tools (Axe, Pulaski, etc.)

- 1) Use the right tool for the job. Keep it well sharpened with a splinter-free handle and a tight head.
- 2) Treat the ends of axe handles and other swinging tools to prevent slippage. Inspect wedges for tightness.
- 3) When swinging an axe or similar tool, place feet firmly and shoulder-width apart. Grip the handle near the end. Make sure there is ample clearance from objects and persons near the swing arc. Always chop away from feet, legs, and body. Guard against loss of grip or control of tool.
- 4) Sheathe all chopping tools when not in use. Never leave an axe or similar tool in normal path of movement or sticking in a tree or stump.
- 5) Observe safe spacing between crew members carrying sharp or pointed tools. Travel on foot in single file. Sheathe tools and hand-carry on the downhill side, but do not carry on shoulder. Keep other hand free. If tripping, slipping, or falling, throw the tool to the downhill side. Use both hands to regain balance or break fall.
- 6) Be watchful of the force released by cutting a sapling that is being held in a bowed position by adjacent trees or brush.
- 7) Maintain 15-foot space between workers using tools.

8) Allow overhead clearance when using a brush-cutting tool. Use the proper handhold. Keep body well-braced and balanced. Make each stroke productive.

B. Chipping Tools. Protect eyes from flying particles. Use screens to protect other persons from flying chips. Use tool holders when holding chisels or drills.

C. Wrenches. Place the wrench on the nut so that pull on the handle tends to force the jaws further onto the nut. Make sure you have a good footing before applying force to the wrench. Pull, don't push, the wrench when turning the nuts.

D. Screwdrivers. Never use a screwdriver as a chisel. Don't carry a screwdriver loose in pockets. Use a screwdriver with an insulated handle and shaft for all electrical work.

E. Hammers. Select hammers with secure heads that are of suitable type, and weight, and have a proper handle length for the job to be done. Allow sufficient working space.

F. Picks. Use picks with handles that are free from splinters and securely fastened to the head. When swinging a pick, make sure that you have overhead and side clearance.

G. Files. Fit files with substantial handles and guards. Never use a file as a pry. Keep files clean to reduce slipping. Protect hands with proper gloves when filing sharp objects.

H. Handsaws. Keep handsaws properly sharpened. Use the thumb to guide the handsaw in starting a cut. Use teeth guards when carrying a crosscut or ripsaw.

I. Air Tools

- 1) Wear specified personal protective equipment (PPE) when operating air tools, such as earplugs, protective shoes, respirator, gloves, etc.
- 2) Do not use air tools unless a fixture on the tool retains the replaceable bit or jack set. Inspect retainers daily for cracks.
- 3) Air hose couplings must have safety chains to keep them from whipping loose if coupling fails.
- 4) Release pressure before connections are broken; do not kink hose.
- 5) Make sure no one is in line of airflow. Never aim an air hose at anyone.
- 6) Never use pressurized air to blow dust or chips from hair or clothing. Compressed air used for cleaning purposes must be equipped with a valve that reduces the pressure to less

than 30 psi when dead-ended and then only with effective chip guarding and personal protective equipment.

- 7) Air compressors should be drained periodically to allow condensation to escape and reduce rust in the tank.
- 8) Portable air tanks shall be marked for disposal 5 years after put into service. Under no circumstances can homemade air tanks be used.

J. Chain Saws. Follow manufacturers' operating and safety instructions. Training (S-212) and PPE are required for chainsaw operators. Required PPE for chainsaw operators are chaps, ear, eye, face, head, foot, and hand protection. Other required equipment includes wedges and a single-bit ax.

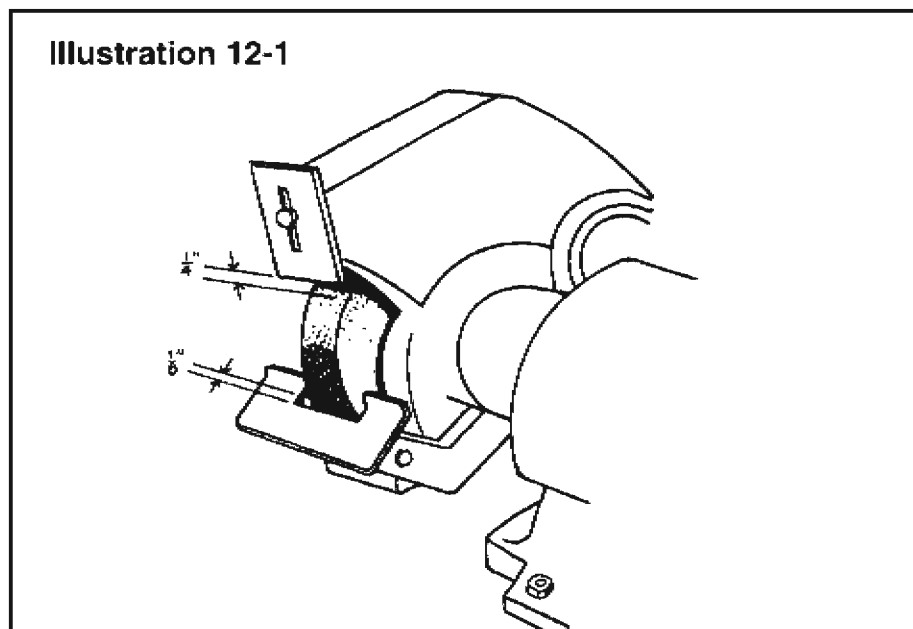
- 1) Stop and place the blade vertically before carrying a saw. The chain must be guarded. Carry saw on downhill side with blade to rear. Secure saw when transporting it in a vehicle.
- 2) Stop the engine and cool for about 5 minutes before refueling. Fill the fuel tank on bare ground. Wipe spilled fuel off the engine. Start saw at least 10 feet away from refueling area. Do not smoke while fueling or while saw is running.
- 3) Safe chainsaw starting techniques should be established and followed, always keeping the saw away from the body. Keep co-workers away from chainsaw starting and operation.
- 4) Stop engine for cleaning, adjustments, or repair.
- 5) Fuel tanks shall be purged prior to storage.

12.4 Portable Electric Tools. Inspect and test all power tools regularly and maintain in good condition. Establish a definite schedule for inspection, testing, maintenance, and repairs. All electric tools must be three-wire grounded and ground fault circuit interrupter (GFCI) protected, or double-insulated.

- A. Regularly test and maintain three-wire ground systems supplying electric power tools.
- B. Use only electric cords and plugs in good condition. Make sure tool cords do not become tripping hazards. Protect tool cords against insulation damage during use. Unplug tools when not in use.
- C. Do not operate power tools without training and authorization.
- D. Do not operate portable electric tools where flammable vapors or gases are present or in wet areas.

H-1112-2
Safety and Health for Field Operations

- E. All portable electric tools must have the manufacturer's guards in place. Do not use tools that are damaged, have dull blades, damaged cords, or are otherwise unserviceable.
- F. Drill-chuck wrenches must be eject type. Unplug the tool when changing bits or accessories. Anchor any material being drilled.
- G. Keep bench grinder guards in place and properly adjusted. Tool rest must be one-eighth inch away from stone; tongue guard must be one-fourth inch away (Illustration 12-1).
- H. Inspect motor-driven grinding stones at least weekly for cracks, damage, and excessive wear. Discard defective stones.
- I. Keep stones free from oil and properly dressed.



12.5 Radio Equipment . AC-powered radio equipment cabinets must be locked, and keys must be available only to specially instructed and authorized radio technicians or personnel.

- A. Provide whip antennas with safety knobs, closed loops, or other protective devices to prevent injury.
- B. Only those qualified and trained personnel may climb antenna towers. Wear appropriate PPE, such as fall protection equipment, etc., when climbing high structures. Do not work on energized antennas.

12.6 Fixed Machines

Woodworking and Metalworking

Only trained and authorized personnel may operate shop equipment. Personnel must not wear loose clothing, ties, or jewelry, or have loose hair that may catch in moving machinery. Required PPE must be used.

- A. On equipment where injury to the operator might result if motors were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power.
- B. Machines will be located to ensure adequate space for movement of the operator and handling of stock. Safety zones must be marked around each machine. Machine switches must be within immediate reach of the operator.

- C. Floor and work areas must be kept free of sawdust, scrap, and excess material.
- D. Machines designed for a fixed location shall be anchored.
- E. Machines must be shut down and locked in accordance with lockout/tagout requirements before authorized and experienced persons make repairs.
- F. Machines that are operating must be attended at all times.
- G. No machines may be operated unless required guards are in place and functional.

12.7 Compressors. All tanks must be in compliance with the American Society of Mechanical Engineers (ASME) standard and conform to state laws.

- A. Inspect monthly for leaks and signs of corrosion on surfaces. Replace any worn parts and remove corrosion. Maintain a service log.
- B. Don't replace the brass fusible plug with an ordinary pipe plug.
- C. Clean or replace air filters as needed.
- D. Make sure that all pressure tanks or lines have safety valves, air-pressure gauges, and a drain cock at the lowest point on the tank that is opened periodically to drain the condensation.

12.8 Portable Air Tanks (PAT). These are portable pressure tanks that can be filled at a maintenance shop, gas station, or other air compressor. These air tanks are normally used to inflate low or flat tires in the field.

- A. Absolutely no homemade or shop made tanks will be used.
- B. PATs must have a pressure gauge and have the maximum allowable working pressure painted or stenciled on the tank.
- C. PATs must have an over-pressure device, either a pop-off valve or a frangible disk.
- D. Inspect and drain PATs periodically. If the tank does not have a separate bleed valve, remove the air outlet fitting and manually drain any accumulated fluid. Maintain a service log.
- E. Prior to each use, visually inspect the tank for damage, corrosion, improperly functioning valves, expired disposal date, or other potential safety problems. Special emphasis should be given to sharp indentations that would serve as stress points or could be corroded internally. If there is any question as to the safety or serviceability of a PAT, dispose of it immediately.

- F. Do not use PATs longer than 5 years. Prior to placing a new tank in service, PAINT the disposal date on the tank. Don't use metal stamps as that can damage and weaken the tank. Do not use PAT with expired disposal date. Dispose of it by depressurizing the tank, removing all fittings, cutting a hole or the entire end off the tank.

12.9 Welding and Cutting. Allow only qualified welders, mechanics, machinists, or specially qualified personnel to use welding equipment.

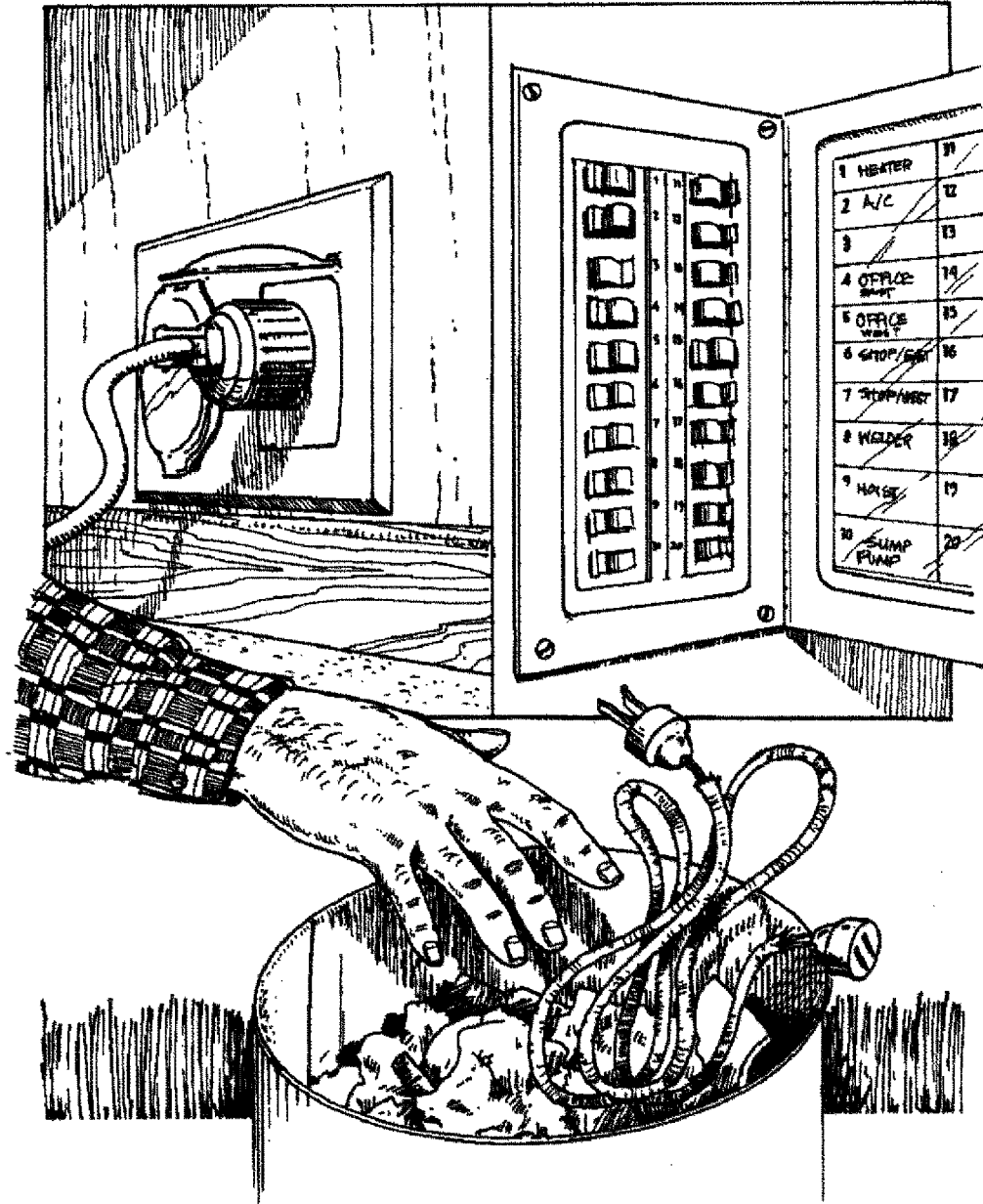
- A. Welders shall wear appropriate PPE.
- B. Confine welding activities to well-ventilated areas and away from flammable and combustible materials.
- C. Keep sparks and flames away from cylinders and hose lines. All flammable or explosive material in the areas of welding operations must be removed.
- D. Keep the correct type of fire extinguishing equipment easily accessible at all times during welding operation.
- E. Before cutting into tanks or drums, determine the present or previous contents. Drain, steam clean, and thoroughly dry if they held oil, gasoline, or other highly flammable fluids. Fill with water up to the point to be welded. Leave an opening for steam generated during welding to escape.
- F. Use a respirator or point-of-operation exhaust ventilation when welding on metals coated with paint containing lead or zinc or when welding brass, because fumes from these metals are toxic. Adequate exhaust systems must be provided to ensure removal of injurious fumes and gases. If a respirator is used, make sure that it is appropriately matched to the toxicity types and levels being generated, and that it meets all respiratory requirements in 7.3.
- G. Inspect hose lines and/or power cables frequently. Replace or repair damaged items.
- H. Curtains or screens must be used around all welding locations.
 - I. Ensure that hoses are equipped with appropriate flashback devices.

12.10 Spray Painting. Where spray-painting operations are regularly performed indoors, painting must be done in specially constructed, isolated, fire-resistant areas with approved electrical equipment. All motors, fixtures, switches, and electrical devices must be explosion-proof. All sources of ignition must be eliminated, and

H-1112-2
Safety and Health for Field Operations

spray booths are to be fitted with sprinkler heads in accordance with National Fire Protection Association (NFPA) requirements.

- A. Only trained and authorized personnel may operate painting equipment.
- B. Painting areas must have adequate ventilation to remove flammable and toxic substances. Respirators must be worn when spray painting.
- C. Smoking is expressly prohibited. A fire extinguisher of the correct type and size must be available.
- D. All paint labeled flammable must be stored and mixed in an approved flammable liquid storage cabinet or flammable storage shed.



Chapter 13

Electrical Systems and Equipment

Chapter 13 — Electrical Systems and Equipment

13.1 References

- A. NFPA 70, National Electrical Code
- B. 29 CFR 1910.147, Control of Hazardous Energy (Lockout/Tagout)
- C. 29 CFR 1910, Subpart O, Machinery and Machine Guarding
- D. 29 CFR 1910.242, Hand and Portable Powered Tools Equipment - General
- E. 29 CFR 1910.243, Guarding of Portable Power Tools
- F. 29 CFR 1910.244, Other Portable Tools and Equipment
- G. 29 CFR 1910, Subpart Q, Welding, Cutting, Brazing
- H. 29 CFR 1910, Subpart S, Electrical

13.2 Procedures. Only trained and qualified personnel are to operate electrical devices in accordance with manufacturers' instructions applicable to the device. Supervisors are to ensure that all equipment (devices) identified as not meeting specifications contained in 29 CFR 1910 and NFPA 70 are properly tagged and removed from use.

13.3 Electrical Safety Requirements. Any location with electrical equipment creates potentially dangerous working conditions. Therefore, all electrical work practices must comply with applicable sections of the Occupational Safety and Health Administration (OSHA) and the National Fire Protection Association (NFPA).

13.2 Inspections of Electrical Equipment

Inspections of portable electrical devices shall be conducted prior to use and shall include inspection of the following:

- 1) Service cord and plug
- 2) Case, for cracks, corrosion, and loose or missing parts
- 3) On/off switches and dead-man switches
- 4) Guards over blades and rotating/reciprocating parts
- 5) Electrical filter assemblies

13.3 Other Electrical Appliances and Equipment. Electrical appliances and equipment are defined as coffee pots, computer systems, fans, radios, clocks, typewriters, and other equipment not normally moved from one location to another. Only equipment listed by Underwriters Laboratories (UL) or other recognized national certifying authority is allowed in the work space and shall be used only for their intended purpose.

A. Approved Electrical Outlets. Electrical appliances shall be energized only through approved electrical outlets and power poles installed in accordance with the National Electrical Code.

B. Electric Space Heaters. Use of electric space heaters is prohibited unless heaters are equipped with tip-over safety switches and thermostat heat controls and their use is authorized.

C. Extension Cords. Extension cords must be 3-wire grounded type, must be designated for hard service or extra hard service, and must be listed by the Underwriters Laboratories (UL).

- Do not exceed the rated load.
- Use cords only in continuous lengths without splice.
- Do not use worn or frayed extension cords.

The use of extension cords (flexible cords) for permanent installation of appliances and equipment is prohibited.

If using extension cords in a temporary situation (not to exceed 90 days), observe these safe practices:

- Disconnect at the end of the day or work shift.
- Always disconnect by pulling the plug, not the cord.
- Replace when worn, frayed, or brittle. Don't splice, kink, allow overheating, or coming in contact with chemicals.
- Use cord to operate one appliance only. Don't use cords in lieu of fixed wiring, and do not run through openings, attach to building surface, or conceal in walls, ceilings, and floors.
- Protect from physical damage; keep them from being run over by wheeled equipment, etc.
- It is good management practice to test extension cords for proper wiring, impedance, and plug tension.
- Extension cords shall be used only as allowed in 29 CFR 1910.305(g).

13.4 Electrical Work at BLM Facilities. All work, repair, or maintenance will be performed only by a licensed electrician.

13.5 Electrical Safety

A. Breaker Box Switch Index. Ensure that breaker box switches always indicate on the index the room, office number(s), and area or item where they control the electricity. Other markings indicating voltage, current, or wattage are required.

B. Loose Wires. Treat all loose wires hanging from buildings or poles as energized, unless certain they are not connected to a live source of electricity.

C. Damp Locations. Exercise caution when installing or using fixed power equipment or portable power tools in hazardous or damp locations. Be careful when using household appliances in kitchens, bathrooms, or basements, because of the proximity to ground sources such as water pipes.

D. Periodic Testing. Branch circuit receptacles should be tested periodically to ensure proper connection, low impedance, and tension.

E. Fuse Replacement. De-energize switch before removing or replacing cartridge-type fuses.

F. Overloaded Circuits. Do not overload circuits. Where excessive use of appliances results in frequent fuse failure, redistribute plug-in appliances or install additional circuits. Don't change fuses to higher rating than wire size permits and do not use an alternate item as a fuse replacement.

13.6 Electrical Equipment. Keep electrical test equipment and hand tools in good repair. Restrict them to proper use.

Use only nonconducting ladders for electrical work. Keep ladders clean and serviceable.

13.7 Ground Fault Circuit Interrupter (GFCI). Protect all 125-volt, single-phase, 15 and 20 ampere receptacle outlets used in locations such as laboratories, shops, garages, wet locations, outdoor receptacles, bathrooms, kitchens, and for construction operations with a GFCI.

Install the GFCI in accordance with the manufacturer's instructions and test it before initial use and periodically thereafter.

13.8 Wet Locations. Only the following type electrical systems are permissible for use in wet areas where there is danger of electrical shock.

- A. GFCI.** Electrical circuits for lighting and hand tools must not exceed 120 volts and must be protected by UL-listed GFCI.
- B. Stationary Portable Equipment.** Connect stationary, portable, electrically powered equipment, such as pumps, heaters, blowers, welders, transformers, etc., to a circuit protected by a GFCI or effectively ground the equipment with both an internal grounding system and visible flexible copper ground wire.
- C. Substitute Equipment.** Whenever practical, substitute air, battery, or hydraulically powered tools for electrically powered tools.

13.9 Battery Charging. Restrict battery charging operations to well-ventilated areas designed and designated for that purpose.

Because battery charging can produce explosive gases, post signs with the following wording at entrances to battery charging area "BATTERY ROOM - NO SMOKING OR OPEN FLAME WITHIN 25 FEET".

13.10 Power Lines. Treat all power lines as dangerous. Notify the power company in advance concerning work on or near power lines or installations. Have the electrical utility company perform work for which they are responsible, such as tree trimming or other maintenance activities.

13.11 Lockout/Tagout (LO/TO). The LO/TO policy establishes minimum requirements for controlling accidental release of hazardous energy whenever maintenance or servicing is done. LO/TO ensures that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any servicing or maintenance where the unexpected energization or startup of the machine, or release of stored energy, could cause injury. Potential hazardous energy sources include: electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

All employees, upon observing a machine or piece of equipment that is locked out for servicing or maintenance, shall not attempt to start, energize, or use that machine or equipment.

Note: The LO/TO policy does not apply to cord-and-plug-connected electric equipment where unexpected energization of the equipment is controlled by unplugging the equipment and where the equipment is under the exclusive control of the person performing the service or maintenance.

Authorized employees or contractors will comply with the following procedures at all times.

A. Sequence of Lockout/Tagout System Procedure

- 1) Notify all affected employees that a lockout/tagout system is going to be used and the reason for this step. The authorized employee will know the type and magnitude of energy that the machine or equipment uses and will understand the hazards.
- 2) If the machine or equipment is operating, shut it down by the normal stopping procedure (e.g., depress stop button, open toggle switch, etc.).
- 3) Operate the switch, valve, or other energy isolation device(s) so that the equipment is isolated from its energy source(s). Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleed down, etc.
- 4) Lock out the energy-isolating devices with assigned individual locks with attached identification tags.
- 5) After ensuring that no personnel are exposed, and as a check to ensure that the energy sources are disconnected, operate the push button or other operating controls to make certain the equipment will not operate.
- 6) The equipment is now locked out.

B. Restoring Equipment to Normal Operation

- 1) After the servicing and/or maintenance are complete and equipment is ready for production, check the area around the machines or equipment to ensure that components are operational.
- 2) Check the work area to ensure that all employees have been safely positioned or removed from the area. Remove the lockout devices and tags, and then re-energize the machine or equipment.

C. Multiple Lockout/Tagout Procedures

- 1) If more than one individual is required to lock out equipment, each will place his/her own personal lockout/tagout device and identification tag on the energy isolating device(s). When an energy-isolating device cannot accept multiple locks, a multiple lockout device (hasp) must be used that allows the use of multiple locks to secure it. Each employee

will use his/her own lock to secure the multiple lockout devices complete with his/her identification tag.

- 2) When work is complete, and each person no longer needs to maintain his/her lockout protection, each person will remove his/her lock and tag from the multiple lockout device. This is the only procedure to be used for multiple lockouts.

D. Shift or Personnel Change

- 1) If a machine or piece of equipment must be locked out beyond the end of one shift, the supervisor of the shift going off duty must place his/her lock and tag on the machinery. Then all other employees who had locked the machine out may remove their locks and tags. The maintenance supervisor on the next shift will then place his/her lock and tag on the machine. When all employees who may be working on the machinery the next shift, have placed their locks and tags on the machine, the supervisor of the present shift may then remove his/her lock.
- 2) If a machine will be locked out for several shifts and no work will be done during that time, then a supervisor's lock must be left on the machine. In this case the importance of the identification tag is paramount.

E. Outside Contractors

- 1) When outside service personnel are engaged in service or maintenance activities that require energy control procedures, management and the outside contractor shall inform each other of their respective lockout/tagout procedures.
- 2) BLM Management shall ensure that all employees understand and comply with the restrictions and prohibitions of the outside contractors' lockout/tagout procedures.

F. Glossary of Terms

Affected employee — An employee who performs the duty of his or her job in an area in which the energy control procedure is implemented and servicing or maintenance operations are performed. An affected employee does not perform servicing or maintenance on machines or equipment and is not responsible for implementing the energy control procedure. An affected employee becomes an authorized employee whenever he or she performs servicing or maintenance functions on machines or equipment that must be locked out.

Authorized employee — An employee who performs servicing or maintenance on machines and equipment. Lockout/Tagout is used by these employees for their own protection.

Capable of being locked out — An energy-isolating device is considered capable of being locked out if it meets one of the following requirements: (1) It is designed with a hasp to which a lock can be attached; (2) It is designed with any other integral part through which a lock can be affixed; (3) It has a locking mechanism built into it; or (4) It can be locked without dismantling, rebuilding, or replacing the energy isolating device or permanently altering its energy control capability.

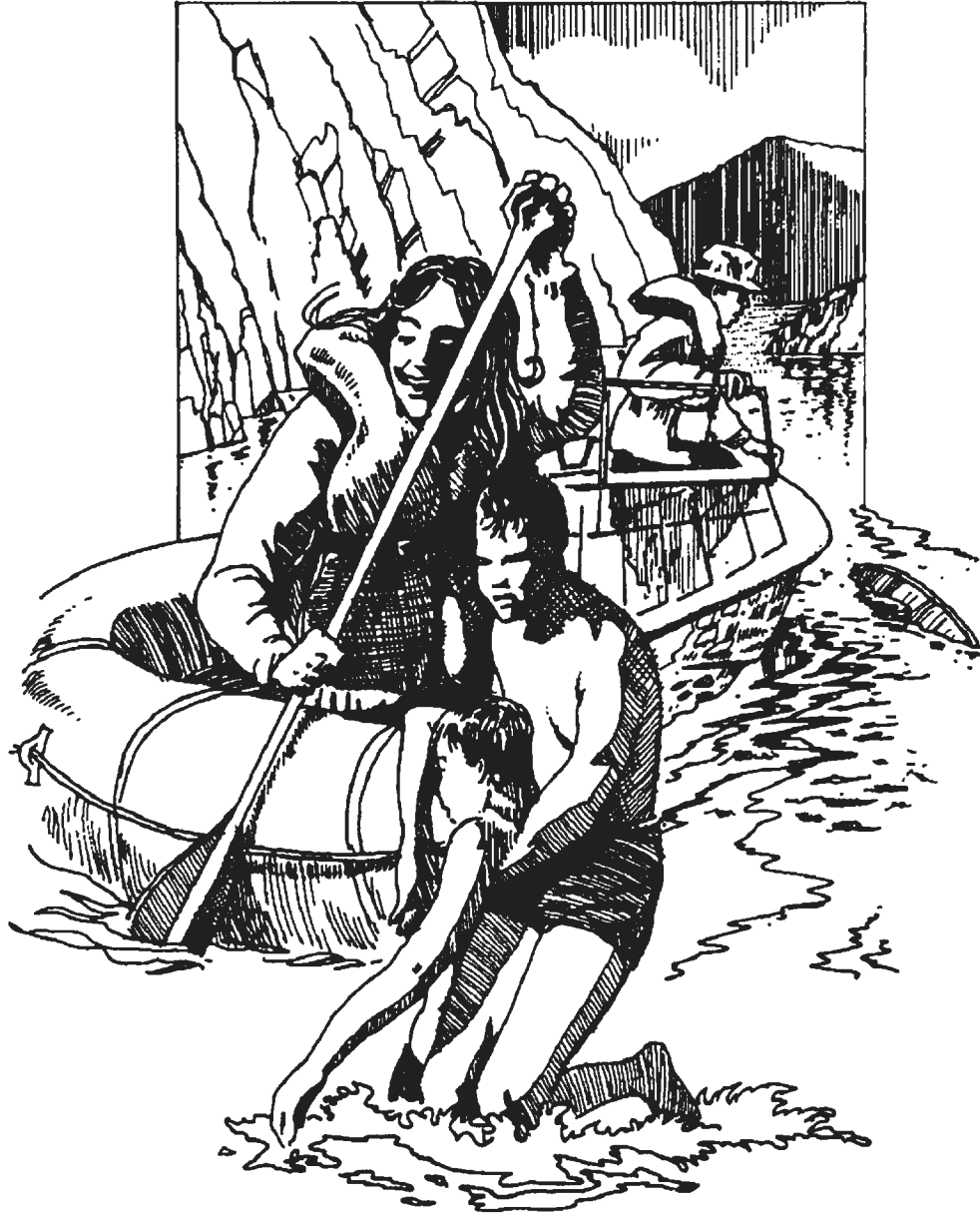
Energized — Machines and equipment are energized when they are connected to an energy source or they contain residual or stored energy.

Energy-isolating device — Any mechanical device that physically prevents the transmission or release of energy. These include, but are not limited to, manually operated electrical circuit breakers, disconnect switches, line valves, and blocks.

Energy source — Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Energy control procedure — A written document that contains those items of information an authorized employee needs to know in order to safely control hazardous energy during servicing or maintenance of machines or equipment.

Examples — Some common examples of machinery to be locked and tagged out while being worked on are table and reciprocal saws, drill presses, hydraulic lifts, grinders and cutters, presses, and electric motors.



Chapter 14

Watercraft Operations and Water Safety

Chapter 14 — Watercraft Operations and Water Safety

14.1 References

- A. BLM Manual Handbook 1112-1, Chapter 19, Watercraft Safety
- B. 485 DM 22, Watercraft Safety

14.2 Procedures . Only BLM employees who have successfully passed the DOI Motorboat Operator Certification Course (MOCC) in accordance with 485 DM 22 Watercraft Safety are authorized to operate BLM watercraft under 65 feet and under 300 tons.

Recertification is required every 5 years and can be accomplished by completing the appropriate refresher courses.

(See <http://safetynet.smis.doi.gov/WCtrainingA4.htm>).

DOI certified motorboat operator instructors will conduct training.

Training will be annotated by the supervisor/authorized issuing officer indicating the class/type of watercraft the employee is authorized to operate. Written documentation of training will be maintained by the operator.

The MOCC requires a minimum of 24 hours training in the following mandatory subject areas:

- 1) Agency watercraft policies
- 2) Required safety equipment
- 3) Motorboats and motorboat maintenance
- 4) Trailers and trailer maintenance
- 5) Navigation aids/rules of the road
- 6) Emergency operations
- 7) Fire suppression
- 8) Motorboat orientation/marlinspike
- 9) Motorboat At-Speed and Low-Speed Maneuvering
- 10) Alongside maneuvering
- 11) Trailering
- 12) Towing/anchoring

A. Motorized Watercraft Under 26 Feet in Length (Class A and I Boats)

- 1) Watercraft will be equipped with the appropriate marine fire extinguishers (Type B1 or B2, dry chemical). Fire extinguishers and bracket must be United States Coast Guard (USCG)-approved, and properly mounted.

- 2) Watercraft will carry spare gasoline, the quantity of which to be determined by the length of the trip, in an approved safety can. When refueling, always shut off engine. If fuel can is not fixed to craft, remove can to dock or shore and refuel.
- 3) Except in emergencies, have only experienced operators make surf landings.
- 4) Equip craft with appropriate materials to respond to emergency situations. Craft that are used in areas where a reliable source of aid is more than 2 hours away should carry a full complement of hull patching materials regardless of construction material.
- 5) Standard safety equipment will include the following:
 - a. Adequate first aid kit
 - b. Reach pole
 - c. Type IV personal flotation device (PFD) mounted to watercraft with at least 60 feet of line attached

B. Motorized Watercraft over 26 Feet in Length (Class II and III Boats)

- 1) Safety regulations will be posted and followed as required by the U.S. Coast Guard.
- 2) Assign only employees with valid licenses for the class of craft and type of water being navigated as powered watercraft operators.
- 3) Instructions for starting and operating main and auxiliary engines, anchor gear, radio, and other equipment will be prepared and conspicuously posted, so that in emergencies, someone other than the main operator can move the craft.
- 4) Personnel who regularly travel on boats must know how to start and operate the main and auxiliary engines, as well as other equipment, gear, and radio, etc., in case of emergency.
- 5) Standard safety equipment must include:
 - a. Items identified in 14.2A.5 and the following.
 - b. Sufficient lifeboat capacity for all passengers. Lifeboats equipped with oars, survival equipment, and, where required, outboard motors.
 - c. Readily accessible personal flotation devices in clearly marked locations for all persons aboard.

- d. One USCG-approved life ring (Type IV throwable) on each side of pilothouse with at least 60 feet of buoyant line attached.
- e. Sufficient line or chain and proper anchor.
- f. Appropriate size and type of fire extinguishers (Type B1, B2, or B3) rated for the length of watercraft being operated. Extinguishers must be of marine type and USCG-approved, including proper mounting of extinguisher and bracket.

14.3 Non-Motorized Watercraft. All operators of non-motorized craft, such as canoes, rafts, kayaks, rowboats/jon boats, etc., must complete a basic training course appropriate to the watercraft they will be operating and appropriate for the class of water on which they will be boating.

Acceptable courses must include both lecture and on-the-water sessions (practical). At a minimum, the following topics must be covered: terminology, basic boat types, safety equipment, emergency procedures (self and assisted rescue), boating techniques, and water classification. Courses that are offered by other entities that meet these standards may be accepted as satisfying this requirement (e.g., state requirements in California, Idaho, and other states for meeting outfitting and guiding licenses).

It is recommended that all watercraft operators in swift moving water are trained at a minimum by a Swift Water Rescue Technician (SRT-1). The State Watercraft Coordinator must approve whether the type of course taken meets these standards.

14.4 Operations Aboard All Watercraft

- A. Operators must be trained and qualified to handle the size, type, and class of watercraft they are operating.
- B. On motorized craft, the anchor is to be attached to the bow, not the stern. Exercise care in releasing and raising the anchor. Make sure anchor line and anchor type are adequate and use extreme caution in tidal influence areas. On non-motorized craft, the anchor may be attached to the stern if it is designed to be attached there.
- C. Personnel at the bow are the principal lookouts for submerged obstructions that can damage or capsize the craft. Midship personnel should keep movements to a minimum.
- D. All transportation at night should be kept to a minimum. Appropriate navigational lighting is mandatory for all craft. Use of other lighting at night should be kept to a minimum so as to protect night vision.

- E. Avoid traveling in high winds and rough water or if a storm threatens. If caught in a storm, reduce speed and make sure that a personal flotation device is properly worn. Beware of broaching. If in a canoe, lower the center of gravity by kneeling on the bottom.
- F. Do not travel in a metal craft during a lightning storm. Upon sighting an approaching storm, proceed to the closest shore and beach the craft. If unavoidably caught in a metal craft on open water during a lightning storm, insulate yourself from metal surfaces by sitting on nonconductive material. Do not handle metal oars, tools, motors, or fishing equipment.

14.5 Loading and Unloading from Watercraft

- A. Total load will not exceed the manufacturer-rated capacity plate mounted on the watercraft. Always maintain a safe margin below the danger point and consider weather and other adverse conditions that might be encountered.
- B. When transporting cargo, balance the load evenly by weight between port and starboard. Secure cargo so that it will not shift when the craft is in motion. Where possible, load and unload from the side rather than over an end.
- C. Do not stack cargo too high above gunnels, since this could affect the boat's center of gravity.
- D. When possible, enter or leave the craft from the side rather than the ends, and always step in the center of the craft.
- E. Do not stand up, change places, or make sudden moves in a craft. Go to shore if necessary to change places, repair motor, or reposition cargo.

14.6 Personal Protection

- A. A risk assessment will be completed for all boating operations.
- B. All watercraft operators must be able to swim and know how to perform self rescue. Personnel who routinely travel by watercraft or work over or near water should be able to swim.
- C. Every person in a BLM/DOI motorized vessel will wear a USCG and DOI approved Type I, II, III, or V PFD. Every vessel will have on board and readily available at least one Type IV (buoyant cushion or ring lifebuoy) PFD equipped with 31 square inches of retro-reflective tape.
- D. Recreational Type III hybrids/inflatables, Type V hybrids/inflatable PFDs are not DOI-approved for use on DOI/BLM vessels). Every person on a BLM/DOI non-motorized watercraft (e.g., rowboats, rafts, canoes, kayaks, or other) will

wear a USCG approved Type I, III, or V PFD equipped with 31 square inches of retro-reflective tape. For examples of approved PFDs, see www.boatsafe.com/nauticalknowhow/boating/4_2_a.htm.

- E. Avoid traveling in small craft in heavy tidal currents.
- F. The watercraft operator is responsible for safety practices onboard BLM watercraft.
- G. Never wear hip boots or loose waders when working from boats in swift water or water over 3 feet deep. If use of waders is necessary, they should be made of neoprene and should fit snugly. If made of other material, have a belt secured around the outside of the waders and fitted firmly around the waist.
- H. Personnel operating in cold water conditions should wear additional PPE appropriate to the job and conditions (i.e., wet suits, dry suits, or USCG-approved Type III/IV Anti-Exposure Coveralls/Work Suits).
- I. Remain seated while in craft. Horseplay is prohibited in the craft.
- J. If by chance you find yourself in the water in arctic or sub-arctic environments, keep all outer clothing on your body. Hang on to the boat, oar, or anything that is floating nearby until help comes. Initiate HELP/Huddle techniques to reduce loss of body heat.

14.7 Emergencies

- A. Personnel assigned to watercraft must be trained in emergency procedures for that particular watercraft.
- B. Do not attempt to swim to shore from an overturned craft, stay with it until help arrives or it drifts or can be paddled to shore. Maintain extra caution in moving water conditions.
- C. When involved in an overturned or sinking craft, surviving the incident is often dependent on what you carry on your person. Equip your own PFD, if one is assigned, with personal survival items that you can use in emergencies. Onboard safety and first aid supplies should be secured in a water tight, floatable container.
- D. Learn how to use personal clothing as a flotation device, should you find yourself in the water without a PFD. This procedure requires that you discard your heavy outer clothing and shoes.

- E. Plan your trip and ensure that your itinerary (float plan) is filed and follows the established check out/check in procedures established for your operations.

14.8 Safety of Watercraft and Equipment

- A. All BLM watercraft must be maintained in first-class condition. All BLM watercraft will be inspected annually and documented accordingly.
- B. All motorized and non-motorized boats, rafts, or other craft owned or used by BLM employees will be operated and maintained with safety as the prime consideration.
- C. For rubberized boats or lifeboats, inspect all seams, surfaces, fabric condition, valves, and ability to hold air under operating pressure before each use.
- D. Metal and plastic craft should have skid proof paint applied to the deck of the craft to avoid slipping. The outer surface of tubes on rubber/PVC/hypalon rafts should be of nonskid coating.
- E. Keep oars and oarlocks in good condition. Spare oars, oarlocks, or paddles should be carried on long trips.
- F. Check with local residents when operating in unfamiliar rivers and lakes for weather conditions or water conditions that may be unique to that area.
- G. Get reliable weather reports before departure.

14.9 Forging Streams

As a guiding principle, never ford a water crossing if a satisfactory above-water crossing is nearby. If it becomes necessary to ford a stream, the following procedures are recommended:

- A. Using a stick or pole, place it on the upstream side at a slight angle. The force of the water will help hold the pole down.
- B. Work the pole ahead to test for deep holes, then wade up to the pole.
- C. Work in teams of two or more within sight of one another.
- D. Avoid crossing streams on logs, wade if possible. If necessary, cross by straddling rather than by walking on the log.
- E. Secure chest waders around the chest with quick-release belt or rope to prevent filling.

- F. If depth, velocity, or stream bottom makes continued wading too hazardous, back out of the stream using the wading pole to brace yourself. Turning around exposes a broader body surface to the current and increases chances of falling.
- G. If carrying backpacks, use quick-release harnesses or slip off the upstream shoulder strap so that pack can be discarded in emergency.
- H. Use lifelines securely anchored on the bank for hazardous crossings.

14.10 Vehicle Water Crossings

- A. Before crossing through unfamiliar water complete a field risk assessment and check for hidden obstacles such as logs, stumps, rocks and debris. Use a stick to check depth and bottom conditions prior to crossing.
- B. Most 4x4 vehicles can be driven in water that is hub-deep without taking any special precautions.
- C. Remember to cross streams only at legitimate fords. Drive slowly and steadily, creating a small bow wave in front of the bumper that will reduce the height of the water behind the bumper and keep the water away from the engine.
- D. Cross fast-flowing streams at an angle, driving slightly upstream.
- E. This presents a smaller surface area and lessens the force of the stream on the vehicle. Apply your brakes several times after a water or deep mud crossing to dry out. Do not cross fast-flowing deep streams, as you and your vehicle might be swept away.

14.11 Swimming

- A. If swimming is allowed, designate a person, qualified in water safety, to supervise the activity. Have a lookout observing the swimmers all the time. Use a buddy system — no one shall enter the water alone.
- B. The swimming area must be equipped with strategically placed lifesaving equipment, such as reaching poles, lines, and ring buoys, or Type III throwable PFD.
- C. Inspect swimming areas for treacherous currents, deep holes, or other hazards.
- D. Swimmers should wait an hour after meals before swimming.
- E. Do not swim if overheated.

H-1112-2
Safety and Health for Field Operations

- F. Never dive into unfamiliar water.
- G. Do not swim in stock-watering holes, or in tanks with vertical walls.



Chapter 15

Wild Horse and Burro

Chapter 15 — Wild Horse and Burro

15.1 References

- A. BLM Manual Handbook 1112-2,
 - 1) Chapter 3, Field Work
 - 2) Chapter 4, Motor Vehicle and Equipment Safety
 - 3) Chapter 6, Aviation Safety
 - 4) Chapter 10, Field Injury Prevention and First Aid
- B. BLM Manual Handbook 4710-1, Census of Wild Horses and Burros Handbook
- C. BLM Manual Handbook 4720-1, Capture and Removal of Wild Horses and Burros Handbook
- D. BLM Manual Handbook 4750-1, Preparation of Animals for Adoption
- E. 350 DM, Aviation Management

15.2 Procedures

A. Gathering by Horseback

- 1) Only experienced wranglers shall participate in roundups where saddle horses are used. Only one trainee shall be permitted to serve in a support capacity during an active roundup. A risk assessment (RA) will be completed prior to conducting any roundup.
- 2) Wranglers shall only ride horses they are familiar with, which means knowing the animal's habits, limitations, personality, and mannerisms.
- 3) All saddle horses shall be properly shod. Their shoes shall be reset when necessary. Only experienced contractors or trained personnel shall be allowed to remove/apply horseshoes.
- 4) All saddle horses shall be 3 years old or over, gentle, and display the proven ability to perform the needed tasks.
- 5) Saddles and other tack must be in good condition. They should be checked for worn leather and/or hardware on a regular basis at least bi-monthly.
- 6) Each wrangler shall have a radio available for emergency communication at all times during the roundup and be fully trained in its use, operation, and maintenance.
- 7) Appropriate field attire and personal protective equipment (PPE) will be used in this operation, as indicated in a written risk assessment.

- 8) All employees on site shall be properly trained & equipped to perform immediate first aid and cardiopulmonary resuscitation during active gatherings; loading and unloading operations; and animal shipment and transport and be present at public functions (adoptions, fairs etc) where Bureau employees are required to gather, work, handle equipment, and livestock.

B. Census and/or Gathering by Helicopter

- 1) Contract helicopters and pilots used to assist BLM personnel in census and/or gathering animals (BLM gathers) must meet the requirements established by the Department of the Interior and Bureau of Land Management Aviation Management Directorate.
- 2) Personnel on special-use flights (reconnaissance, census etc.) associated with in-house and national gather contract gather operations are required to wear PPE, which includes fire-resistant flight suit and gloves, flight helmet, and leather boots. The helicopter shall be equipped with the required first aid and survival kits.
- 3) BLM personnel administering a national gather contract for wild horse gather will assure compliance with the BLM's Standard Operating Procedures for Wild Horse Removal.
- 4) Radio communication between the helicopter and the ground crew (wranglers) shall be maintained while the helicopter is airborne.
- 5) Radio communication shall be maintained between the helicopter or ground crew and the local dispatcher at all times.

C. Wild Horse/Burro Handling and Care

- 1) Individuals working with these animals shall be trained, experienced, and mentally alert.
- 2) Trucks and trailers used to transport wild horses or burros must be equipped with non-slip flooring and be free of any projections that may injure an animal.
- 3) Door or gate latches and catches must be in good working condition and routinely inspected and maintained.
- 4) Do not overload trucks or trailers. Animals may go down and need room to regain their footing. Animals shall be checked periodically along the travel route.
- 5) Loading and unloading shall be done in an orderly manner and involve only those employees who are needed to

H-1112-2
Safety and Health for Field Operations

perform these duties. Only experienced wranglers will be allowed to participate in the loading and unloading process.

- 6) Feed and water shall be available to animals upon their arrival at a holding facility or to any animal left at a trap for any length of time.
- 7) During the preparation of horses or burros, anyone not performing a specific duty shall leave the working area.
- 8) Unless specific written permission is obtained from the office in charge, employees and the general public shall be kept clear of the facility or working area.
- 9) Sharps will be handled properly and disposed of in a sharps container.



Chapter 16 Explosives

Chapter 16 — Explosives

16.1 References

- A. DuPont's Blaster Handbook
- B. BLM Manual Handbook 1112-1, Chapter 23, Explosives
- C. Interagency Standards for Fire and Fire Aviation Operations (Redbook)
- D. Fireline Blaster's Guidebook, PMDS No. 460
- E. 29 CFR 1910.106, Storage of Flammables and Combustibles
- F. 29 CFR 1910.109, Explosives and Blasting Agents
- G. 29 CFR 1926, Subpart U, Blasting and Use of Explosives
- H. 49 CFR 383-392, Commercial Drivers License
- I. 49 CFR 397, Transportation of Hazardous Materials; Driving and Parking Rules
- J. NFPA 495, Explosive Materials Code

16.2 Procedures.

Explosive operations must be conducted in a manner which exposes the minimum number of people to the smallest quantity of explosives for the shortest period of time.

OSHA, DOT, Bureau of Alcohol, Tobacco and Firearms, NFPA, and Interagency Standards for Fire and Fire Aviation Operations regulate the use, storage, and transportation of blasting agents. Compliance with each applicable regulation is mandatory.

If unexploded ordnance (UXO) is found on public lands by BLM employees or volunteers, the site supervisor will appropriately mark the area and report the findings to the appropriate law enforcement officials.

All personnel will maintain a safe distance from the materials. The Safety Manager and HAZMAT Coordinator will also be immediately notified. See BLM Manual Handbook 1703 for further guidance.

Personal protective equipment (PPE) will be identified, inspected, used, and stored in accordance with applicable standards.

16.3 Responsibilities.

A Certified Blaster shall be in charge of all explosives operations. The blaster shall be responsible for determining all aspects of the operation, including explosives transportation, storage, types, amounts, blasting methods, priming techniques, equipment, and materials used.

Prior to all explosives operations (including transportation, disposal, and cleanup), the blaster will prepare a risk assessment (RA) for

the entire operation. The RA will include a blasting plan that identifies all procedures, shots, locations, tools, and methods.

- A. All blasters will conduct blasting operations in accordance with their training, blaster certification, and the requirements identified in the operation RA.
- B. All blasting tools and equipment will be well maintained and working properly.
- C. All blasting tools and equipment will be inspected and tested prior to every shot.
- D. Always remember the Cardinal Rule of Explosives Safety; the minimum number of people around the minimum quantity of explosives for the minimum amount of time.

16.4 Transportation

When transporting explosives, the blaster will comply with all Federal, state, and local laws and regulations. In addition, the following general requirements apply:

- A. Explosives, caps, or primers will never be transported in the cab of a vehicle.
- B. Explosives, caps, or primers will never be transported outside of their original transportation overpack. Explosives packaging is designed to minimize explosive propagation and to protect the explosives from damage.
- C. Explosives, caps, or primers will never be transported in the same vehicle with personnel nonessential to the blasting operation.
- D. If explosives and initiating devices, e.g., caps, primers, must be transported in the same vehicle, they will be separated in such a way as to preclude an accidental ignition of any cap or primer from causing the ignition of the explosives. This can normally be achieved by only transporting explosives, primers, or caps in the original transportation overpack, and by separating the initiating devices from the explosive by carrying them in metal boxes. Surplus military ammunition boxes work very well for this purpose.

16.5 Local Requirements. Local requirements for transportation and storage vary considerably. Some municipalities and DOT have special requirements for transporting and storing explosives.

A universal requirement is that special warning signs shall be posted near all blasting sites. The blaster or blast operations inspector will ensure compliance in each scenario.

16.6 Blaster Qualifications. Blaster qualifications are noted in 29 CFR 1926.901, DuPont's Blaster Handbook, Fireline Blaster's Guidebook, PMDS No. 460, and Interagency Standards for Fire and Fire Aviation Operations.

16.7 Options to BLM's Blasting Needs

Blasting needs of the Bureau are accomplished by a combination of the following methods:

- Private certified contractors
- Certified BLM blasters
- Contract blasting by other Government agencies

16.8 Blaster Certification and Training

In order for a Bureau employee to receive a Blaster's Certificate and maintain currency, the employee must:

- A. Receive a minimum of 32 hours of initial classroom training that includes transportation, storage, handling, and the use of explosives. Training must be provided by a government-approved training facility and conducted by a certified blaster examiner.
- B. Receive a minimum of 16 hours of refresher classroom training every 3 years.
- C. Participate in field blasting operations a minimum of three times per year. A record of the blaster's shots will be maintained in the Field Office.
- D. Have a certificate that is valid and recognized by the state in which the blaster is working.
- E. Annual refresher training requirements can be accessed at the National Interagency Fire Center's homepage Safety link at www.nifc.gov.
- F. Record of training will be maintained in accordance with established BLM and OSHA guidelines.
- G. BLM blasters must carry their Blaster Certificate card. Blasters working wildland firefighting must carry their Incident Qualification and Certification Card (Red Card) indicating current certification(s).

16.9 Wildfire Fireline Explosives. All offices shall comply with applicable safety requirements as specified in the Fireline Blaster's Guidebook, PMDS No. 460, NFES No.2093 published by the National Wildfire Coordination Group, Interagency Standards for Fire and Fire Aviation Operations (Redbook), and BLM Manual

Handbook 1112-1 Chapter 23, DOT, OSHA, or the more stringent requirement.

- 16.10 Explosives Storage.** Proper storage of hazardous materials is essential for the protection of employees and the public. The quantity and type of explosives effect storage requirements and should be considered when developing an explosives storage area.
- A. Care must be exercised in procuring appropriate storage magazines. Blasting caps, electrical blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives.
 - B. Ground around magazines shall slope away for drainage. The land surrounding magazines shall be kept clear of brush, dried leaves, and other materials for a distance of 25 feet and appropriately placarded establishing a perimeter around the storage magazine.
 - C. Magazines as required by this paragraph shall be of two classes:
 - 1) Class I magazines shall be required where the quantity of explosives stored is more than 50 pounds.
 - 2) Class II magazines may be used where the quantity of explosives stored is 50 pounds or less.



Chapter 17 Firearms Safety

BLM Manual
Supersedes Rel. 1-1657

Rel. 1-1703
8/9/2006

Chapter 17 — Firearms Safety

17.1 References

- A. BLM Manual Handbook 1112-1, Chapter 26, Firearms
- B. BLM Manual 9260, Law Enforcement, General Orders
- C. 446 DM 10, Law Enforcement, Firearms
- D. State and Local Laws

17.2 Procedures. State Directors may authorize non-law enforcement personnel to carry firearms when functions or circumstances related to their official duties necessitate such permission.

Use of firearms by BLM personnel while on official business will be limited to those individuals who have been authorized by the State Director and have successfully completed a firearm safety course.

Authorizations will be in writing and training must be documented. See Illustration 17-1 for an example of a Request to Carry and Use Firearms and training documentation.

Adjustments to program and training requirements will conform to DOI policies relating to the use of non-law enforcement firearms.

A. Expiration of Firearms Authorization

The authorization to carry a firearm shall expire:

- 1) A maximum of 12 months after the issue date; or
- 2) Upon completion of the project; or
- 3) When there is a change of duty station, status, or transfer; or
- 4) Upon failure to demonstrate shooting proficiency, as required; or
- 5) Any domestic violence conviction; or
- 6) When rescinded for any other reason.

B. Seasonal or Part-Time Employees. Seasonal or part-time non-law enforcement employees, or full-time employees who have only an occasional need to carry firearms, are required to demonstrate proficiency once at the commencement of each term of employment, at the beginning of each field period requiring the use of firearms, and must meet the requirements outlined above in 17.2 A.

17.3 Equipment. The Bureau will only issue 12-gauge pump shotguns and solid slug ammunition for animal protection. Employees wishing to use their personal firearms must meet the minimum caliber and power requirements (.30-.06 or equivalent for rifles; .44-caliber magnum or greater for side arms), and complete the firearm

training course and a safety check of these firearms by an approved instructor. No reloads allowed.

Bureau policy requires that all firearms be equipped with a child safety lock (trigger lock). This lock must remain in place until such time as the firearm is ready to load and put into service.

17.4 Firearms Certification for Non-Law Enforcement Personnel

Only those non-law enforcement personnel who are competent and qualified marksmen and have completed a firearms training program may be authorized to use or carry firearms.

The firearms training program must consist of at least 4 hours of classroom time culminating in a prescribed shooting regimen at a firing range. The instructor administering the firing range component will be a certified Federal Law Enforcement Training Center graduate, Federal Bureau of Investigation officer, or a National Rifle Association instructor.

A. Classroom Component, Firearms Training Course

The classroom component of a qualified firearms training course shall consist of the following subjects:

- 1) Basic firearms safety
- 2) Legal and moral aspects of firearms use
- 3) Non-lethal alternatives
- 4) Animal behavior (optional based on risk assessment)

B. Shooting Proficiency, Firearm Training Course

This portion of the firearms training course will take place on the firing range under the control of an authorized instructor.

The target for animal protection will be 8 1/2 inches by 11 inches in size and will be placed a distance of 15 yards from the firing line. Proficiency is achieved when 70 percent of the shots are on the target and when all sequences of shots are fired within the allowable time of 25 seconds. Each sequence will be performed twice to demonstrate proficiency; the shooter must exhibit proper safe handling of the firearm(s).

- 1) **Pump and semi-automatic shotguns:** two sequences of fire consisting of magazine capacity for the shotgun, plus one (i.e., Remington 870, four rounds in magazine, plus one)
 - The shooter will start with a full magazine and empty chamber. The weapon will have the action closed and the safety on.

- On the command to fire, the shooter will be required to fire the rounds in the magazine, then reload and fire one additional round.
- Upon completion, the shooter will open the action and make sure the safety is on.
- The time limit will be 25 seconds. This sequence will be repeated.

2) Double-barrel shotguns: two sequences of fire consisting of four rounds per sequence.

- Shooter will start with the shotgun fully loaded and the safety on.
- On the command to fire, the shooter will be required to fire the two rounds of ammunition in the firearm, then load and fire two additional rounds.
- Upon completion, the shooter will open the action and make sure the safety is on.
- The time limit will be 25 seconds. This sequence will be repeated.

3) Rifles: two sequences of fire consisting of magazine capacity for the rifle, plus one round (i.e., a bolt action rifle with magazine capacity of three rounds; the course will be four rounds for each sequence).

- The shooter will start with the magazine fully loaded. The action will be closed on an empty chamber and the safety on.
- On command to fire, the shooter will fire the rounds in the magazine, then reload and fire one additional round.
- Upon completion, the shooter will open the action and make sure the safety is on.
- The time limit will be 25 seconds. This sequence will be repeated.

4) Handguns: two sequences of fire, each consisting of cylinder/magazine capacity for the handgun.

- The shooter will start with a fully loaded handgun.
- On the command to fire, the shooter will fire all rounds contained in the cylinder/magazine.
- Upon completion, the shooter will open the cylinder/slide and make sure the handgun is unloaded.

- The time limit will be 25 seconds. This sequence will be repeated.

17.5 Use of Firearms. Bureau employees must observe all Federal, state, and local laws in regard to the licensing, use, transportation, etc., of firearms and ammunition. Bureau employees are prohibited at all times from using Government-owned vehicles or equipment for the express or incidental purpose of hunting, shooting, or transporting of game, hunters, firearms, or ammunition. Violators are subject to disciplinary action and/or prosecution under the law.

A. Firearms in Camp. The use of firearms is prohibited in camp areas or during working hours by non-law enforcement personnel except when required for the safety of personnel or if in the best interest of the Bureau.

B. Taking Game in Defense of Life or Property. As a job requirement, firearms may be carried in work areas and used if necessary for the protection of work parties from dangerous animals. The necessity of taking game animals must not be brought about by harassment or provocation of the animal or the unreasonable invasion of the animal's habitat.

C. Rabid or Infected Animals. If Bureau employees are specifically requested by local officials to carry firearms to help curb an epidemic of rabid animals; to reduce the number of undesirable, crippled, or infected animals; or to carry out other authorized activities, such as cone harvesting, the purpose of the action and the caliber of the firearm(s) must be stated in the letter of authorization.

D. Reporting Requirements. Game animals taken may become property of the state. Different parts of the animal may have to be provided to the state for administrative reasons. This may have to be done in required time frames. Bureau personnel should check local regulations prior to carrying a firearm.

17.6 Firearms and Ammunition Storage

All firearms, when not in active use, shall be stored in a secure place, out of sight, under lock and key. Firearms will be unloaded prior to storage.

Illustration 17-1

Form OR-1112-18
(October 1991)

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Oregon State Office**

REQUEST TO CARRY AND USE FIREARMS

Full Name: _____ Date of Birth: _____

Sex: Female Male _____

District: _____ Area/Division: _____

Duties requiring employee to carry/use firearms: _____

Firearms Information

Firearm(s) to be used: Caliber: _____ Make: _____ Model: _____

Serial No.: _____ Registered owner: _____

Employee Safety Requirements

Firearms Safety Course Attended (minimum 4 hours in safety, handling, firing, and legal/moral aspects of the use of firearms):

Course Name: _____ Date Attended: _____

Certifying Official/Instructor: _____

Course Sponsor (NRA, FLETC, FBI): _____

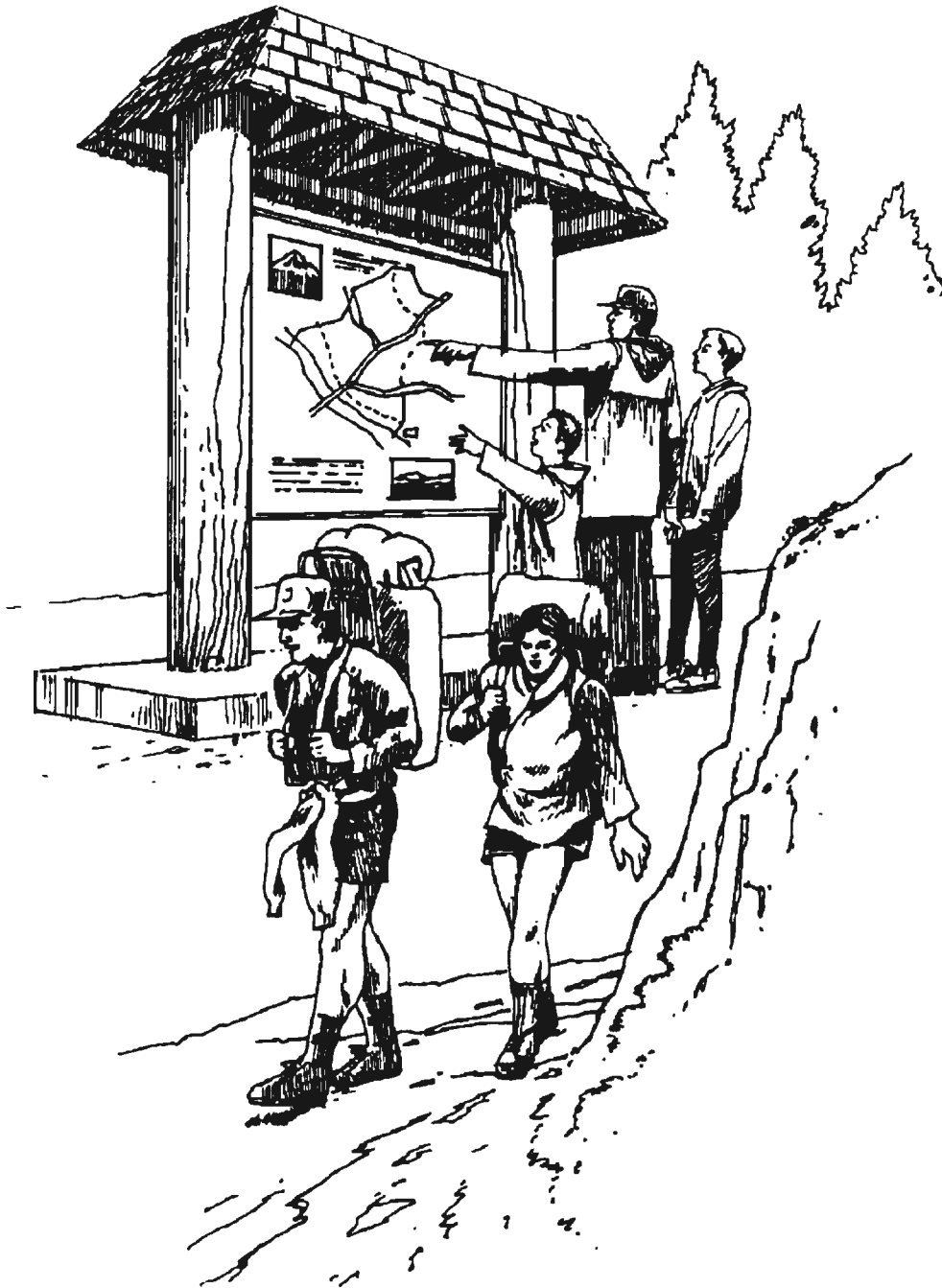
Non-law enforcement employees authorized to carry firearms in the course of employment must demonstrate their shooting proficiency (70% or better); permanent employees twice a year; seasonal or part-time employees once a year or at the commencement of each term of employment.

Proficiency Certification: _____ by _____
Date Approved Instructor

_____ by _____
Date Approved Instructor

Authorization Required (Dates) From _____ To _____

Location(s) Required: _____



Chapter 18

Visiting Public Safety and Health

Chapter 18 — Visiting Public Safety and Health

18.1 References

- A. BLM Manual Handbook 1112-1, Chapter 20, Visiting Public Safety and Health
- B. 485 DM 23, Public Safety and Health
- C. 43 U.S.C. 1457, Duties of Secretary

18.2 Procedures.

Established BLM visitor sites and facilities shall be managed to provide reasonable safeguards against known hazards and still provide a quality outdoor recreation experience for all visitors.

BLM sites and facilities shall be designed for maximum accessibility and maintained to minimize the risk of injury or illness to all visitors.

18.3 Inspections.

BLM-developed recreation sites, campgrounds, and facilities shall be inspected periodically, but no less than annually, for compliance with policies, standards, and codes to help ensure the safety and health of the visiting public.

Qualified inspectors shall conduct safety and health inspections.

18.4 Accident Reporting.

All known visitor accident/incidents on public lands that could reasonably result in tort claim action must be reported into the DOI Safety Management Information System (SMIS).

Known accidents/incidents involving visitors on the public lands shall be subject to the same reporting and investigation requirements as those involving BLM employees and volunteers.

All accidents associated with Special Recreation Permits, Special Use Permits, or Concession Permits must also be reported in SMIS, <http://www.smis.doi.gov>.

18.5 Coordination with other BLM Programs.

The Visitor Safety Program (VSP) shall be coordinated with the Safety, Law Enforcement, Volunteer, Recreation, Engineering, and Hazardous Materials programs.

Law Enforcement is responsible for ensuring compliance with visitor use and conduct regulations, including the requirement for seat belt use by the driver and all occupants of motor vehicles equipped with safety belts.

The Recreation, Volunteer, and Engineering programs are responsible for managing and maintaining established BLM visitor sites and facilities pursuant to policies, standards, and codes.

The Hazardous Materials Program is responsible for identifying and eliminating hazardous waste sites on the public lands that may pose safety or health dangers to the visiting public.

- 18.6 Coordination with Outside Agencies.** The Safety Program shall coordinate visitor safety and health activities with recognized national safety and health organizations.

The Law Enforcement Program is responsible for coordination of Federal, state, and local law enforcement agencies, search and rescue units, and emergency medical service providers.



Chapter 19

Search and Rescue

Chapter 19 — Search and Rescue

19.1 Reference

BLM Manual Handbook 1112-1, Chapter 25, Search and Rescue

19.2 Procedures. The BLM will normally be in a supportive role in Search and Rescue (SAR) operations. However, BLM may take the lead for expediency in life or death situations or when non-Bureau SAR programs are not capable of providing the services. In cases where the BLM is lead on a SAR a formal risk assessment will be accomplished.

BLM employees may provide emergency assistance to persons whose lives or safety are in danger on or adjacent to public lands. Such assistance must be fully coordinated with local agencies that have the primary responsibility for emergency assistance.

Bureau personnel do not replace existing search and rescue (SAR) organizations, but merely supplement those already in existence. Where SAR needs exist, Bureau managers may assist local authorities as deemed necessary.

A. Coordination with Other Organizations. Bureau personnel must, to the maximum extent feasible, cooperate and coordinate with local, state, and other Federal agencies within their areas of responsibility. Examples of areas of cooperation include interagency radio communications, shared patrol responsibilities, cooperative search and rescue planning and implementation, cooperation with local law-enforcement agencies, and cooperative management agreements.

B. Skills and Training to Participate in Search and Rescue. Bureau employees who will be providing rescue services need to have appropriate skills acquired through training, such as climbing, diving, water vessel, etc. Bureau ground personnel who participate in SAR should maintain a standard first-aid certificate. Personnel who participate in SAR should be in good physical condition commensurate with a wide range of environmental conditions.

19.3 Search and Rescue (SAR) Assistance. Local and state authorities have the primary responsibility for locating persons lost on public lands. Bureau personnel are authorized to assist them in searching for persons lost on or near the public lands. The extent of such assistance depends on local agency capabilities, BLM training and equipment, and the nature of the emergency.

A. BLMs Involvement in SAR

Appropriate search involvement may include the following:

- 1) Monitoring a search effort and completing required reports.
- 2) Providing local agencies with information regarding topography, visitor use areas, water sources, mine shafts, structures, etc.
- 3) Supplying maps, vehicles, radios, search equipment, or aircraft.
- 4) Using employees to manage or participate in searches.

B. Response to Search Requests

Whenever a request for a search is received, BLM employees must relay the nature of the situation to local authorities through the appropriate manager.

- 1) When encountering a search situation on public lands, BLM employees may take charge of the situation when no local authorities are present on the scene.
- 2) Whenever local authorities are on the scene of a search incident on or near public lands, Bureau managers may offer available BLM assistance.

19.4 Search Procedures for Lost, Overdue, or Missing

Employees. The Bureau will initiate whatever action it deems necessary if a SAR action involves a BLM employee.

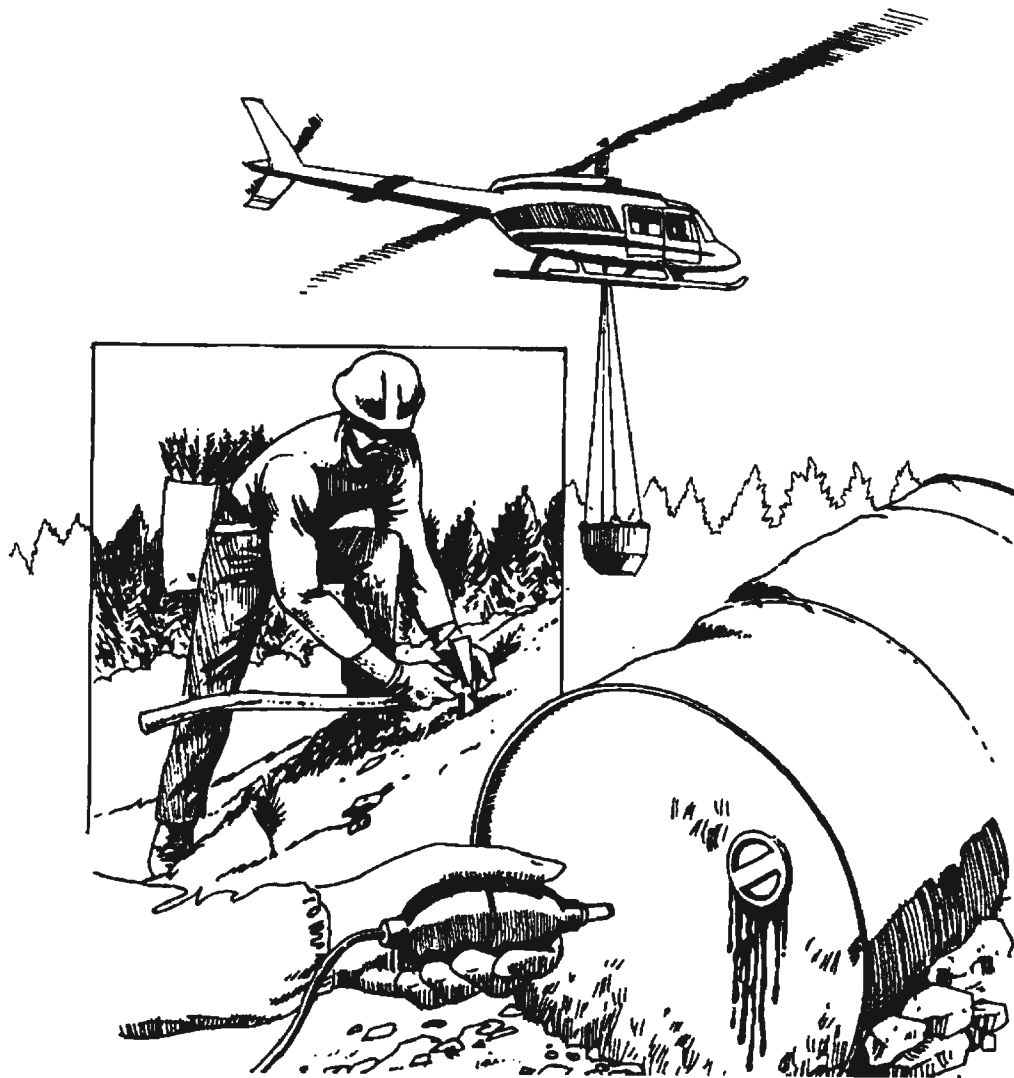
- A. Determine whether a search needs to be implemented for the employee or employees. This can be done by:
 - 1) Attempting contact with the missing individual(s) by radio or phone.
 - 2) Checking with supervisor and co-workers as to their whereabouts.
 - 3) Checking the compound, parking lots, and surrounding area for the missing person's private and work vehicles.
 - 4) Contacting by phone the family and/or friends of the missing individuals for information as to their whereabouts.
 - 5) Dispatching a BLM employee to the employee's residence and/or contacting the local law enforcement office to request that they do so.
- B. If contact with the missing employee cannot be made, then:
 - 1) Notify the appropriate manager.
 - 2) Notify the appropriate primary search and rescue agency.
 - 3) Notify the appropriate Logistics Center and/or Dispatch Center.

- C. Once it has been determined that there is a lost, overdue, or missing employee or employees, it is necessary to gather additional information.
- 1) WHO?
 - Names
 - Number of persons missing
 - Descriptions of person(s): gender, nationality, height, weight, hair color, eye color, and attire
 - 2) WHAT?
 - Missing person's travel plan and proposed schedule
 - Mode of transportation
 - Person's work assignment
 - Type of communications equipment missing person(s) took on assignment
 - 3) WHEN?
 - Time persons were last seen or contacted
 - Time persons were to complete work assignment
 - Time persons were to return to base
 - 4) WHERE?
 - Determine the person's planned destination.
 - Determine the person's departure point.
 - Determine travel routes and any stops.
 - Once appropriate information has been gathered, provide the information to the primary search and rescue coordinator.

19.5 Planning. Districts, Field Offices, Resource Areas, and other detached facilities will write Search and Rescue Plans or Emergency Action Plans that include search procedures for lost, overdue, or missing employees.

The purpose of the plan is to expedite emergency actions by various individuals to determine status, effective rescue, facilitate medical treatment, and handle security measures involved in a successful search and survival mission.

- 19.6 Search and Rescue Equipment.** Managers must ensure that visitor services personnel are supplied with search equipment necessary to provide assistance, as needed.



Chapter 20

Contractor Safety and Health

Chapter 20 — Contractor Safety and Health

20.1 References

- A. BLM Manual Handbook 1112-1, Chapter 21, Contractor Safety and Health
- B. 485 DM Chapter 24, Contractor Safety and Health
- C. BLM Manual 1510, Procurement
- D. Department of the Interior Acquisition Regulations (DIAR)
- E. Federal Acquisition Regulations (FAR)

20.2 Procedures

A. Contracting Officer (CO)

The Contracting Officer (CO) is responsible for, but may delegate these responsibilities to, the Contracting Officer's Representative (COR):

- 1) **Advise of Potential Hazards.** BLM will provide information regarding hazardous substances to contractor employees as required by OSHA in 29 CFR 1910.1200, Hazard Communication Standard. The CO shall advise the contractor of all potentially unsafe or unhealthful working conditions that have been determined to exist or have the potential to occur on the job site.
- 2) **Provide Material Safety Data Sheets (MSDS).** Provide Material Safety Data Sheets (MSDS) to the contractor for all hazardous materials provided by the Bureau for use by the contractor. If the contractor is to acquire, control, and use hazardous materials, the contractor is required to acquire MSDS for the hazardous products used. The contractor must provide the BLM with a copy of the MSDS on request.

B. Contractor Requirements

The contractor shall provide and maintain work environments and procedures that will:

- 1) Safeguard the public and Government personnel, property, materials, supplies, and equipment exposed to contractor operations and activities.
- 2) Avoid interruptions of Government operations and delays in project completion dates.
- 3) Provide appropriate safety barricades, signs, and signal lights.
- 4) Comply with the applicable federal, state, and local safety requirements.

- 5) Ensure that any additional measures the CO or COR determines to be reasonably necessary for the purposes are taken.
- B. Whenever the CO or COR becomes aware of any noncompliance with these requirements or any condition that poses a serious or imminent danger to the health or safety of the public or Government personnel, the CO or COR shall notify the contractor orally, with written confirmation to follow, and request immediate initiation of the corrective action(s). If the contractor fails or refuses to promptly take corrective action, the CO or COR may issue an order stopping all or part of the work until satisfactory corrective action has been taken.
- C. These provisions apply to all contractors regardless of the size or type of business entity.
- C. Multi-Employer Worksites** . OSHA considers contractors and contracting agencies as multi-employer worksites. OSHA's Field Inspection Reference Manual (FIRM), Chapter III, Sec. C-6, and OSHA Instruction CPL 2-0.124 define the roles of each level of employer at a multi-employer worksite.
 - A. Under these provisions, BLM would be considered an exposing employer if BLM personnel were exposed to unsafe conditions even if caused by a contractor.
 - B. BLM would be liable and subject to OSHA citation if:
 - 1) BLM knew of the hazardous condition or failed to exercise reasonable diligence to discover the condition;
or
 - 2) BLM failed to take steps to protect its employees; or
 - 3) BLM directed a contractor on how to perform contractual duties

20.3 Contracts. All contracts shall have occupational safety and health clauses wherein the contractor is required to comply with all applicable safety and health standards as directed by Federal, state, or local safety requirements. The clause shall advise the contractor that failure to comply with safety and health standards may result in a stop order being issued. All costs related to a stop order for failure to comply with safety and health standards will be borne by the contractor.

20.4 Records

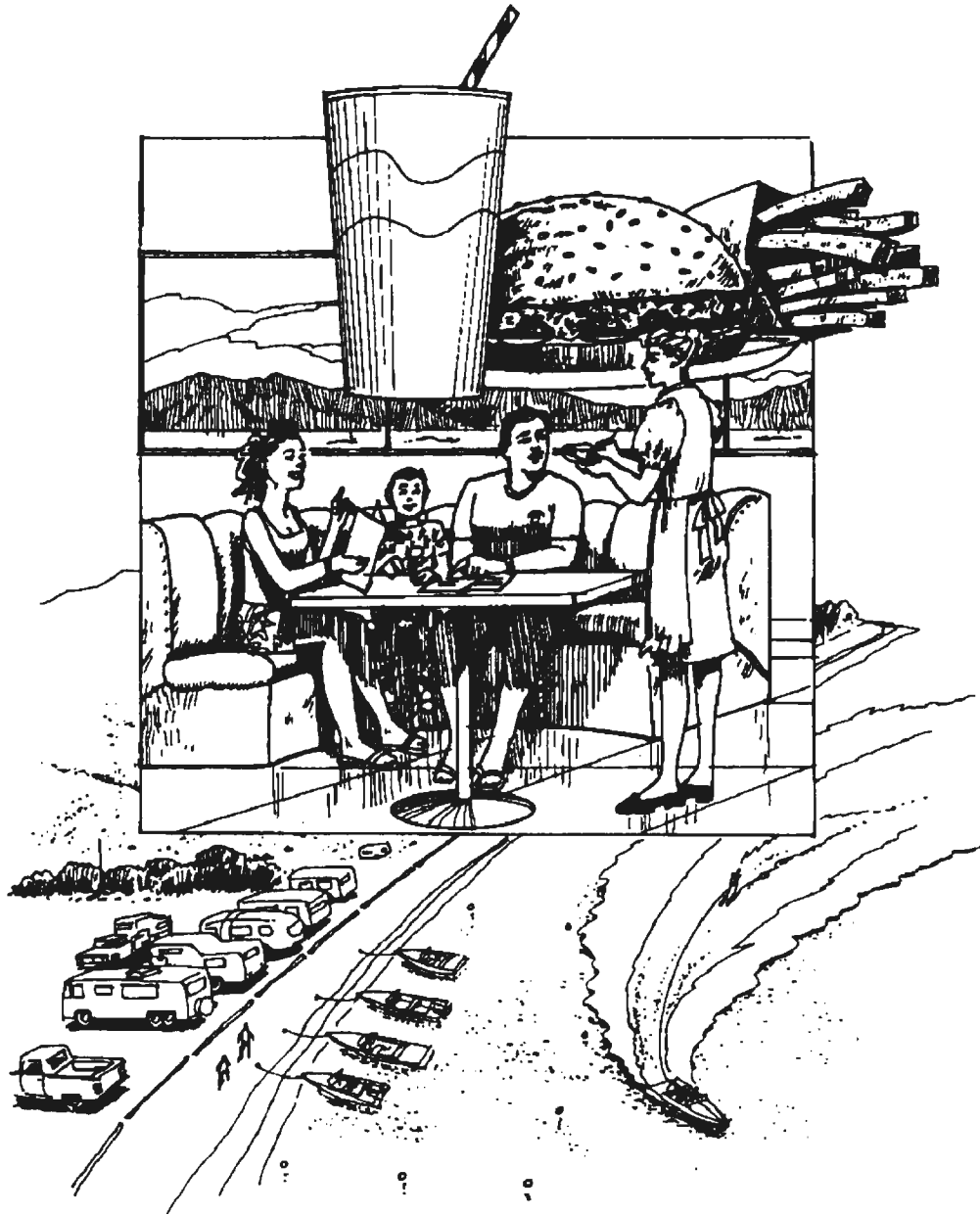
A. Safety and Health Deficiencies

All safety and health deficiencies noted during inspections will be recorded and maintained in the project contract files. Actions

taken by the CO, COR, or Project Inspector to obtain compliance by the contractor shall be recorded and will be considered as limiting factors in future contract awards.

B. Accidents

Accidents will be reported to the COR, who will enter the information into the Safety Management Information System (SMIS) electronic Accident/Incident report (<http://www.smis.doi.gov>)



Chapter 21

Concessionaire Safety and Health

Chapter 21 — Concessionaire Safety and Health

21.1 References

- A. BLM Manual Handbook 1112-1, Chapter 22, Concessionaire Safety and Health
- B. 29 CFR 1910.1200, Hazard Communication
- C. 29 CFR 1926, Construction Standards

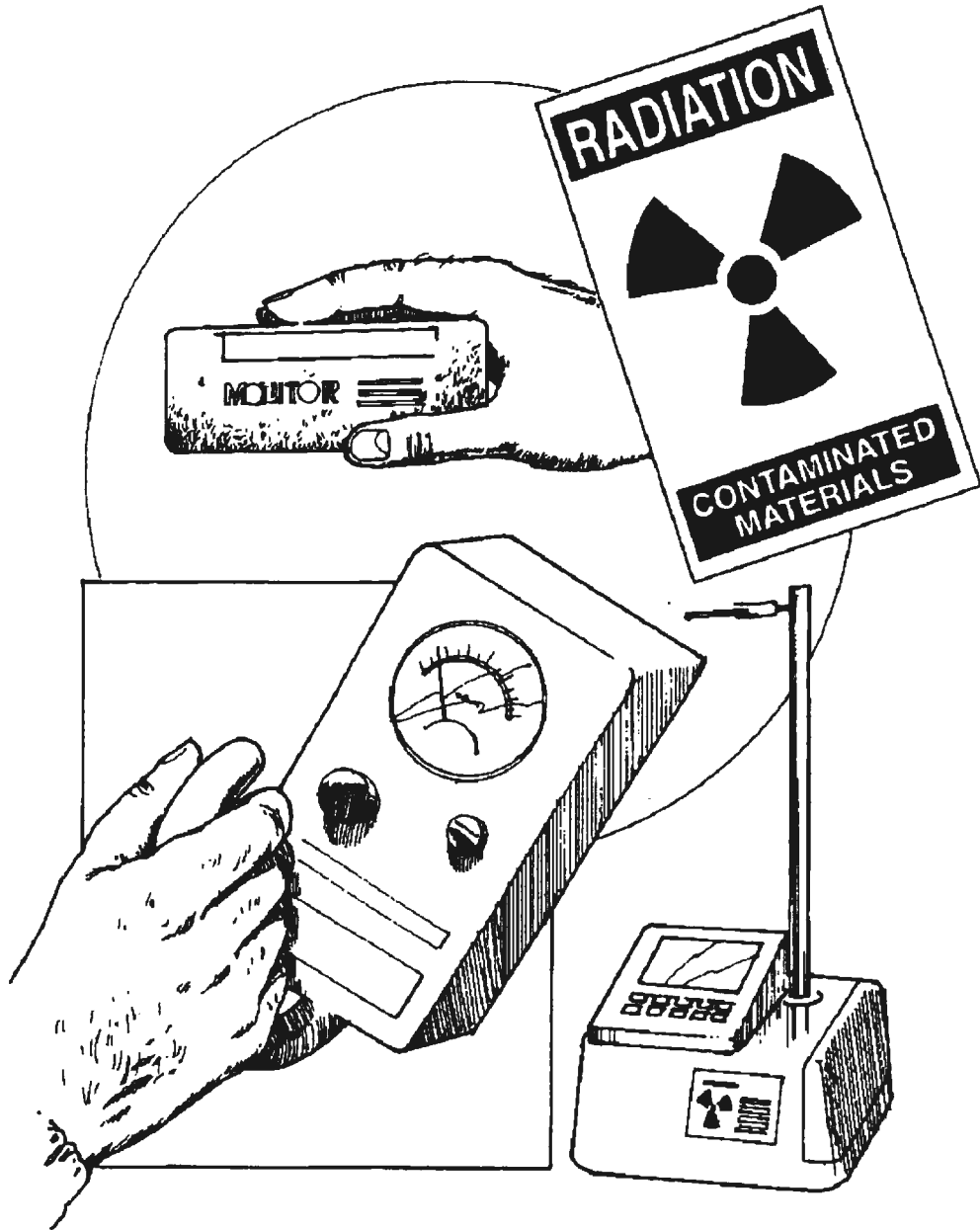
21.2 Procedures. Any BLM office establishing contracts with concessionaires will include applicable safety and health requirements for protecting concession employees, the public, and Bureau personnel.

A. Concessionaires' Safety Program. The degree, scope, and complexity of the Concessionaires' Safety Program will be determined by the products handled, the extent of equipment operations, and the amount of visitor services provided.

Any program, regardless of size, should address the following:

- 1) Procedures to identify and correct safety deficiencies.
- 2) Steps to ensure that safety awareness, hazard recognition, and accident prevention are communicated to all affected groups.
- 3) Steps to ensure compliance with the Hazard Communication (HAZCOM) safety standard.
- 4) Specific hazards associated with the concessionaires' activities.
- 5) Accident/incident and emergency procedures to be established and posted.

B. Review of Concessionaires' Safety Program. Offices, when appropriate, will monitor training, conduct and review safety inspections, and review safety promotion efforts conducted by concessionaires for the safety of their employees and the public. Safety personnel do not have the authority to stop concessionaire operations unless there is imminent danger. Safety concerns shall be brought to the lease or permit manager for resolution.



Chapter 22

Radiation Safety

Chapter 22 — Radiation Safety

22.1 References

- A. NUREG 1556, Vol. 1, Rev. 1, Consolidated Guidance about Materials Licenses: Program Specific Guidance about Portable Gauge Licenses
- B. 10 CFR 19 Notices, Instructions and Reports to Workers; Inspections and Investigations
- C. 10 CFR 20, Standards for Protection against Radiation
- D. 10 CFR 30, Rules of General Applicability to Domestic Licensing of Byproduct Material
- E. 10 CFR 71, 49 CFR 100-185, Packaging and Transportation of Radioactive Material
- F. 29 CFR 1910.96-97, Ionizing/Non-Ionizing Radiation
- G. 49 CFR 170-178, DOT Regulations

22.2 Procedures. When Bureau employees are assigned to work in or near areas where they may be potentially exposed to radioactive material, whether it be contained in sealed devices or emitted from other sources, a Radiation Safety Program (RSP) must be established.

A. Components of a Radiation Safety Program

- 1) Radiation Safety Officer
- 2) Handling and storage procedures
- 3) Transportation
- 4) Security
- 5) Personnel monitoring and recordkeeping
- 6) Records and reports
- 7) Response to incidents
- 8) Emergency procedures
- 9) Leak testing
- 10) Maintenance and maintenance records
- 11) Training

B. Nuclear Devices.

In the event that Bureau operations use radioactive devices (e.g., nuclear soil moisture/density gauges), for any given task, the following is required:

- 1) **License.** A license from the Nuclear Regulatory Commission (NRC) for the specific source material must be obtained prior to purchase of a nuclear device. The agreements made in the application for the license must be followed. All authorized users must adhere to the operating and emergency procedures outlined in NUREG-1556 and the District/Field Office Radiation Safety Plan. Use of an unlicensed nuclear device to perform Bureau work is strictly prohibited.
- 2) **Authorized Users.** Individuals using the gauges are referred to as authorized users. Authorized users have the responsibility to ensure the surveillance, proper use, security, and routine maintenance of portable gauges containing licensed material.
- 3) **User Training.** All users of the gauges must receive approved training (Outlined in NUREG-1556, Vol. 1, Rev. 1, Appendix D and as specified in the Unit Radiation Safety Plan) in a portable-gauge manufacturer's course or in an alternative training program for gauge users approved by the Radiation Safety Officer identified on the license. This training is to be certified and training certificates must be on file with the Radiation Safety Officer prior to engaging in gauge operations. No one is to operate a nuclear gauge without the required training. Users will receive refresher training at least every 5 years to include radiation safety and regulatory requirements, emphasizing practical subjects important to safe use of the gauge; radiation vs. contamination; internal vs. external exposure; concept of time, distance, and shielding to minimize exposure; control and surveillance of gauges; location of seal source within the portable gauge; inventory; recordkeeping; incidents; licensing and inspection by regulatory agency; need for complete and accurate information; employee protection; deliberate misconduct.
- 4) **Radiation Safety Officer Training.** Individuals serving as Radiation Safety Officer (RSO) must receive training as directed in NUREG 1556.
- 5) **Transportation.** Whenever a gauge is transported, shipping papers must be maintained in the transport vehicle within the reach of the driver. The required shipping papers consist of:
 - a) A current copy of the International Atomic Energy Agency (IAEA) Certificate of Competent Authority (special form certificate) for each source in the gauge must be on file.

- b) A bill of lading filled out in accordance with 49 CFR 172.200-204.
 - c) An Emergency Response Information document must be in the transport vehicle with the shipping papers and immediately accessible to the driver or emergency personnel.
 - d) The gauge must be controlled by constant surveillance when not in storage and must be secured from damage or theft while at temporary job sites and while on TDY.
 - e) Whenever the gauge is transported in a vehicle, it must be locked in the trunk of a car, locked in a van, or secured by lock and chain and properly tied down while in an open-bed truck.
 - f) The gauge must be in a TYPE A package and a copy of the TYPE A Package Certificate provided by the gauge manufacturer must accompany the package during transportation.
 - g) The package must be properly marked, labeled, sealed, and inspected prior to each shipment.
- 5) **Personnel Monitoring.** All operators must be monitored for radiation exposure by personnel monitoring equipment (e.g., film badges). Processing of personnel monitoring devices must be performed by a qualified laboratory institution.
- 6) **Leak Test.** Leak tests must be performed on the gauges at six-month intervals or at intervals approved by NRC.
- 7) **Physical Inventory.** All gauges must be accounted for periodically. Physical inventories are to be conducted every 6 months. Physical inventory records must be kept for 3 years and the RSO must have copies of these inventories.
- 8) **Public Dose.** Gauge users will ensure that licensed gauges will be used, transported, and stored in such a way that members of the public will not receive more than 100 millirem in 1 year, and the dose in any unrestricted area will not exceed 12 millirem in any 1 hour, for licensed operations. Members of the public include persons who live, work, or may be near locations where portable gauges are used or stored and employees whose assigned duties do not include the use of licensed materials and who work in the vicinity where gauges are used or stored. Operating and emergency procedures regarding security and surveillance specified under that section of NUREG-1556, Public Dose. Public dose is controlled by each individual Unit Radiation Safety

Plan, in part, by ensuring that gauges not in use are stored securely (e.g., stored in a locked area) to prevent unauthorized access or use. There should be a designated individual at each facility storing a gauge who must calculate distance, time, and shielding when choosing a permanent or temporary storage location. Decreasing the time spent near a gauge, increasing the distance from the gauge, and using shielding (i.e., brick, concrete, lead, or other solid walls) will reduce radiation exposure. As a rule of thumb, gauges should be stored as far as away as possible from areas that are occupied by other employees and members of the public.

- 9) **Annual Audit.** Each facility storing a gauge should designate one individual to perform an annual documented audit (NUREG – 1556, Appendix F), and note corrective actions taken. A copy of the audit must be sent to the Radiation Safety Officer (RSO) for signature and verification.



Chapter 23

Forestry

Chapter 23 — Forestry

23.1 References

- A. 29 CFR 1910.266, Logging Operations
- B. ANSI Z89.1-1997, Industrial Head Protection
- C. ANSI Z87.1-1989, Occupational and Educational Eye and Face Protection
- D. USFS National Tree Climbing Guide

23.2 Procedures. All employees working in forested areas must have and use appropriate personal protective equipment (PPE) as determined by the risk assessment process.

23.3 Field Attire. Recommended proper field attire consists of a helmet (hard hat), long pants, long-sleeved shirt, and footwear providing protection from the environment, non-slip soles and ankle support. Boots suitable for work in the woods are typically a minimum of 6 to 8 inch leather, lace-up boots with non-slip traction or caulked soles and heels.

When overhead hazards are present, such as underneath the forest canopy or potential electrical storms, the wearing of a Type 1, Class E (ANSI Z89.1-1997) helmet is mandatory.

23.4 Environmental Conditions

- A. Weather.** Field work must be delayed or terminated during electrical storms, periods of high winds, or other inclement weather which may constitute a high hazard to employees working in the forest environment.
- B. Danger Trees.** Employees working in forested areas where the timber canopy is above their heads should pay particular attention to danger trees. Danger trees are trees that present a hazard to employees due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem, or limbs, and the position, direction or lean of the tree. Trees with dead, broken, or rotted limbs and tree tops which are suspended in overhead branches are often referred to as “widow makers” for good reason and employees should give them a wide berth. Employees should also exercise added precaution when under the forest canopy in gusty and/or windy conditions. Workers who are not part of a felling crew should never be closer than two and one-half (2.5) times the height of the tree(s) being felled.
- C. Steep and/or Brushy Terrain.** Employees working on steep and/or brushy terrain shall wear adequate footwear and pay close attention to their footing to reduce the possibility of slips,

trips, and falls. Hand tools should be carried on the downhill side and gloves worn to protect the hands. In extremely brushy conditions or where there is danger of flying particles or branches protective eyewear should also be worn.

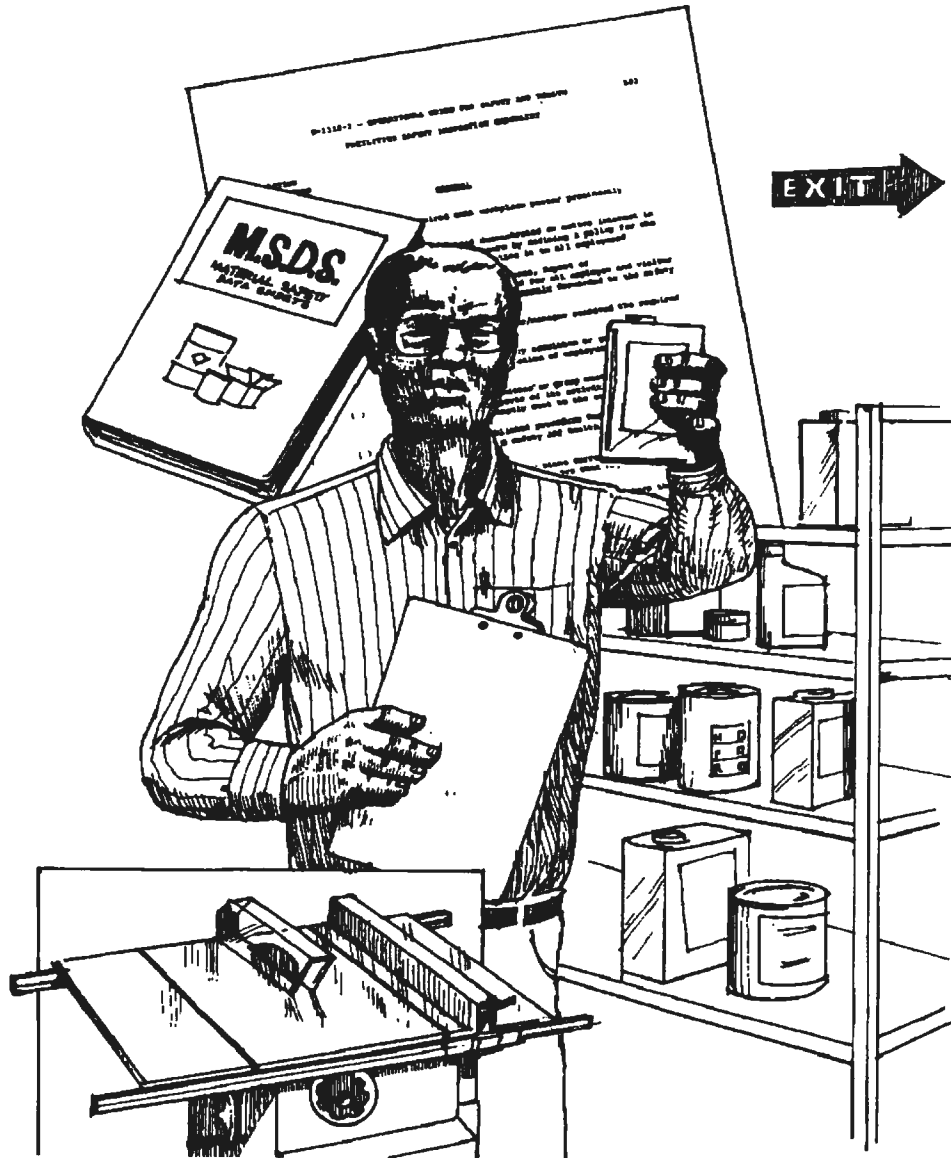
D. Poison Oak, Poison Ivy, etc. Employees shall be trained in the identification of poisonous plants and should avoid them whenever possible. When avoidance is not possible, employees should be trained in pre- and post-exposure interventions for reducing adverse reactions from poisonous plants.

E. Bees, Snakes, etc. Employees shall be made aware that these and other natural hazards of the outside work environment may be encountered when working in the woods. This awareness training must include identification, avoidance, and first-aid techniques.

Some states have epinephrine training programs which allow for the use and administration of the prescription drug, epinephrine, for emergency treatment of anaphylactic shock. Use of these programs is encouraged since they equip employees to promptly deal with a life-threatening condition in remote areas.

F. Tree Climbing

All tree climbing shall be done in conformance with the United States Forest Service (USFS) National Tree Climbing Guide.



Chapter 24

Inspections and Abatements

Chapter 24 — Inspections and Abatements

24.1 References

- A. BLM Manual Handbook 1112-1, Chapter 6, Inspections and Abatements
- B. 485 DM 6, Inspections and Abatements
- C. 29 CFR 1960, Subpart D, Inspection and Abatement
- D. 29 CFR 1960, Subpart H, Training

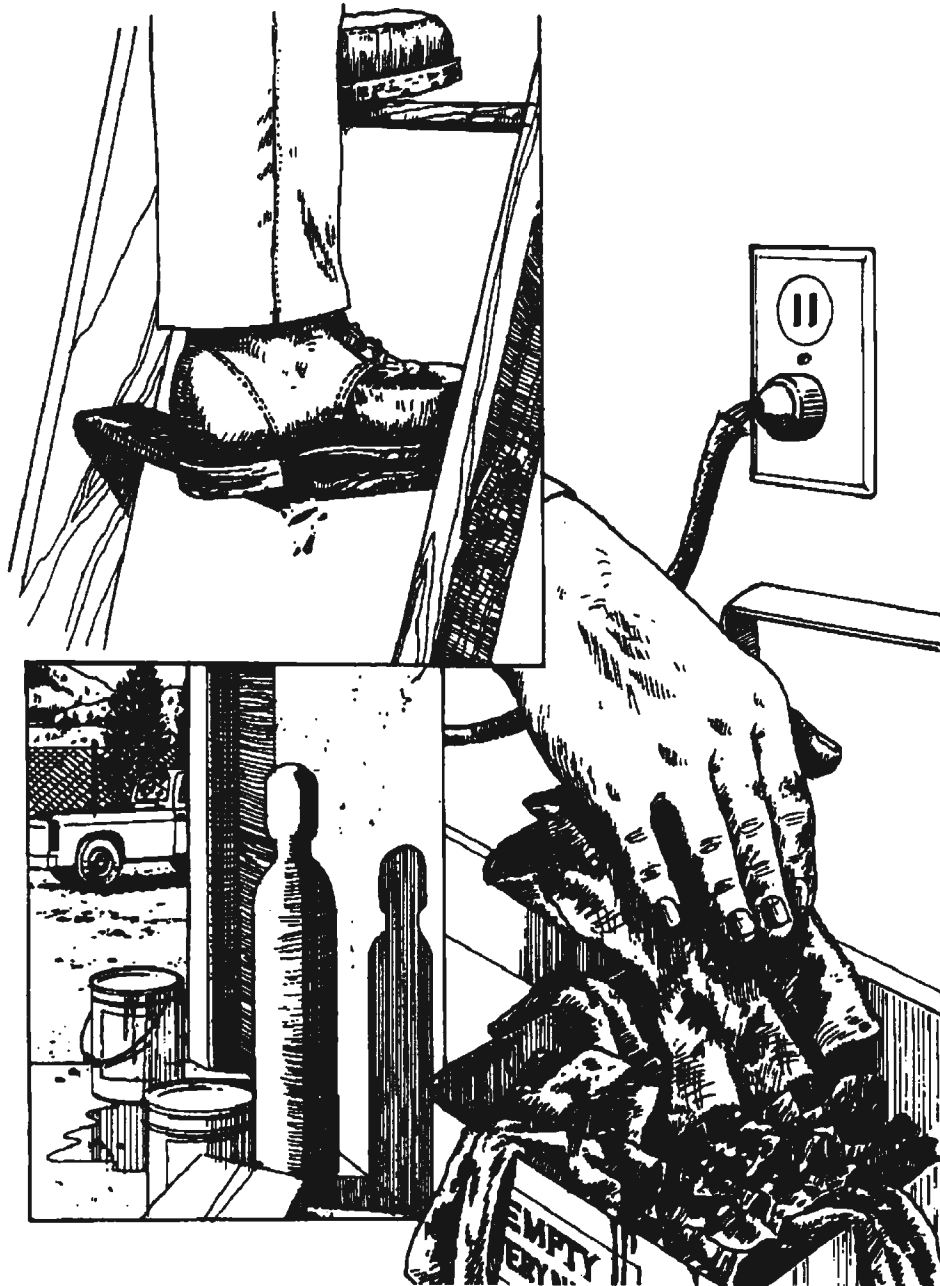
24.2 Procedures

- A. Routine Inspections.** The routine inspection of all operations, workplaces, and facilities is a continuous part of every supervisor's responsibility.
- B. Formal Inspections.** Procedures for conducting formal inspections can be found in BLM Manual Handbook 1112-1, Chapter 6.
- C. Annual Inspections.** Qualified personnel with the training, equipment and competence to recognize unsafe or unhealthful working conditions and occupational hazards shall conduct formal annual inspections of workplaces and facilities. Annual inspections should be scheduled with management at the facility to be inspected.
- D. Inspection Checklists.** Inspection checklists are an excellent tool for conducting routine inspections. While checklists are helpful, they are not all-encompassing. Hazards identified that are not included on checklists should be added as appropriate.

24.3 Responsibilities. Supervisors are responsible for corrective actions on a continuing basis. Those corrective actions that cannot be implemented immediately by the supervisor will be referred to a higher level of management for corrective action.

24.4 Hazard Abatement Plans and Risk Assessment Codes (RAC). Safety personnel assign a Risk Assessment Code (RAC) to deficiencies identified during an inspection. All RAC 1, 2, or 3 hazards will be corrected within 30 days of notification. If the hazard cannot be abated within 30 days, a written abatement plan must be completed on BLM Form 1112-8, Hazard Abatement Plan, and submitted to the Safety Officer who conducted the inspection.

Form 1112-8, Hazard Abatement Plan, is available at internet site:
<http://www.blm.gov/records/forms>



Chapter 25

Employee Reports of Unsafe/Unhealthful Working Conditions

Chapter 25 — Employee Reports of Unsafe/Unhealthful Working Conditions

25.1 References

- A. BLM Manual Handbook 1112-1, Chapter 10, Employee Reports of Unsafe/Unhealthful Working Conditions
- B. 485 DM 8, Employee Reports of Unsafe Conditions and Allegations of Reprisal
- C. 29 CFR 1960.8, Agency Responsibilities (General Duty Clause)
- D. 29 CFR 1960.26, Conduct of Inspections
- E. 29 CFR 1960.27, Representatives of Officials in Charge and Representatives of Employees
- F. 29 CFR 1960.28, Employee Reports of Unsafe or Unhealthful Working Conditions
- G. 29 CFR 1960, Subpart G, Allegations of Reprisal

25.2 Procedures. Employees are responsible for identifying potentially hazardous conditions and correcting them when they have the ability and knowledge to do so. Employees may use BLM Form 1112-4, Employee Report of Unsafe or Unhealthful Working Condition (Illustration 25-1), to report such conditions.

A. Employee Rights. The employee has the right to decline a task because of a reasonable belief that there is an imminent risk of death or serious injury and there is insufficient time for hazard reporting and abatement actions.

Employees have the right to make reports and to remain anonymous without fear of reprisal.

B. Reports to OSHA. Employees may also submit formal complaints alleging workplace hazards directly to the Department of Labor OSHA. However, the Secretary of Labor encourages employees to use the Bureau in-house hazard reporting procedure as the most expeditious means to achieve abatement. Complaints outside the Bureau may serve as the basis for investigations or inspections by OSHA officials; therefore, employees should not contemplate such actions until in-house efforts prove to be ineffective.

25.3 Responsibilities

A. Supervisor Responsibilities.

Supervisors are the key to ensuring that employee reports of unsafe conditions are investigated. This responsibility cannot be delegated to the Safety Manager or to the employee. Supervisors

to whom reports are made are responsible for investigating employee reports and implementing controls to protect employees from the hazard. Examples of such controls are the following:

- 1) Discontinue the operation or process until corrective action is completed.
- 2) Remove all employees from the hazardous condition, operation, or process.
- 3) Place barriers and signs in the hazardous area to prevent employee entry until corrective actions are completed.
- 4) Provide employees with appropriate clothing or personal protective equipment (PPE) or tools to allow them to continue the task safely.
- 5) Advise employees concerning corrective actions completed or planned.
- 6) Forward a report on actions taken to the Safety Manager.
- 7) Follow up to ensure corrective actions have been taken.

B. Safety Manager Responsibilities. The Safety Manager is responsible for providing technical assistance to supervisors and managers for proper identification of hazards and appropriate corrective actions.

C. Management Responsibilities

Management officials are responsible for implementing and supporting the reporting process by doing the following:

- 1) Training employees in proper reporting of unsafe or unhealthful working conditions.
- 2) Providing supervisors with the resources to ensure that employees are protected from the potential hazard(s) reported.
- 3) Ensuring that no employee is subjected to restraint, interference, coercion, discrimination, or reprisal by virtue of submitting a report either orally or formally within the organization or to higher levels of authority.

25.4 Workplace Violence. Bureau offices shall implement a zero-tolerance policy on workplace violence. The policy shall be disseminated to all employees. Procedures for reporting workplace violence shall be established, and employees will be notified of the proper reporting procedure. Employees should receive training on prevention of workplace violence and proper reporting procedures. Employees who have potential exposure to conflict in the performance of duties shall receive training in conflict resolution or the equivalent.

H-1112-2
Safety and Health for Field Operations

Form 1112-4
(March 1993)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EMPLOYEE REPORT OF UNSAFE OR UNHEALTHFUL WORKING CONDITION

This form is provided for the assistance of an employee and is not intended to constitute the only method by which a report may be submitted.

SECTION A: Information	Safety Office Log No.
1. The Undersigned (<i>check one</i>) <input type="checkbox"/> Employee <input type="checkbox"/> Representative of Employee believes that a violation of an occupational safety or health standard has occurred which has resulted in a safety or health hazard.	
2. Office/Facility and Location	
3. Location of alleged violation (<i>Building or Work Site. Include Address</i>)	
4. Government Supervisor at site of alleged violation	4a. Supervisor's telephone (<i>include area code</i>)
5. Briefly describe the hazard. Include the approximate number of employees exposed to or threatened by such hazard	
6. List by number and/or name the particular safety or health standard(s) alleged to be violated	
7. Do you believe that this hazard immediately threatens death or physical harm?	<input type="checkbox"/> Yes <input type="checkbox"/> No
8. To your knowledge, has this alleged violation been the subject of any union/management grievance?	<input type="checkbox"/> Yes <input type="checkbox"/> No
9. To your knowledge, has this alleged violation been called to the attention of or discussed with the government supervisor or other management official?	<input type="checkbox"/> Yes <input type="checkbox"/> No
10. If the answer to item 7 or 8 is "Yes", describe the efforts made by management to eliminate the hazard	
11. Additional Remarks/Comments	

SECTION B: Certification	The person reporting must complete the section below	
12. Name (<i>type or print</i>)	13. Signature	14. Date
15. Home Address	16. Home Telephone (<i>include area code</i>)	17. Work Telephone (<i>include area code</i>)
	18. May your name be revealed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
19. If Representative of Employee, enter your position, organization and authority to act		

(See reverse side for instructions and appeal rights)

Illustration 25-1,
BLM Form 1112-4,
Employee Report of Unsafe or Unhealthful Working Condition

H-1112-2
Safety and Health for Field Operations

REPORTING INSTRUCTIONS

1. You are encouraged to report unsafe or unhealthful work practices or conditions whenever detected in the Bureau of Land Management. Any condition, whether you consider it to be a minor infraction or an imminent danger **must** be reported. Reporting such conditions to your immediate supervisor will usually achieve the most expedient results leading to corrective action. Such reports should be made orally and the supervisor is required to promptly investigate the condition and take appropriate corrective action. Supervisors are then required to inform the reporting employee of all actions taken. **In the interest of expediency and prompt elimination of the condition that you wish to report, you are strongly urged to work within the chain of command and report directly to your supervisor.**
2. In the event that you fear adverse action or reprisal associated with reporting unsafe or unhealthful conditions, you are authorized to report directly to the Safety Manager or the State/Center Director through the use of this form. Under such conditions you are not required to report to any other person. Further, you have the right to remain anonymous and you may so indicate on this form. Response to persons who wish to remain anonymous will be made by posting corrective actions taken on bulletin boards at or near the location where the hazardous conditions existed or exists, or by letter to the person's home address unless the person reporting indicates in Block 11 (*Additional Remarks/Comments*) that he/she does not wish to have correspondence mailed to the home address.
3. Reports of unsafe and unhealthful conditions submitted by use of this form will be responded to in writing by the State/Center Safety Manager within 15 calendar days after receipt. The response will provide details of interim or completed corrective action or will advise that the condition reported is not considered hazardous and that no action will be taken.

APPEAL RIGHTS

You have the right under law to be provided a safe and healthful work environment. In the event that you disagree with the response made by the Safety Manager or with the corrective actions taken, you have the right to discuss the matter with the Safety Manager to initiate negotiations for changes or improvements. You have the right to appeal to the State/Center Director if the matter cannot be resolved to your satisfaction through the efforts of the Safety Office. If you are dissatisfied with the State/Center Director's response or have not received a response within 20 working days, you may appeal to higher levels of authority. The sequence of appeals shall be through the Director, Bureau of Land Management; the Secretary, Department of the Interior, the final appeal shall be to the Office of Federal Agency Safety Programs, U.S. Department of Labor, Washington, D.C. 20210. **Your appeal must be made in writing and must describe in detail the entire previous processing of your report of unsafe or unhealthful working conditions and actions that were taken in response. Further, you must set forth in writing your objections thereto.**

Illustration 25-1(cont)



Chapter 26

Accident/Incident Investigations

Chapter 26 — Accident/Incident Investigations

26.1 References and Required Forms

- A. BLM Manual Handbook 1112-1, Chapter 8, Accident Investigation and Reporting
- B. BLM Manual Handbook 1112-3, Serious Accident Investigation Manual
- C. Safety Management Information System (SMIS), Accident/ Incident Report (<http://www.smis.doi.gov>)
- D. 29 CFR 1904, Recordkeeping and Reporting Occupational Injuries and Illnesses
- E. 20 CFR 10, Claims for Compensation under the Federal Employees' Compensation Act
- F. Form CA-1, Federal Employees Notice of Traumatic Injury
- G. Form CA-2, Notice of Occupational Disease and Claim for Compensation.
- H. Form CA-16, Request for Examination and/or Treatment
- I. Form OWCP 1500, Health Insurance Claim Form/HCFR Form 1500
- J. Form SF-91, Operator's Report of Motor Vehicle Accident
- K. Form SF-94, Statement of Witness
- L. Form DI-135, What Every Driver Should Do In Case of an Accident envelope

26.2 Procedures. The Safety Management Information System (SMIS) is the accident reporting tool used to electronically report accidents and file worker's compensation claims (<http://www.smis.doi.gov>).

The employee initiates the claim by completing an electronic Form CA-1, Federal Employees Notice of Traumatic Injury or a Form CA-2, Notice of Occupational Disease and Claim for Compensation using SMIS. Supervisors will receive electronic notification that they are to complete their portion of the CA-1 or CA-2 forms. Once the CA-1 or CA-2 has been completed, supervisors will be prompted to complete the required supplemental information related to the accident/incident.

The employee must complete the CA-1 or CA-2 within 30 calendar days after the incident. The detailed SMIS accident report must be completed within 6 working days after the incident occurs.

The appropriate form is to be completed by the employee and supervisor or the designated Workers' Compensation Coordinator prior to medical treatment, except in critical situations, in which the

reports can be completed after evacuation or medical attention has been administered.

A. Obtaining Medical Treatment. Form CA-16, Request for Examination and/or Treatment, authorizes initial medical treatment of an injured employee at BLM's expense. Supervisors should only issue this form after they have confirmed that it is a work related injury. It should be issued within a few hours of the occurrence of the traumatic injury and cannot be retroactively issued for treatment already received except in the case of emergency treatment. In cases where an employee has suffered an occupational disease or illness, the CA-16 can only be issued if prior approval from OWCP has been granted.

This form should accompany the employee to the medical facility unless the situation is determined critical and there is not enough time to complete the form. Employees must advise the attending physician that they have suffered a work related injury and it cannot be handled by their individual insurance. When possible, supervisors are encouraged to accompany injured employees to the medical facility to ensure assistance is given to the employee. The supervisor is responsible for informing the physician (within 24 hours) of light-duty alternatives.

B. OWCP 1500/HCFA Form 1500, Health Insurance Claim Form. OWCP 1500 form is a standard billing form and is the responsibility of the medical provider, not the employee. The attending health care personnel will submit the completed form to OWCP for payment. Most health care providers have the OWCP 1500 form or its equivalent.

C. Agency-Provided Medical Care. If an employee's injuries are treated via agency-provided medical care (APMC), a SMIS electronic Accident/Incident Report, must be completed. The immediate incident supervisor/BLM employee, the home unit supervisor, will ensure that the SMIS report is submitted. If internet capabilities are not available, a SMIS off-line report worksheet may be used and sent with every Form CA-1 or CA-2 back to the home unit. The off-line report worksheet will then be used to complete the SMIS electronic Accident/Incident Report at the home unit. Hard copies of the off-line report worksheet can be printed from <http://www.smis.doi.gov> and stored with CA-1 and CA-2 forms, or an electronic copy can be downloaded and saved.

D. Electronic Accident/Incident Report (SMIS). Use the Department of Interior's Safety Management Information

System (SMIS) system (<http://www.smis.doi.gov>) to report all accidents or incidents.

The SMIS electronic Accident/Incident Report shall be completed by the supervisor and submitted within 6 working days after the event. The exception to this would be personnel working in remote locations where electronic reports cannot be submitted within that timeframe due to lack of internet access. In that situation, 10 working days are allowed (see paragraph C. above for information on using the SMIS off-line report worksheet).

The SMIS electronic Accident/Incident Report should not be held for more information. The report must be completed with the information known and, if necessary, an update can be made to the report to add, delete, or correct information previously reported. SMIS supports OSHA reporting requirements and the BLM's need for collecting, assimilating, and analyzing accident, illness, and injury data.

- E. Supervisor's Investigation.** Following treatment of the injured employee, the supervisor must initiate investigations of all accidents/incidents, either personally or through a trained accident investigator. The accident investigation will include compiling facts that led up to the incident, actions or inactions culminating in the incident, and post-incident actions relating to the incident.
- F. Requested Forms and Timeframes.** BLM forms required for injury accidents are as follows:

ACCIDENT FORMS REQUIRED FOR INJURY ACCIDENTS		
Complete using the DOI SMIS Program at: http://www.smis.doi.gov		
FORM	INITIATOR	RECIPIENT
SMIS Electronic Accident Report	Injured employee and supervisor	Supervisor Safety Manager
CA-1 (Employee Notice of Traumatic Injury)	Injured employee as soon as possible but no later than 30 days from the date of the accident	Immediate supervisor OWCP Compensation Coordinator Employee Medical File DOL OWCP
CA-2 (Employee Notice of Occupational Disease and Claim for Compensation)	Employee as soon as possible but no later than 30 days from the date of the accident	Immediate supervisor OWCP Compensation Coordinator Employee Medical File DOL OWCP
CA-16 (Request for Examination and/or Treatment)	Supervisor provides employee with completed copy to take to attending physician	Attending physician OWCP Compensation Coordinator DOL OWCP

G. Critical Incident Management/Serious Accident/ Fatality. If a serious accident occurs (a fatality; 3 or more individuals hospitalized; \$250,000 or more property damage), immediately contact your local Safety representative and/or State Safety Manager.

See BLM Manual Handbook 1112-1, Chapter 8, and BLM Manual 1112-3 for guidance on serious accident investigations. See *Agency Administrator's Guide to Critical Incident Management*, a publication of the National Wildfire Coordinating Group, for guidelines on assisting employees involved in serious accidents/incidents.

26.3 Motor Vehicle Accidents. All motor vehicle accidents involving Government-owned, leased, or privately owned vehicles (being used for official business) must be reported to the employee's supervisor

immediately. If a private citizen and/or property are involved, the supervisor should anticipate and plan from the beginning that a tort claim may be filed. The information required includes the names and addresses of the private-sector persons involved, vehicle license numbers, driver's license information, insurance policy references, police reports, pictures, if possible, of the accident site and damaged property, and newspaper articles. When involved in an accident, employees should refrain from discussing the incident with private parties.

A. Required Forms. BLM forms required for motor vehicle accidents are as follows:

ACCIDENT FORMS REQUIRED FOR MOTOR VEHICLE ACCIDENTS		
Complete using the DOI SMIS Program at: http://www.smis.doi.gov		
FORM	INITIATOR	RECIPIENT
SF-91 (Operator's Report of Motor Vehicle Accident)	Operator (at the accident scene)	Fleet Manager Safety Manager (if required by policy)
SF-94 (Statement of Witness)	Witness (if any)	Fleet Manager Safety Manager (if required by policy)
SMIS Electronic Accident Report	Employee and Supervisor	Supervisor Safety Manager

26.4 Visitor Accidents. All known visitor accident/incidents on public lands must be reported on the SMIS electronic Accident/Incident Report.

26.5 Other Accidents. Aircraft and boating accidents require special investigation and reporting procedures. Wildland and prescribed fire-related shelter deployments and entrapments also require special investigation procedures. For instructions on these types of accidents, contact your local safety representative.



Chapter 27 Confined Space

Chapter 27 — Confined Space

27.1 References

- A. 29 CFR 1910.146, Permit-Required Confined Space
- B. BLM Cave Safety Standards
- C. 43 CFR 37, Cave Management Regulations
- D. Federal Cave Resources Protection Act 1988

27.2 Procedures. The BLM has established procedures and policy for identifying confined spaces and associated hazards and controlling such hazards to allow safe entry.

Management has also established cave safety standards and mine entry requirements for BLM employees.

These standards consist of safety guidelines, risk assessments (RAs), and search and rescue (SAR) procedures. Employees will have appropriate training prior to entry into confined spaces.

27.3 Confined Space. Many workplaces contain spaces that are considered to be confined because their configurations hinder the activities of employees who may have to enter into, work in, and exit from them.

In many instances, employees who work in confined spaces also face increased risk of exposure to serious physical injury from hazards such as entrapment, engulfment, and hazardous atmospheric conditions.

Confinement itself may pose entrapment hazards. Work in confined spaces may keep employees closer to hazards (such as an asphyxiating atmosphere) than there would be otherwise. For example, confinement, limited access, and restricted airflow can result in hazardous conditions that would not arise in an open workplace.

The term permit-required confined space i.e., permit space, refers to those spaces that meet the definition of a confined space and pose health or safety hazards, thereby requiring a permit for entry.

A. Confined Space Definition

In 29 CFR 1910.146, OSHA defines confined space as a space that:

- 1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- 2) has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and

3) is NOT designed for continuous employee occupancy.

B. Permit-Required Confined Space

A permit-required confined space is a confined space (see definition above) that includes one or more of the following characteristics:

- 1) A hazardous atmosphere or a known potential to contain a hazardous atmosphere.
- 2) A material with the potential for engulfment of an entrant (e.g., grain, ore, sand, water).
- 3) An internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross section.
- 4) Any other recognized serious safety or health hazard.

C. Confined Space Program Elements

Supervisors considering entry into any confined space should consult their local or state confined space entry policy and their Safety Manager for assistance and guidance. Confined space program elements include:

- 1) Identification of confined spaces – maintain an inventory
- 2) Hazard identification/risk assessment
- 3) Hazard control
- 4) Permit-system
- 5) Employee information and training
- 6) Site control
- 7) Authorized and unauthorized entry
- 8) Equipment
- 9) Rescue
- 10) Protection from internal hazards
- 11) Duty to other employees

27.4 Caving. Cave management responsibilities include consideration for employee and public health and safety while in a cave. A safety orientation based on the following guidelines and a cave risk assessment is required before BLM employees enter caves as part of their assigned duties.

Program elements for caving include:

- A. Cave safety standards
- B. Risk assessment
- C. Search and rescue procedures/pre-planning

27.5 Inactive/Abandoned Mines. Entry into inactive/abandoned mines should be conducted only after a comprehensive risk assessment has been completed and there is an official need to enter.

Due to the high potential of exposure to hazardous conditions during mine entry and examination, it is recommended that the entry requirements outlined under the Confined Space standard be followed to ensure the safety of those employees required to enter mines to perform their duties.

Continuous monitoring for hazards (e.g., lower explosive limits, oxygen deficiency, toxic gases, etc.) is still recommended when in the mine.



Chapter 28

Toxic and Explosive Gas Protection

Chapter 28 — Toxic and Explosive Gas Protection

28.1 References

- A. BLM Manual Handbook 1112-1, Chapter 16, Occupational Health Hazards/Industrial Hygiene
- B. 29 CFR 1910.134, Respiratory Protection
- C. ANSI Z390.1-199, Accepted Practices for Hydrogen Sulfide (H₂S) Safety Training Programs

28.2 Procedures. Hydrogen sulfide gas (H₂S) is invisible, explosive, flammable, and deadly. It initially has the smell of rotten eggs but within minutes of exposure, even at low concentrations, the sense of smell is deadened or lost.

H₂S occurs naturally in crude petroleum, natural gas, volcanic gases, and hot springs. It is also produced when organic matter decays. H₂S is often referred to as "sewer gas."

H₂S is a serious, life-threatening concern in many BLM field offices, especially where there is oil and gas activity, underground mines, blasting, or projects involving underground water. Anyone involved in field activities in or near a BLM field office with an oil and gas program must contact the local field manager for an H₂S safety briefing and must be accompanied by a trained BLM employee before entering a potential H₂S area. Employees who work in an H₂S environment must follow standard safety practices to protect themselves against potential H₂S hazards and exposures. Safe work practices include proper use of PPE and annual training.

Methane is a colorless, odorless gas with a wide distribution in nature. It is the principal component of natural gas. Methane is not toxic when inhaled, but it can produce suffocation by reducing the concentration of oxygen inhaled. The "firedamp" of coal mines is chiefly methane. Anaerobic bacterial decomposition of plant and animal matter, such as occurs under water, produces marsh gas, which is also methane.

A. Buddy System Procedure (Toxic Gases). Ambient air with an H₂S concentration of 100 ppm or greater is considered Immediately Dangerous to Life and Health (IDLH) and requires that buddy system procedures be implemented.

The buddy or safety backup must be an individual trained in H₂S/methane safety. The safety backup is responsible for maintaining contact with the individual during an inspection and ensuring a safe rescue in the event the individual is overcome by gas. The safety backup will:

- 1) Stay in a safe zone (always upwind or crosswind).

- 2) Establish radio contact with the field office and advise when an employee is entering IDLH conditions, the expected duration of inspection, and will notify the office upon completion of the inspection.
- 3) Maintain visual contact with employee at all times.
- 4) Wear a working monitor.
- 5) Wear a Self-Contained Breathing Apparatus (SCBA) and be ready to mask-up immediately if employee goes down.
- 6) Be physically capable of moving employee to a safe zone. If rescue is necessary, safety backup will assess the situation to determine whether it is safe to attempt rescue, inform the field office, mask-up and check SCBA, shut off source of methane/H₂S, if possible, and proceed with rescue.
- 7) Note: The buddy system is not required in most methane environments.

B. Tank Gauging Inspections

If the H₂S concentration is known to be 10 ppm or greater, the employee will:

- 1) Verify that monitor is working prior to entering environment.
- 2) Wear SCBA and mask-up prior to ascending stairs.
- 3) Stand upwind from hatch when opening it, allowing tank vapor pressure to equalize.
- 4) If tank vapor pressure does not equalize within 30 seconds, and if monitor reading at shirt pocket level does not reach or exceed 100 ppm, leave hatch open, get down from the tank and wait for 10-15 minutes and resume tank gauging procedure to ensure that tank vapor pressure has equalized. If vapor pressure does not equalize and monitor reaches or exceeds 100 ppm, close hatch and leave area until buddy system can be implemented.

C. Meter Calibration Inspections

When witnessing a gas meter calibration inside a meter house, and the H₂S concentration is known to be 10 ppm or greater, the employee will:

- 1) Verify that monitor is working prior to entering environment.
- 2) Open meter house door and ventilate area for 3-5 minutes.
- 3) Wear SCBA and mask-up prior to entering meter house.

- 4) If the ambient air H₂S concentration is less than 10 ppm, the mask can be taken off. The SCBA or work unit must be used when performing inspections inside meter houses.
- 5) The employee must mask up prior to witnessing the orifice plate inspection.
- 6) If the ambient air H₂S levels reach or exceed 100 ppm at any time, the employee is to leave area immediately and initiate the buddy system before re-entering building.

D. Entering Buildings and Enclosed Structures. The employee must follow the safety procedures described for meter calibration inspections prior to entering a building when an explosive gas is present or when H₂S concentrations are 10 ppm or greater.

E. Drilling Operations. The employee must have a multi-gas monitor and escape pack ready for immediate use when performing drilling inspections.

F. Plugging, Abandonment, and Other Oil and Gas Operations. The employee must use an air monitor, and if high concentration of explosive gases or H₂S levels register greater than 10 ppm, the employee must leave the area immediately, put on an SCBA, and mask-up prior to continuing work.

G. Surface Compliance Inspections. Surface Compliance Specialists (SCS) working in an environment with an explosive gas or H₂S concentration of 10 ppm or greater must follow the same safety guidelines established for Petroleum Engineer Technicians (PETs).

H. All Other Field Activities or Inspections. No person shall work at a site with known toxic/explosive gas concentrations without authorization, appropriate training, and PPE. Visiting personnel must have an escape pack and be trained in proper use. Visitors must also be accompanied by a BLM employee who has completed appropriate toxic/explosive gas training.

I. Procedures in Explosive Gas Areas (Methane). The immediate health hazard with an explosive gas such as methane is thermal burn. Methane is flammable and when it is combined with air, can be highly explosive.

Examples of locations where methane can be present:

- 1) Drilling site/Well head. At the drilling site, make sure the inspector is familiar with the various components of a drilling rig to recognize any hazard in the area. The inspector must be trained in Blowout Preventer (BOP) equipment testing procedures if an emergency takes place. Employee must be

wearing the proper PPE (e.g., air monitor, safety-toed footwear, hard hat, safety glasses). The employee must be familiar with rig safety, potential escape routes, and safe locations. The employee must be aware that methane concentrates in and around the well head and when combined with air it will explode at low concentration levels. The permissible explosion level is < 0.5 ppm.

- 2) Point of Delivery (POD) buildings. At the POD building, make sure employees are aware that their personal air monitor is powered up and the unit is zeroed prior to leaving the office. Make sure the detector has been calibrated within 30 days prior to inspection date and that the batteries are charged. The employee must ensure that the POD building is in operational status by checking if the gas venting is in progress, if operations observed are normal, if POD building is in operation, and if there is noticeable vapor or can hear leaks. The employee must be wearing anti-static clothing and must ground themselves in order to discharge any static electricity. The employee must be familiar with the piping arrangements and not move any valve settings. If POD building is equipped with its own air monitoring system, employee must visually inspect the reading on the outside monitor before entering the building. If POD building is not equipped with an air monitoring system, the employee must ground themselves to the outside of the building before opening the door. Most POD buildings have a small hole in the door to insert a tube to connect to a gas monitor so the employee can test the inside air before opening the door.

28.3 Personal Protective Equipment (PPE). Employees assigned PPE will be responsible for using and maintaining equipment according to the manufacturer's specifications and BLM policy requirements.

A. Multi-Gas Monitors. Multi-gas monitors are used to monitor levels in the air in parts-per-million (ppm) and to alert employees when concentrations of toxic and/or poisonous gases reach hazardous levels. All monitors must be calibrated at least every quarter (90 days) or before each use. Batteries must be replaced every quarter (90 days) and checked before each use. Each monitor must be checked before entering a hazardous area, ideally before leaving the office. Each individual must maintain a means (log, tag, computer program, etc.) of documenting inspections, calibrations, and maintenance schedules.

B. Self-Contained Breathing Apparatus (SCBA). All SCBA tanks must be hydro-tested at least every 5 years or in accordance

with manufacturer's instructions. The mask and other related equipment associated with the SCBA must be inspected before each use and cleaned at least every quarter. There must be some means of documenting each test, inspection, and cleaning.

1) SCBA Types and Usage

- a) Rescue Pack. The rescue pack is a 30-minute respirator and will be rated and approved by NIOSH/MSHA as a 30-minute SCBA with a pressure demand Type C supplied-air respirator. It is used for rescue and to accomplish tasks of short duration.
- b) Work Unit. The work unit respirator is to be rated and approved by NIOSH/MSHA as a combination 5-minute SCBA for escape and pressure demand Type C supplied-air respirator for work. This unit is designed to be attached to a breathing air supply hose from a large tank for longer periods of work.
- c) Escape Pack. The escape pack is a 5-minute lightweight, self-contained air supply pack with a bag-type cover to enclose head area. This is a one-piece unit designed to be used for escape only and is not to be used for any other purpose. Each individual must maintain a log or similar means to document inspections and testing.

2) Maintenance

All equipment must be inspected to ensure equipment is in good working order before and after use. Equipment must also be cleaned after use.

- a) Fit tests are performed, using a non-toxic test agent, to ensure that employees are assigned a proper fitting respirator.
- b) Fit checks must be performed every time a respirator is to be used to enter a toxic environment.
- c) All SCBAs shall be inspected before and after each use and at least monthly.
- d) Any equipment that does not pass a fit check will be replaced or repaired.
- e) On an annual basis, supervisors will inspect all breathing air equipment and report to management on the condition of this equipment.

28.4 Training. Petroleum Engineer Technicians (PETs), Surface Compliance Specialists (SCSs), Safety Backups and all other field

personnel required to enter hazardous areas must receive training on the safety practices and procedures for working in a toxic/explosive gas environment.

28.5 Medical Evaluation. Employees will not be assigned to tasks requiring the use of respirators unless it has been determined by a physician that they are physically able to perform the work and use the equipment.

A. Medical Questionnaire. Employees will complete the medical questionnaire in 29 CFR 1910.134, Appendix C. A medical provider will perform the medical evaluation using the questionnaire or a medical examination, if medical provider deems it necessary.

B. Additional Medical Evaluations.

The employee's medical status will be re-evaluated annually by a physician or if any of the following events occur:

- 1) Employee reports medical signs or symptoms that are related to ability to use a respirator.
- 2) Medical provider, supervisor, or respirator program administrator informs the employer that the employee needs to be re-evaluated.
- 3) Observations made during fit testing and program evaluation indicate a need for employee re-evaluation.
- 4) A change occurs in workplace conditions, i.e. physical work effort, protective clothing, temperature, that may result in an increase in physiological burden on the employee.

Appendix: FACILITIES SAFETY INSPECTION CHECKLIST

H-1112-2
Safety and Health for Field Operations

OK

NEEDS ACTION

GENERAL

- | | | |
|--|-----|-----|
| 1. Is the required OSHA workplace poster prominently displayed? | () | () |
| 2. Has the Office Head demonstrated an active interest in safety and health matters by defining a policy for the workplace and communicating it to all employees? | () | () |
| 3. Are the required SMIS reports prepared for all employee and visitor accidents/incidents and promptly forwarded to the safety manager? | () | () |
| 4. Has the Safety Coordinator/Manager received the required training? | () | () |
| 5. Is there an active Safety Committee or group that allows and encourages participation of employees in safety and health activities? | () | () |
| 6. Does the Safety Committee or group meet regularly and prepare written reports of its activities? Are copies of the minutes promptly sent to the Safety Manager? | () | () |
| 7. Is there an established procedure for handling employee concerns regarding safety and health issues without fear of reprisal? | () | () |
| 8. Are workplace emergency plans current? Do they cover all types of | () | () |

natural disasters that might be anticipated to affect the workplace?

9. Are emergency telephone numbers () ()

posted where they can be easily seen in the event of an emergency?

10. Are the workplace emergency plans () ()

readily available for quick reference during working hours?

11. Are the workplace emergency plans () ()

readily available for quick reference before and after working hours and on weekends? Are appropriate after hours telephone numbers included in the emergency plans?

12. Does the workplace emergency () ()

plan list the name and extension of employees currently certified in CPR and First Aid?

13. Have copies of the current () ()

emergency workplace plans been sent to the safety manager?

14. Have all employees that drive () ()

either a Government vehicle or a private or rental vehicle on Government business attended a Defensive Driving Course within the last 3 years? Has the training been documented? Are employees notified of the need for required Defensive Driving refresher training at least 6 months before their Defensive Driving Certificate expires? Do the employees

have valid State driver licenses?

15. Have all aircraft users had a
minimum of 8 hours of aviation safety
training within the last 3 years? Has
the training been documented?

16. Have all employees that operate
all terrain vehicles or other large or
unique vehicles been properly trained
in the operation of such vehicles?

Has the training been documented?
When appropriate, do the employees
have a valid State driver license to
operate such vehicles?

17. Have appropriate employees
been trained in CPR and First Aid?
Has the training been documented?
Are employees notified of available
refresher training before their CPR
and/or First Aid certificates expire?

18. Has other appropriate safety
and health training been provided
for appropriate employees? Has
such training been documented?

ELECTRICAL WIRING, FIXTURES, AND CONTROLS

29 CFR 1910.301

1. Are fuses and circuit breakers
the right type and size for the load
on each circuit?

2. Are all fuses free of "jumping"
with pennies or metal strips?

H-1112-2
Safety and Health for Field Operations

3. Are all switches properly identified to show their purpose? () ()
4. Do switches or circuit breakers show evidence of overheating? () ()
5. Are switches mounted in clean, tightly closed metal boxes? () ()
6. Are all outlets covered by face plates?() ()
7. Are all plugs safe to use? () ()
8. Are metallic cable and conduit systems properly grounded? () ()
9. Are outlets tested for proper grounding? () ()
10. Are ground-fault circuit interrupter outlets provided in restrooms or at other locations within 6 feet of a water source? () ()
11. Are portable electric tools and appliances grounded or double insulated? () ()
12. Is any cord temporarily placed in a walkway covered by a runner? () ()
13. Are all electrical cords 3-pronged and free from fraying or other defects? () ()
14. Are all telephone cords and any temporary extension cords secured under desks or alongside baseboards? () ()
15. Do all electrical installations in hazardous (classified) locations, due to the possible presence of flammable vapors, liquids or gasses, or combustible dusts or fibers, meet the OSHA requirements of () ()

- 29 CFR 1910.307 for such locations?
16. Are electric motors clean and kept free of excessive grease and oil? () ()
17. Are electric motors properly maintained and provided with adequate over-current protection? () ()
18. Are portable lights equipped with proper guards? () ()
19. Are all lamps kept free of combustible material? () ()

EXITS AND ACCESS

29 CFR 1910.35

1. Are all exits visible and unobstructed? () ()
2. Are all exits marked with a readily visible sign that is properly illuminated? () ()
3. Are there sufficient exits to ensure prompt escape in cases of emergency? () ()
4. Are adequate controls established and posted for areas requiring limited occupancy? () ()
5. Is the exterior egress from the emergency exit to designated safe areas smooth, solid, and substantially level? () ()
6. Are special precautions taken to provide employees with adequate exits during construction and rehabilitation work? () ()
7. Are latches or other fastening () ()

devices on exit doors provided with
a panic bar for easy exit?

FIRE PROTECTION

29 CFR 1910.155

- | | | |
|---|-----|-----|
| 1. Are portable fire extinguishers provided inadequate number and type? (Total travel distance does not exceed 75 feet for a Class A fire or 50 feet for a Class B fire). | () | () |
| 2. Are fire extinguishers serviced annually and such service properly noted on the inspection tag? | () | () |
| 3. Are fire extinguishers mounted in readily accessible locations? | () | () |
| 4. Are fire extinguisher locations marked with a readily visible sign? | () | () |
| 5. Are fire extinguishers inspected monthly for general condition and operability? Is the monthly inspection recorded on a tag attached to the extinguisher? | () | () |
| 6. Is the fire alarm system tested at least once a year? | () | () |
| 7. Are evacuation drills conducted at least once a year? | () | () |
| 8. Are employees periodically instructed in use of extinguishers and fire protection procedures? | () | () |
| 9. Is the Emergency Evacuation plan current and posted throughout the | () | () |

building?

10. Are any interior stand pipes and valves inspected regularly? () ()

11. Are fire doors and shutters in good operating condition? Are fusible links in place, unobstructed, and protected from obstruction? () ()

12. Is the local fire department well acquainted with the facilities and any specific hazards? () ()

HOUSEKEEPING AND GENERAL WORK ENVIRONMENT

29 CFR 1910.141

1. Are halls, passageways, storerooms, and service rooms kept in a clean, orderly, and sanitary condition? () ()

2. Is the general work area free from clutter and excess accumulation of paper or other debris? () ()

3. Are food products not kept in the same refrigerator as batteries, film, chemicals, or other non-food products? () ()

4. Are rubbish and litter disposed of daily? () ()

5. Are there tripping hazards in halls, walkways, or work areas? () ()

6. Are carpets well secured to the floor and free of worn or frayed seams? () ()

7. Is smoking permitted in designated "SMOKING" areas only? () ()

8. Are "NO SMOKING" signs () ()

prominently posted for areas containing combustibles and flammables?

9. Do toilet facilities meet the requirements of applicable sanitary codes? () ()
10. Are adequate washing facilities provided? () ()
11. Are all areas of the facility adequately illuminated? () ()
12. Are the building ventilation systems regularly checked for their performance and balanced when necessary? () ()
13. Are stairways in good condition with standard risers provided for every flight having four or more risers? Are non-slip treads provided? () ()
14. Have weeds or other combustible material been removed from within 20 feet of any building? () ()
15. Are portable ladders adequate for their purpose, in good condition, and provided with secure footing? () ()
16. Are fixed ladders adequate, in good condition, and equipped with side rails or cages or special climbing devices, if required? () ()
17. Are all areas below 7 feet in height free from nails, hooks, screws, and any other sharp protruding object. () ()

MEDICAL AND FIRST AID

29 CFR 1910.151

1. If a hospital or medical clinic is not located near your facility, are one or more employees trained in first aid? () ()
2. Are the first aid supplies adequate for the type of potential injuries in the workplace? () ()
3. Are there quick water flush facilities available where employees are exposed to corrosive materials? () ()

MACHINES AND EQUIPMENT

29 CFR 1910.212

1. Are all machines or operations that expose operators or other employees to rotating parts, pinch points, flying chips, particles, or sparks adequately guarded? () ()
2. Are mechanical power transmission belts and pinch points guarded? () ()
3. Are hand tools and other equipment regularly inspected for safe condition? () ()
4. Whenever compressed air is used for cleaning, is the pressure reduced to 30 psi or less? () ()
5. Are power saws and similar equipment provided with safety guards? () ()
6. Are grinding wheel tool rests set to () ()

within 1/8-inch or less of the wheel?

7. Are grinding wheels worn or cracked? () ()
8. Is all machinery and equipment kept () ()
clean and properly maintained?
9. Are power saws and similar equipment () ()
provided with proper safety guards?
10. Are radial arm saws equipped with () ()
an automatic return?
11. Are table saws equipped with () ()
anti-kickback devices?
12. Are eye guards and other () ()
protective equipment located near
the machine area?

COMPRESSED GASES

29 CFR 1910.101

1. Are compressed gas cylinders () ()
examined regularly for obvious signs
of defects, deep rusting, or leakage?
2. Are compressed gas cylinders () ()
securely fastened at all times and
capped at all times when not in
actual use?
3. Are compressed gas cylinders only () ()
moved with an appropriate dolly?
4. Are compressed gas cylinders () ()
segregated so that full, empty,
oxidizers, and flammable gases are
stored separately?

FLAMMABLE LIQUIDS

29 CFR 1910.106

- | | | |
|---|-----|-----|
| 1. Are approved safety cans or other acceptable containers used for handling and dispensing flammable liquids? | () | () |
| 2. Are contents of safety cans or other acceptable containers clearly marked in large letters on the outside of the container? | () | () |
| 3. Are all flammable liquids that are kept inside buildings stored in proper storage containers and placed in approved flammable storage cabinets? | () | () |
| 4. Is storage of flammable materials at the work area limited to only a one day's supply and all excess materials returned to the flammable storage cabinet at the end of the work day? | () | () |
| 5. Are flammable storage sheds provided with adequate ventilation? | () | () |
| 6. Is properly designed electrical wiring and equipment installed in flammable storage sheds? | () | () |
| 7. Do flammable storage sheds have a clear aisle at least 3-feet wide? | () | () |
| 8. Is there at least one portable fire extinguisher located outside, | () | () |

but not more than 10 feet from,
the door opening of the flammable
storage shed?

9. Are containers of over 30-gallon capacity not stacked? () ()

10. Are "NO SMOKING" signs posted and smoking regulations strictly enforced in areas used for storage of flammable liquids? () ()

WELDING, CUTTING, AND BRAZING

29 CFR 1910.251

1. Are only authorized, trained personnel permitted to perform welding, cutting, or brazing operations? () ()

2. Have operators been provided a copy of operating instructions and directed to follow them? () ()

3. Are welding gas cylinders stored so they are not subjected to damage? () ()

4. Are valve protection caps in place on all cylinders not connected for use? () ()

5. Are all combustible materials located near the operator covered with protective shields or otherwise protected? () ()

6. Is a fire extinguisher provided at the welding site? () ()

7. Do operators have the proper protective clothing and equipment? () ()

PERSONAL PROTECTIVE EQUIPMENT

29 CFR 1910.132

1. Are hard hats provided and worn () ()
where any danger of falling objects
exists?
2. Are protective goggles or glasses () ()
provided and worn where there is any
danger of flying particles or splashing
of corrosive materials?
3. Are protective gloves, aprons, shields, () ()
or other equipment provided for
protection from sharp, hot, cold, or
corrosive materials?
4. Are approved respirators provided () ()
for regular or emergency use where
needed?
5. Is all protective equipment () ()
maintained in a sanitary condition and
readily available for use?
6. Is special equipment available for () ()
electrical workers?
7. Are noise protection devices () ()
available?

HAZARD COMMUNICATION

29 CFR 1910.1200

1. Is a written Hazard Communication () ()
Plan on file?
2. Have all hazardous materials been () ()
inventoried and the inventory made

H-1112-2
Safety and Health for Field Operations

available to all employees?

3. Have employees been trained in

the use of hazardous materials that
they might use or come in contact with?

4. Are all hazardous material containers

properly labeled?

5. Are Material Safety Data Sheets

(MSDS) available for all hazardous
materials?

6. Are all containers of hazardous

materials properly stored?

7. Is storage of hazardous materials

at the work area limited to a 1-day

supply with all excess quantities

returned to the storage area at

the end of the work day?



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MANUAL TRANSMITTAL SHEET

Release
1-1755

Date
07/23/2013

Subject

H-1283-1 – Data Administration and Management Handbook (I)

1. Explanation of Materials Transmitted: The 1283 Handbook has been updated and will include three handbooks. This is the first of three handbooks and includes information on data architecture and data governance.
2. Reports Required: None
3. Materials Superseded: Current 1283 Data Administration and Management Handbook 1-1705 (12/28/06).
4. Filing Instructions: File as directed below.

REMOVE

All of 1283-1 (Rel. 1-1705)
(Total: all pages)

/s/ Lisa L. Jollay

Deputy Assistant Director
Information Resources Management



BUREAU OF LAND MANAGEMENT (BLM)

Data Administration and Management (Internal)

BLM Manual Handbook H 1283-1

Table of Contents

Chapter I. Introduction.....	I-1
A. Basic Concepts.....	I-1
1. Data	I-1
2. Information and Knowledge.....	I-1
3. Metadata.....	I-1
4. Data Management Knowledge Areas.....	I-2
5. Data Lifecycle	I-3
6. Data Life Cycle and Integrated Lifecycle Management	I-5
B. Data Management Scope	I-5
1. Structure and Organization of the 1283 Handbooks	I-6
C. Authorities.....	I-6
D. Goals and Principles	I-7
E. Performance Measures.....	I-7
F. Data Management Roles	I-8
1. Identify Your Data Management Responsibilities	I-8
2. Acquire Data Management Knowledge and Skills	I-8
G. Data Management Tools.....	I-8
Chapter II. Data Governance.....	II-1
A. Concepts.....	II-1
B. Goals	II-1
C. Major Activities	II-1
1. Establish and Maintain Data Governance Organization	II-1
2. Recommend and Approve Annual Data Priorities of the Bureau	II-2
3. Provide Report on the Status of the Data Priorities	II-2
4. Develop and Maintain the Data Management Strategy	II-3
5. Identify and Appoint Data Stewards	II-3
6. Develop and Issue Bureau Data Policies.....	II-4
D. Practices and Techniques.....	II-4
E. Governance Responsibilities.....	II-4
Chapter III. Data Architecture	III-1
A. Concepts.....	III-1

1. Enterprise Data Model	III-1
2. Enterprise Data Framework	III-1
B. Goals	III-2
C. Major Activities	III-2
1. Define and Maintain the Enterprise Data Framework	III-2
2. Define and Maintain the Enterprise Data Model	III-2
3. Define and Maintain the Data Technology Architecture	III-3
4. Define and Maintain the Data Integration Architecture.....	III-3
5. Define and Maintain the BLM Taxonomy	III-3
D. Practices and Techniques.....	III-3
E. Data Architecture Responsibilities	III-4
F. Technology and Tools.....	III-4
Appendix 1: Glossary and Acronyms	A1-1
Appendix 2: Bibliography.....	A2-1
Appendix 3: Data Management Roles & Responsibilities	A3-1

Figures

FIGURE I-1: DATA MANAGEMENT KNOWLEDGE AREAS.....	I-2
FIGURE I-2: DATA LIFE CYCLE.....	I-4
FIGURE I-3 ILM AND DATA LIFE CYCLE.....	I-5
FIGURE II-1 DAC / DAWG WORK FLOW.....	II-2
FIGURE II-2 DATA GOVERNANCE ORGANIZATION	II-6
FIGURE III-1 ENTERPRISE DATA MODEL.....	III-2

Tables

TABLE II-1 NATIONAL DATA GOVERNANCE ACTIVITY ROLES.....	II-5
TABLE III-1 DATA ARCHITECTURE ACTIVITY ROLES	III-4

Foreword

Because of the depth and breadth of the functions and concepts related to data management, there will be three handbooks developed for Data Administration and Management. The handbooks will be organized based on the Data Management Body of Knowledge (DAMA International, 2009) which was developed by Data Management Association (DAMA) Professionals. The Data Management Book of Knowledge (DMBOK) will be adopted in principle with materials in these handbooks consistent with the authorities for data management activities identified in BLM Manual Section 1283, Data Administration and Management.

This is the first handbook in the series for Data Management. Handbooks 1283-2 and 1283-3 will be released in Fiscal Year 2014.

Chapter I. Introduction

Data Management (DM) is the development and execution of architecture, policies, practices and procedures that properly manage the full data lifecycle needs of an enterprise. It is the process under which data is organized and structured so that it is of high quality and can be used in a consistent manner as the basis of decision-making. (DAMA International, 2009)

According to the DMBOK, Data Management involves the plan for, control of and delivery of data assets. It is the “disciplines of development, execution and supervision of plans, policies, programs, projects, processes, practices and procedures that control, protect, deliver and enhance the value of data and information assets.”

A. Basic Concepts

1. Data

Data¹ is defined as the representation of text, numbers, locations, graphics, images, sound or video. A critical type of data at the Bureau of Land Management (BLM) is geospatial (location) data. It has been estimated that over 80% of BLM’s data can be associated with a location.

Data is considered an enterprise asset; it has value and helps to achieve the goals of the BLM. Assured delivery of high quality data is instrumental in making the right decisions by the BLM.

2. Information and Knowledge

Information is defined as data in context. Context includes the business meaning of the data item, the presentation format of the data, the timeframe and the relevance to its usage. (DAMA International, 2009). Knowledge Management is the management of the mix of experience, values, expert insight and intuition of the organization.

3. Metadata

Metadata² (also meta data or meta-data) is documentation about data or a data set. Metadata describes the content, quality, condition, limitation, source, and other characteristics of data. Metadata is vital in helping potential users to find needed data and determine whether a data set will meet their needs before they spend the time and money to obtain and process it. Metadata helps to establish the context of data for a shared understanding of the meaning of each data element.

¹ Datum is the singular form of data, but data is commonly used to represent both the singular and plural.

² Metadata (one word) will be used in the Handbooks.

4. Data Management Knowledge Areas

Data Management consists of several functions or Knowledge Areas, as they are called in the DMBOK.

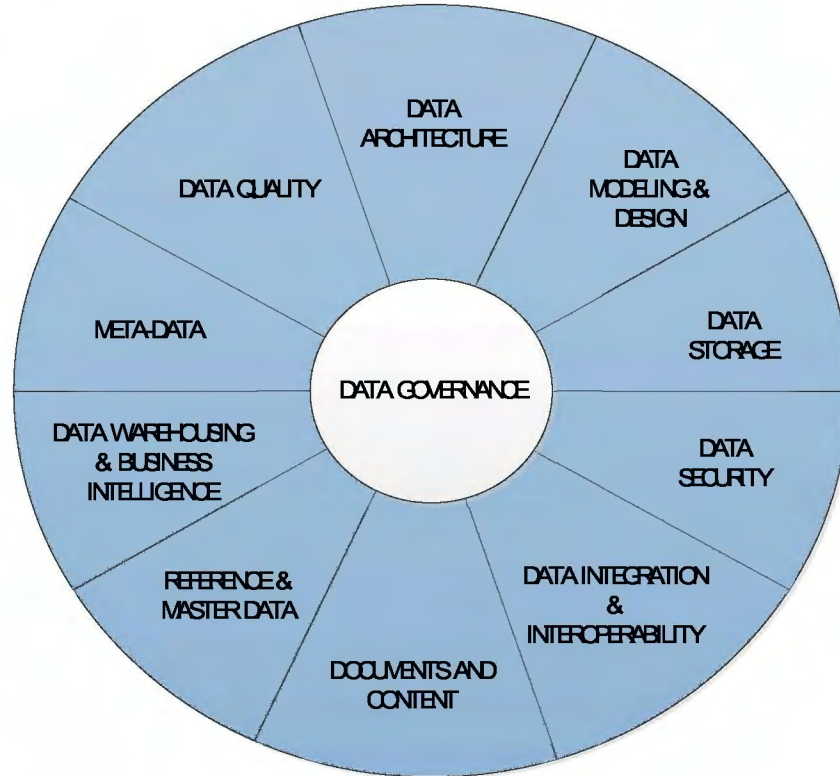


Figure I-1: Data Management Knowledge Areas

The following are descriptions of each Data Management Knowledge Areas (DAMA International, 2009) as shown in Figure I-1: Data Management Knowledge Areas:

- a. **Data Governance** is the exercise of authority and control (planning, monitoring and enforcement) over the management of data assets. Data Governance is high-level planning and control over data management. It is in the center of the wheel as it provides guidance for the other data management functions.
- b. **Data Architecture** is defining the data needs of the enterprise and designing the master blueprints to meet those needs. This function includes development and maintenance of an enterprise data framework and its connection with application solutions and enterprise architecture.
- c. **Data Modeling & Design** is the design, implementation and maintenance of solutions to meet the data needs of the enterprise. These are the data focused activities within the system development life cycle, including data modeling, data requirements analysis, and design, implementation and maintenance of databases. For the BLM this includes developing data standards and geospatial solutions.
- d. **Data Storage** is the planning, control and support for structured data assets across the data life cycle, from creation and acquisition through archiving.

- e. **Data Security** is the planning, development and execution of security policies and procedures to provide proper authentication, authorization, access and auditing of data and information. This includes privacy, confidentiality and appropriate access of data.
- f. **Data Integration & Interoperability** includes data acquisition, transformation and movement and managing extract/transform/load (ETL).
- g. **Document & Content** includes the activities to store, protect and access data found within electronic files and physical records (including text, graphics, images, audio and video.) This is managing data found outside of databases.
- h. **Reference & Master Data** includes the activities to ensure consistency with a “golden version” of contextual data values. (Trusted / authoritative sources of shared data and domain values.)
- i. **Data Warehousing & Business Intelligence** includes activities that provide decision support data and support for knowledge workers engaged in reporting, query and analysis.
- j. **Metadata** includes the activities that enable easy access to high quality, integrated metadata (data about data). This includes the workflows for integrating, controlling and providing metadata.
- k. **Data Quality** includes the activities that apply quality management techniques to measure, assess, improve and ensure the fitness of data for use.

5. Data Lifecycle

Data is an asset and as such, has a life cycle. The BLM developed a Data Life Cycle (DLC) for the management of data during the Data Management Project of 2000-2001. Figure I-2: Data Life Cycle demonstrates the recursive nature of the data life cycle and how the development of the data moves from one segment of the life cycle to the next. If data is not used in an organization, it is not of value to the organization.

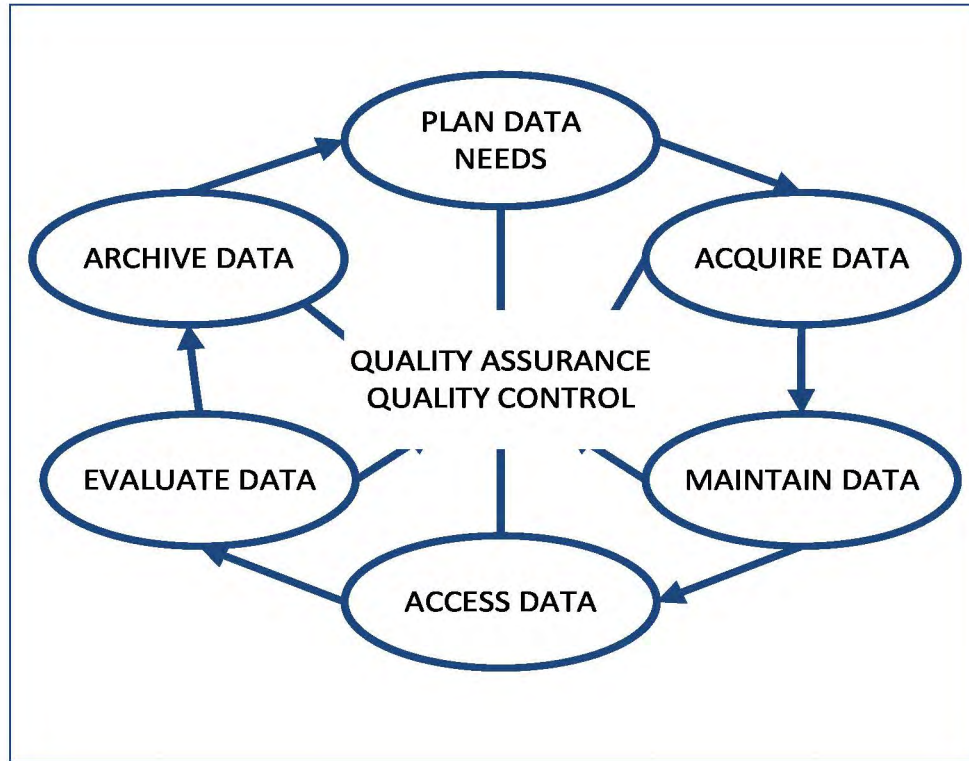


Figure I-2: Data Life Cycle

- a. **Plan (specify and enable) for (business) data needs.** Prior to any data acquisition or system development, the business process needs to be understood, and data needs clearly identified. How will the data be collected, what is the schedule and budget for collection, how will that data be checked and certified? What are all the likely uses for the data, who will use it, what kinds of outputs will be needed? How do these impact the needs to store, access, and protect the data? Once the business data needs are determined, a place (such as a system) to store and manipulate the data can be identified or developed.
- b. **Acquire (create/collect) data.** The task of collecting the data is next. Collect and acquire refers to not only “on the ground” collection but acquisition of existing data from state, federal, and private sources. Suitable metadata also will need to be developed to describe the data. Collection protocols should be established and followed.
- c. **Maintain data.** Data must be reviewed and updated on a regular schedule to maintain a high standard of quality. Managers need to be confident that they have the best possible data available when making decisions. Each time the data changes, the metadata must be updated.
- d. **Access (use and share) data.** The ability to share or provide quality data to the public and other agencies is an important part of the life cycle process. Proper tools are needed to assure that data is shared, with controls to protect proprietary or pre-decisional data and the integrity of the data itself. Data sharing also requires complete metadata to be most useful to those who are receiving it.
- e. **Evaluate data.** It is advisable to periodically evaluate whether data remains useful, and to use that evaluation to identify any improvements or course corrections in management procedures that would make the data more useful. How much is the data used, and have the programs supplemented it with additional data sets (or stretched data definitions to fit

their needs)? Does continued use, without fixes, increase risk to a BLM program? Evaluation of such data issues can be scheduled into parallel tasks to “evaluate” business processes and supporting software applications.

- f. **Archive (update, dispose) data.** Data should be disposed of in accordance with a written policy that conforms to the requirements of the National Archives and Records Administration (NARA). Correct and prompt disposal of outdated information may reduce the Bureau’s risk in some Freedom of Information Act (FOIA) requests or legal actions, by demonstrating strict conformance to written policy and eliminating incorrect, outdated, or irrelevant information from the record.
- g. **Quality Assurance/Quality Control.** Without careful management of the data, decisions based on inaccurate or unreliable data can adversely affect the decision making process. Each stage of the life cycle plays an important role in the overall quality of the data and decisions based upon that data. Quality requirements include establishing and using acceptable quality levels and measurement methods, data acceptance criteria and procedures, ongoing improvement, access control, determining and publishing quality levels, and archiving outdated data and metadata.

6. Data Life Cycle and Integrated Lifecycle Management

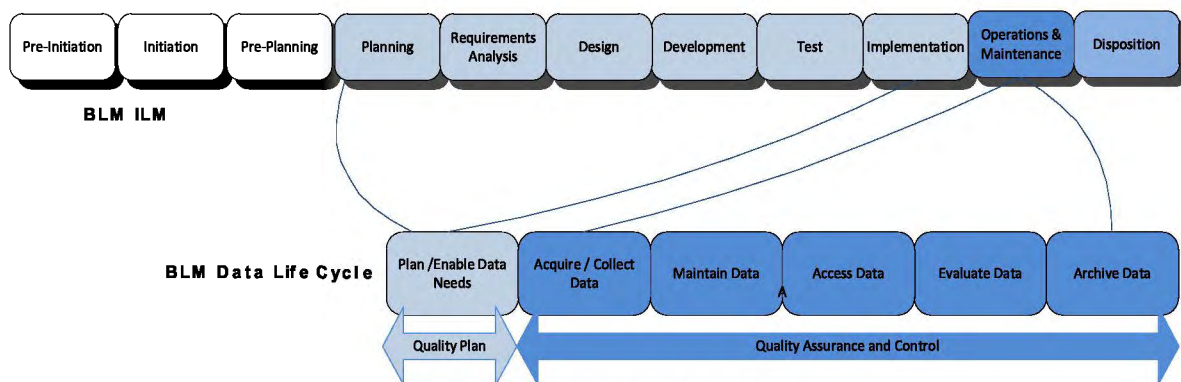


Figure I-3 ILM and Data Life Cycle

The data life cycle is not the same life cycle as the BLM’s Integrated Lifecycle Management (ILM). While the data life cycle represents the life of data within the BLM, the ILM process is for effectively and efficiently managing and governing the integration of technology into the BLM organization. The ILM provides the structure and rigor for overseeing and guiding the many aspects of BLM’s technology projects and system development efforts. Once the application is implemented, the application becomes part of operations and maintenance.

B. Data Management Scope

The BLM Data Administration and Management program is concerned with all types of information produced by BLM, including all Public, Non-public, Confidential or Sensitive Data, regardless of whether collected, maintained, displayed spatially, using alphanumeric characters, in graphic form, digital form or on paper. The consumers of BLM data are not only internal BLM employees, but much of it is also available to other agencies, Congress, the administration and the public.

1. Structure and Organization of the 1283 Handbooks

The handbooks will be organized similar to the DMBOK with chapters covering many of the data management Knowledge Areas (Figure I-1) which is described above in this handbook.

- 1283-1: This handbook introduces the basic concepts of data management and covers the Knowledge Areas of Data Governance and Data Architecture. It also includes descriptions of the roles and responsibilities for data management in the Appendix 3: Data Management Roles & Responsibilities.
- 1283-2: This handbook, to be released in Fiscal Year (FY) 2014 includes the Knowledge Areas of Data Modeling & Design, Data Quality and Metadata. One of the appendices describes the process for developing data standards which includes Data Modeling & Design, Quality and Metadata activities.
- 1283-3: This handbook, to be released in FY 2014, includes the Knowledge Areas Data Warehousing & Business Intelligence, Reference & Master Data, and Data Storage.

The other Knowledge Areas described in the DMBOK are included in other manuals. Data Security is covered in the H-1264-1 Information Technology Security Manual Section and the Documents & Content Knowledge Areas is covered in the H-1220 Records and Information Manual Section. Knowledge Management is not within the scope of Data Management and is not included in the 1283 Handbooks.

Each chapter that covers a Knowledge Area (KA) of Data Management will include most of the following sections:

- *Concepts*: basic terms and definitions relevant to the KA will be described.
- *Goals*: the desired business result or results for the Data Management KA.
- *Major Activities and Deliverables*: the work that is performed for that KA. Other typical activities are included with roles & responsibilities. A description of the deliverable(s) for the major activity is included. These may be the final or interim products or outputs developed or updated as part of an activity.
- *Practices and Techniques*: the methods, procedures and templates used to perform activities this KA at the BLM.
- *Roles and Responsibilities*: who is responsible for each of the KA's activities and how the role participates in an activity.

Materials related to BLM Data Management will be maintained in an online location which can be accessed from the [Data Management SharePoint site](#).

C. Authorities

The authorities for Data Management activities are identified in BLM Manual Section 1283, which provides overall policy direction for the Data Administration and Data Management program. In addition, BLM Manual Section 1278, External Access to BLM Information, includes policy involving data sharing activities and Manual Section 1264 covers Information Technology

Security for data. The Manual Sections mentioned above reference the legal authorities involving data management and data sharing.

D. Goals and Principles

The goal of Data Management is to manage data as an integrated asset optimizing data integrity, quality, accessibility, understanding, and reducing data redundancy across the BLM and to maximize the effective use and value of the data asset.

The operating principles concerning BLM data are:

1. BLM data activities will be governed as a corporate asset to ensure data are managed appropriately.
2. The enterprise data framework will be business driven, as opposed to technology driven, and aligned with the process, application, and technology architectures (PDAT). It will increase and facilitate the standardization and sharing of data across the enterprise.
3. BLM will have one set of corporate data standards and definitions, regardless of whether data is spatial or not.
4. All BLM data is corporate in character, even though it is entered and maintained at a local level.
5. States, Centers, and Field Offices may maintain data and data standards to meet local requirements but such data is still considered corporate and must conform to national Bureau data standards.
6. BLM personnel are accountable for the data they produce.
7. The data steward documents the accuracy standards for data recognizing the limits of time, budgets, and priorities. The Data Steward also identifies those who are allowed access rights and are, thereby responsible for the integrity of the data.
8. The method of collecting data used for government actions, decisions and decision-making may be open to scrutiny by the public, other agencies, and outside institutions.

The Data Administration and Management Program seeks to achieve its goal defined above by:

1. Providing data analysis experts to fully support the BLM's Data Stewards in information creation, use, and dissemination activities.
2. Training BLM employees so that their data responsibilities are known and understood across the BLM organization.
3. Assisting in the development and maintenance of data definitions and standards commensurate with the value of information to BLM and to the public.
4. Identifying the governance and stewardship procedures to achieve these goals.

E. Performance Measures

The BLM is committed to objective and systematic measurement of its performance as a tool for tracking progress toward attaining its goals and a means of identifying opportunities for improvement. These fundamental practices found in the U.S. General Accounting Office (GAO), Accounting and Information Management Division, Executive Guide, Measuring Performance and Demonstrating Results of Information Technology Investments, Washington, D.C., GAO

1998, GAO/AIMD-98-89. The GAO considers Information Technology (IT) performance management and measures to be tied to the agency's Mission Strategic Plan.

F. Data Management Roles

Managing the data assets of the BLM is a shared responsibility between the business community and Information Technology (IT). Data management roles and responsibilities are critical to the success of the BLM in making the right decisions. Everyone within the BLM has responsibilities for ensuring accuracy with respect to the data they work with (either creating, updating or modifying or deleting). A matrix of data management roles and responsibilities can be found in the Appendix 3: Data Management Roles & Responsibilities. The explanations of the roles and responsibilities depend on what position you hold with respect to the data being used.

1. Identify Your Data Management Responsibilities

- a. Locate your, and/or your staff's role in the appendix. The responsibilities are listed for that role.
- b. Plan and schedule for time and activities to include these data management responsibilities.
- c. Work with your human resources staff to add data management responsibilities to position descriptions.

2. Acquire Data Management Knowledge and Skills

- a. Use the appendix to determine the data management knowledge, skills, abilities, and training you and your staff require. Note the training needed to bring you and your staff up to required knowledge level for your data management roles and responsibilities.
- b. Contact your state data administrator, the National Training Center (NTC), and your state training lead to find and schedule participation in the appropriate training sessions.

G. Data Management Tools

The acquisition and use of enterprise data management tools helps to ensure the quality and consistency of BLM data. The major classes of data management tools are:

1. **Design and Analysis Tools** are hardware or software that will assist in the process of identifying and documenting required data, processes, rules, reporting, software, and hardware for a business area. The tools identify what is done and how it is implemented for that business area; the tools may be data flow diagrams, a data dictionary, entity relationship diagrams, use cases, state transition diagrams, code and schema generation capabilities, design models, class diagrams, structure charts, interface-flow diagrams, activity diagrams, sequence diagrams, component diagrams, deployment diagrams, geo-process diagrams, and/or collaboration diagrams.
2. **Database Management Tools** provide the means to design, modify, control and administer databases, including geospatial databases.

3. **Data Integration and Quality Tools** provide the means to profile and cleanse your data. Data profiling tools are used to assess current data conditions, or to monitor data quality over time. Sophisticated software is available to clean data using algorithms, rules and look-up tables, a task that was once done manually. Data transformation is achieved by hardware or software that assists in the process of defining and applying algorithms to change data from one form or domain value set to another domain value set in the target data architecture. Data conversion tools facilitate the process of preparing and re-engineering data to be loaded to the target architecture.
4. **Metadata Management Tools** provide the mechanisms and workflows for business, technical and geospatial metadata to be properly defined around formal standards, verified for adherence to schemas, shared and integrated across the Bureau.
5. **Business Intelligence Tools** are a type of software designed to retrieve, analyze and report data, usually found in a data warehouse or data mart. This can include integrated geospatial/database software, data mining and dashboards.
6. **Database Archival Tools** facilitate the retirement of historic data, which may be for regulatory compliance or records retention.

Chapter II. Data Governance

Data Governance is the exercise of authority and control over the management of data assets at the BLM. It is data stewardship at the executive level and guides how other Data Management Knowledge Areas are performed (DAMA International, 2009).

A. Concepts

Governance is responsible for BLM data assets. IT Governance is not the same as Data Governance. IT Governance makes decisions about IT investments and the application portfolio. The Information Technology Investment Board (ITIB) is the IT Governance board for the BLM.

Data Stewardship is the assigned accountability for business data responsibilities. Data stewards are the appointed trustees for data assets and represent the data interests of the BLM. As such the stewards take responsibility for data quality and metadata and ensure that data meets the needs of the BLM.

B. Goals

1. To approve and communicate data strategies, policies, architecture, procedures and metrics for the Bureau.
2. To track and enforce regulatory compliance and conformance to data policies, standards, and procedures.
3. To monitor the delivery of data management projects and services.
4. To determine and establish data priorities for the BLM.
5. To understand and promote the value of data assets.

C. Major Activities

1. Establish and Maintain Data Governance Organization

Data governance is the responsibility of the Data Advisory Committee (DAC) and the Data Advisory Working Group (DAWG). In Fiscal Year (FY) 2012, the BLM established the DAC by means of a Charter³. Delegation of authority for data governance flows from the Deputy Director to the Data Advisory Committee. The mission of the DAC is to provide a consistent approach to data activities and geospatial priorities, provide direction and coordination of BLM data assets and investments, and to direct the corporate vision and provide guidance for all BLM data investments.

³ WO IB 2012-005 Transmittal of the Data Advisory Committee Charter (10/24/2012)

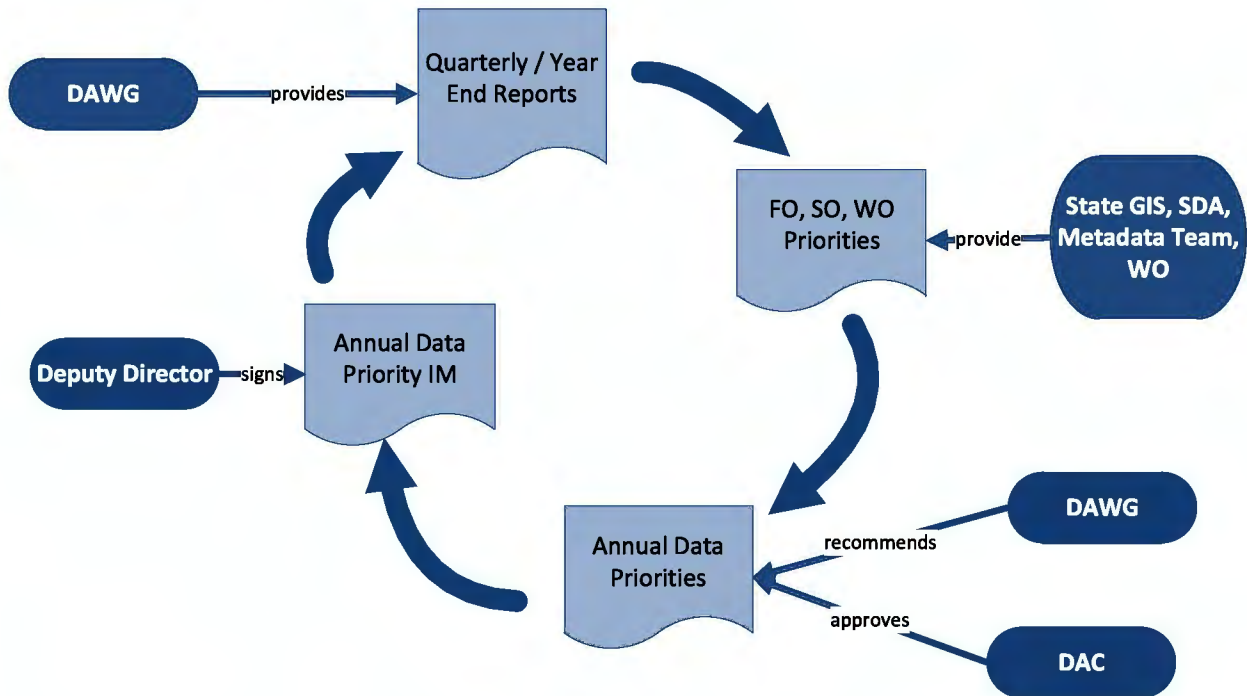


Figure II-1 DAC / DAWG Work Flow

2. Recommend and Approve Annual Data Priorities of the Bureau

The DAWG will review requests for data activity and data standards priorities and submit their recommendations to the DAC. The DAC approves the recommendations and provides the resources necessary to complete the data priorities for the fiscal year.

Deliverables Produced:

- **Annual Data Priorities** are those priorities that the DAC has approved as the critical data work of the bureau for a given fiscal year. These priorities include data standards, data set implementation, best practices for data, communication, data education and training.

3. Provide Report on the Status of the Data Priorities

Each of the approved Data Priorities will be worked on during the Fiscal Year. A quarterly status of the Data Priority will be provided to the DAWG. The DAWG will compile the statuses of the Data Priorities and report on those to the DAC at the DAC quarterly meeting. At Fiscal Year end, the DAWG will provide an annual report.

Deliverables Produced:

- **Annual / Quarterly Data Priority Report** is a report that provides the DAC with the current status of each of the Annual Data Priorities. The report will include percentage completed and any issues that may be impeding progress of the priority.

4. Develop and Maintain the Data Management Strategy

The Bureau Data Administrator will work with the NOC Data Management Branch, the State Data Administrators, the Data Advisory Working Group, the Bureau Geospatial Program Manager and the state Geographic Information System (GIS) Managers to develop the strategic plan for data. This group will examine the current and future state of data, the data management objectives for the bureau and any major issues faced by the bureau. A Data Management Strategy is developed with a plan which lays out a roadmap for achieving data management objectives and measurements for success over a two to three year period.

It will be updated on an annual basis with the approval of the Data Advisory Committee.

Deliverable Produced:

- The **Strategic Data Management Plan** is a high-level course of action to achieve data management goals. It supports the mission and business strategies of the BLM and the Department of Interior (DOI). It is the long term plan for meeting the vision of Data Management at the BLM. It establishes the long-term directional goals of data management and metrics for success in meeting those goals. The current data management strategy can be found on the BLM Data Management Web Site under Deliverables.

5. Identify and Appoint Data Stewards

All mission-relevant data at the BLM needs to have an advocate, someone who is a subject matter expert (SME) These advocates are commonly referred to as Data Steward, and they are assigned at each level (national, state, local) of the BLM.

The **National Data Steward** for a subject area is determined by the respective Group Manager in the Washington Office (WO). **Assistant Directors**, designate the National Data Stewards for the programs under their jurisdiction. A National Data Steward is required for each area of mission-relevant BLM data. The name of the national steward is reported to the Bureau Data Administrator when identified.

State Data Stewards are identified by state level managers and report to the National Data Stewards on issues affecting data standards, definitions, and quality for particular data sets or themes. The identification of a data steward may be made at different organizational levels within the State. While organizationally linked to specific programs or offices, data stewards will be required to work across organizational boundaries to include the majority of customers for a particular data set or theme. Each administrative state must identify a state data steward for each data area that has a national data steward. When the state data steward is identified the name is reported to the State Data Administrator.

Although individuals that are identified as stewards may not always be the senior technical expert on an application, topic or component of a topic, they must have an in-depth knowledge of the data used and how the data will be applied in a given process, work product or system application. There will be one state Data Steward for each corporate data set and/or geospatial theme. When data sets or themes contain or use data from more than one area, or when themes are used by multiple applications, the stewards must coordinate with the other appropriate stewards to ensure effective management of the data.

Field Office Data Stewards are resource specialists and subject matter experts designated by management, responsible for implementing data requirements, standards, access rules, and other data specific activities needed for a particular business or activity. **BLM Field Office (FO) Managers** formally approve and designate all FO Data Stewards and FO Data Administrators who have been identified by their respective first level Manager(s).

When a Data Steward has been identified, use the Data Steward Designation form located on the Data Management SharePoint site. Select 'Handbook Materials' on the left panel. The Bureau Data Administrator is responsible for maintaining a list of national data stewards. A State Data Administrator is responsible for maintaining a list of state and field office data stewards.

6. Develop and Issue Bureau Data Policies

The Bureau Data Administrator (BDA) will research and develop data policy for the Bureau based on compliance with the OMB, General Services Administration (GSA), Department of the Interior, and other Federal policies, regulations, and standards within the areas of data management, data standards, data analysis, customers, training, strategic data plans, and documentation. The BDA will evaluate the Data Management policies and practices and updates data policy as needed.

D. Practices and Techniques

The practices and techniques utilized by the DAWG and the DAC can be accessed from the Data Management SharePoint site, under Quick Links / Data Committees on the Right Panel.

E. Governance Responsibilities

Roles and Responsibilities for all Knowledge Areas included in the Handbooks are documented in the Appendix 3: Data Management Roles & Responsibilities. The following matrix documents the type of participation for responsibility in a data governance activity and role.

Data Governance	Data Governance Activity Roles										
	Bureau Data Administrator	State Data Administrator	Assistant Director	Deputy Assistant Director	NOC Data Branch Chief	NOC Data Mgmt Lead	NOC Data Standard Coordinator	Division Chief	Bureau Geospatial Lead	IRM Advisor	Business Personnel
Establish and Maintain Data Governance Organization	S	S	A	R	I	S	I	I	S	S	S ²
Recommend Annual Data Priorities	S	S ¹				S		R ¹	S	S	S ²
Approve Annual Data Priorities	S		I	R ¹	A						
Provide Quarterly Report on the Status of the Data Priorities	S	S ¹	I	I	I	I	R	I	S	S	S ²
Develop and Issue Bureau data policy	R	S	I	I	I	S	S	I	S	I	
Develop and Maintain Bureau Data Strategy	R	S	I	I	I	S	S	I	S	I	
Identify and Appoint Data Stewards	S	S		C			I	R	C	C	
<i>Maintain Data Steward List</i>	R	R									
<i>Coordinate Data Management Activities</i>	R	S				S	S		S	S	

Italics: Not listed as separate activity in 1283

¹ one person in that role is selected
² two people from each directorate representing data and business

R-Responsible
 A-Approve
 C-Consult
 I-Inform
 S-Support

Table II-1 National Data Governance Activity Roles

In their respective states, **State Data Administrators (SDA)** have a different level of responsibilities for state-level data management tasks.

Based on national data management guidelines, SDAs are responsible (R) for their data governance organization, recommending data priorities for the state, developing a state data management strategy developing state data policies and documenting state level data stewards. They are consulted (C) on the approval of annual state data priorities and support (S) the appointment of state data stewards

The **Data Advisory Working Group (DAWG)** as chartered, reviews requests from BLM programs on the need for data standards and data activities. They prioritize the requests for data standards and data activities and develop recommendations on data priorities and data activity priorities based on the needs of the BLM. These recommendations are presented to the DAC for their approval. DAWG membership includes a management representative (e.g. Division Chief) from each Directorate, the Bureau Data Administrator, the Bureau Chief Technical Officer (CTO), the Bureau Geospatial Lead, Directorate Geospatial Leads, a representative from the NOC Division of Resources Services Branch of Data Management and a representative from the NOC Division of IRM, Branch of Support Services, a State Data Administrator and a State GIS Manager.

The **Data Advisory Committee (DAC)**, the data governance organization of the Bureau, reviews recommendations from the DAWG on data priorities and data activity priorities based on the needs of the BLM. The delegation of authority for data governance flows from the Deputy Director to the Data Advisory Committee.

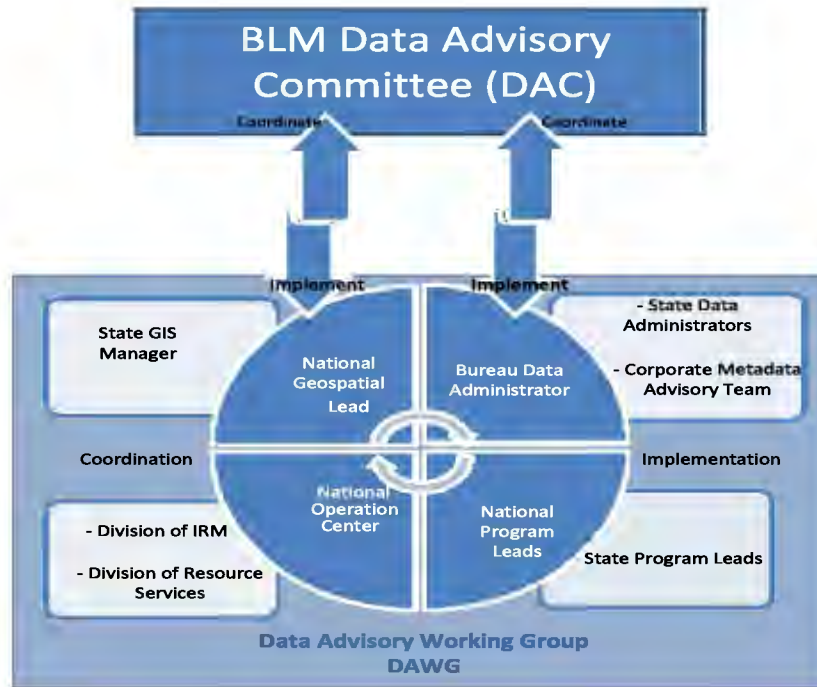


Figure II-2 Data Governance Organization

Chapter III. Data Architecture

Data Architecture is part of the larger enterprise architecture, where data integrates with the business and technology architecture. Data Architecture is an integrated set of specifications used to define data requirements, guide integration and control of data assets and to align data investments with the BLM's overall strategy.

A. Concepts

Enterprise Architecture is an integrated set of business and IT specification models and artifacts reflecting the BLM's overall business and technology requirements. Data Architecture is one component that is integrated within then Federal Enterprise Architecture.

1. Enterprise Data Model

The Enterprise Data Model includes the Enterprise Data Framework, the Conceptual Data Models and the Logical Data Models for each section of the Framework. In the DMBOK (DAMA International, 2009), the enterprise data model is described as an integrated model that defines the essential data produced and consumed across the Bureau. It does not reflect the separate view of the data by directorates or programs. There is only one version of a set of data, regardless of the program that creates or uses it. For example, there is one version of the Employee entity. The attributes in that entity have only one name and definition. There may be synonyms employees (such as worker or manager).

2. Enterprise Data Framework

The Enterprise Data Framework is the taxonomy of BLM's critical data that categorizes and provides a common business vocabulary of business entities. It is the basis on which subsequent work on conceptual models, logical models and applications or data standards is completed. The enterprise data model also includes conceptual data models. A conceptual data model is a high level model of the entities and relationships between the entities for a given subject area, commonly recognized area of a data category.

Logical data models, including attributes, are developed for each subject area in the framework. Figure III-1 Enterprise Data Model, below, shows the relationship between the framework, the conceptual data models, the logical data models and application/ data standard models. The logical and physical data models for application and data standards are not included as part the enterprise data model. However, the work completed for applications and data standards help define the logical data models for the framework taxonomy. Data standards and information on developing data models are described in the H-1283-2 Data Administration and Management Handbook, in the chapter on Logical Data Models & Design.⁴

⁴ Handbook 2 will be released in FY2014.

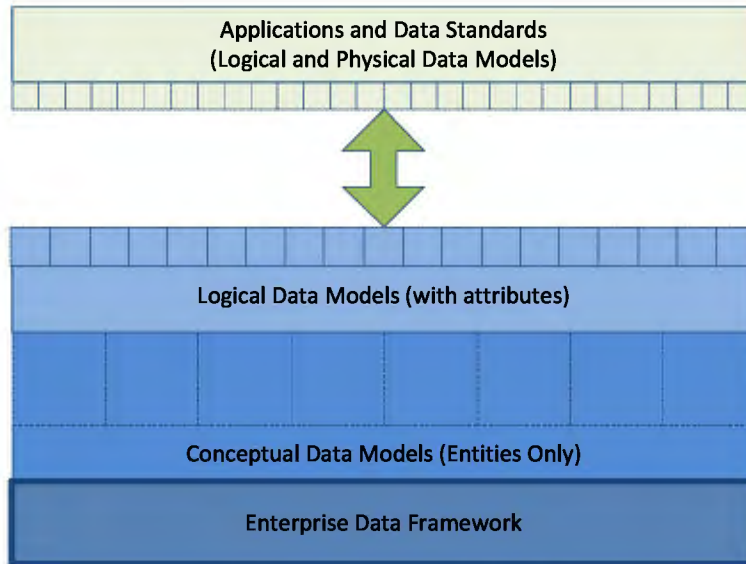


Figure III-1 Enterprise Data Model

B. Goals

- To design plans to meet the current and long-term data requirements of the BLM with a common framework across the Bureau.
- To develop an Enterprise Data Framework that documents the conceptual business data needs of the Bureau.
- To improve and enhance the working relationship between the business user organizations and information services.

C. Major Activities

1. Define and Maintain the Enterprise Data Framework

To understand the information needs of the BLM, an enterprise data framework (EDF) needs to be developed and maintained. It documents the scope of essential data needs for the mission-critical processes of the BLM. It represents a master blueprint that is used in the analysis and design for how data projects are developed for the BLM. The EDF is developed by looking at and aligning the data with the critical business processes of the BLM and their inputs and outputs.

Deliverable Produced:

- The **Enterprise Data Framework** documents the master blueprint for the taxonomy that meets the needs of the mission of the BLM. The Framework can be accessed from the [Data Management SharePoint site](#), from the left panel, in Reference Materials.

2. Define and Maintain the Enterprise Data Model

The enterprise data model is defined based on the enterprise data framework. The work on completing an enterprise data model can be accomplished from the bottom –up or top-down. At the BLM, the enterprise data model will be built as data standards are developed and applications are modified or developed. The enterprise data model will be comprised of

several subject areas, each with a logical data model. As a data standard or application is completed, the Bureau Data Administrator will use the logical data model to determine to which subject areas each entity belongs.

3. Define and Maintain the Data Technology Architecture

This architecture is part of the overall Bureau technology architecture. The BLM will define and maintain an integrated set of data-related tool categories and preferred tools in each category. The categories of tools are related to data include data modeling and model management; database management systems (DBMS) and utilities; geospatial tools; data integration tools; business intelligence; data quality analysis and data cleansing; and metadata management and repositories.

Appropriate tools current with technology trends and software versions are required for developing, integrating and maintaining the enterprise data model, the data architecture and its alignment with the other components of the enterprise architecture, metadata repository and data development.

4. Define and Maintain the Data Integration Architecture

This architecture defines the data lineage; how data flows through the systems of the BLM from beginning to end. It is a combination of the data and application architecture. The BLM needs to define and maintain matrices for this architecture:

1. How processes interact with business entities (data); creating, reading, updating and deleting.
2. What Business roles have responsibility for creating, reading, updating and deleting business entities (data).
3. What data is in an application that crosses business functions.

5. Define and Maintain the BLM Taxonomy

A taxonomy is a way of defining groups of data on the basis of shared characteristics and giving names to those groups (categories). It is the hierarchical structure used for outlining topics (DAMA International, 2009). The BLM will organize its information into taxonomy as part of the data architecture and enterprise data framework. An ontology is the conceptual framework for a taxonomy and how we understand relationships among the topics.

D. Practices and Techniques

The Enterprise Data Model will be developed using logical data modeling techniques and Information Engineering notation. A description of logical data modeling is included in H-1283-2, Data Administration and Management Handbook.⁵

⁵ H-1283-2 will be released in FY2014.

E. Data Architecture Responsibilities

Roles and Responsibilities for all data management functions are documented in the Appendix 3: Data Management Roles & Responsibilities. The following matrix documents the type of participation in a data architecture activity and role.

Data Architecture	Bureau Data Administrator	State Data Administrator	Data Steward	Data Modeler / Architect	NOC Data Branch Chief	NOC DIM Lead	NOC IRM Support Services Chief	Geospatial program Lead	Enterprise Architect
Define and Maintain the Enterprise Data Framework	R	S	S			S		S	S
Define and Maintain the Enterprise Data Model	A	S	S	R	I			I	I
Define and Maintain the Data Technology Architecture	I	S			S		S	I	R
Define & Maintain the Data Integration Architecture	S						S	S	R
Define & Maintain the BLM Enterprise Data Taxonomy	A	S	S			R	S	S	S

R-Responsible
 A-Approve
 C-Consult
 I-Inform
 S-Support

Table III-1 Data Architecture Activity Roles

In their respective states, **State Data Administrators (SDA)** have a different level of responsibilities for state-level data management tasks.

Based on national data management, SDAs are responsible (R) for developing and maintain their enterprise data framework and enterprise data model. They support (S) the data technology architecture, data integration architecture and the taxonomy for their respective states.

F. Technology and Tools

The Data Architecture and Enterprise Data Framework will utilize tools as determined by the BLM Enterprise Architect and Bureau Data Administrator.

Appendix 1: Glossary and Acronyms

A

Alphanumeric Data	Any data that do not indicate the location on the ground. It is a combination of alphabetic and characters. (can also be called tabular data)
Attribute	A property or characteristic of an entity (also referred to as a data element or data item). Note: The geospatial software organization, ESRI defines an attribute as non-spatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. In the 1283 handbooks, the term ESRI attribute will be used to distinguish the two different definitions.

B

BEA	See Bureau Enterprise Architecture
Bureau Enterprise Architecture	(BEA) A model of the way the BLM currently operates.
BLM	Bureau of Land Management
Business Process Management	(BPM) Also known as Business Process Improvement (BPI), Business Process Redesign or Re-engineering (BPR). A technique used to analyze and design streamlined workflows to improve efficiencies in business processes.
Business Rules	Statements of policy, procedures, and guidelines that define or constrain an aspect of the business and provide the structure for conducting BLM business. (Example: A Herd Management Area must be associated with a Herd Area.)
Business Term	Word or phrase that has a specific meaning for the business in some designated context such as a case, a business plan, assessment or customer.

C

CIO	Chief / Corporate Information Office / Officer
CMAT	Corporate Metadata Advisory Team
CMR	See Corporate Metadata Repository
Corporate Metadata Repository	(CMR) The repository that contains the metadata on BLM data including logical information (data standards, entities, attributes, definitions, formats and domains) and physical information (tables, columns, database design, primary keys).
Corporate Data	Data used by or for the BLM, which is considered the property of the BLM. Also refers to data that is used statewide or at least by more than one office. It is data created and used by the BLM for planning, research and other business.
COTS	Commercial off the Shelf

D

DAC	See Data Advisory Committee
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DAMA	Data Management Association, the international organization of data management professionals.
Data	The things representing facts, ideas, or values which may be processed to produce information.
Data Administration	The high level function within the BLM of planning, coordinating, and managing BLM's corporate data resource to meet existing and future data and information needs.
Data Advisory Committee	(DAC) The governing body for data management activities at the BLM.
Data Advisory Working Group	(DAWG) The group that provides recommendations for data priorities to the Data Advisory Committee (DAC).
Data Management	(DM) The process and procedures required for all data BLM collects or acquires.
Data Management Book of Knowledge	(DMBOK) A book of knowledge that defines a standard industry view of data management functions, terminology and best practices, without detailing specific methods and techniques.
Data Model	A data model is a diagram showing definitions that represents the enterprise data and their interrelationships in a specific and consistent way. It is a definition of the structure, rules, and constraints on data required by an enterprise to conduct all of its business functions. The data model contains entities, attributes, relationships, primary and foreign keys, and rules governing the data. This can be an entity relationship diagram, a conceptual, semantic or physical data model.
Data Modeling	Data modeling is the practice of analyzing and representing the data in a meaningful fashion, easily understood by nearly anyone in the enterprise. Also see logical data modeling.
Data Standard	The rules by which data are described and recorded.
Data Steward	The data steward manages the facts or information of some aspect of the BLM to ensure that information can be used to draw conclusions or make decisions. Stewards at the National, Center, State, and Field Offices are experts for a business subject area,
Data Subject Area	Department of Interior data is divided into high-level groups of business data called Data Subject Areas.
DAWG	See Data Advisory Working Group
DM	See Data Management
DMBOK	See Data Management Book of Knowledge

E

EDF	See Enterprise Data Framework
EGIS	See Enterprise Geographic Information System

Enterprise Data Framework	(EDF) The Enterprise Data Framework is the high-level structure of BLM’s critical data that categorizes and provides a common business vocabulary of business entities. It is the basis on which subsequent work on conceptual models, logical models and applications or data standards is completed.
Enterprise Geographic Information System	(EGIS). An Enterprise Geographic Information System is a system that is integrated through an entire organization so that a large number of users can manage, share, and use spatial data and related information to address a variety of needs, including data creation, modification, visualization, analysis, and dissemination. In addition to providing users with GIS capabilities, Enterprise GIS is also made available to other software systems, including those dedicated to Spatial function or those that can usefully benefit from the inclusion of spatial information or processing.
Entity	A person, place, thing, event, or concept of interest, about which descriptive data is defined, collected, or recorded.
Entity Relationship Diagram	A diagram that graphically represents the entities (data) and relationships (connections between entities) for a specific project, subject area or business area.
ERD	See Entity Relationship Diagram

F

FGDC	Federal Geographic Data Committee
FOIA	Freedom of Information Act

G

Geospatial Data	Data of, relating to, involving, location or place. Often used in the context of Geographic Information Systems (GIS) and map products. GIS data uses spatio-temporal (space-time) location as the key index variable for all other information. Just as a relational database containing text or numbers can relate many different tables using common key index variables, GIS data can relate unrelated information by using location as the key index variable. The key is the location and/or extent in space-time.
Geographic Information System	(GIS)A system designed to capture, store, manipulate, analyze, manage, and present all types of geographic data. In the simplest terms, GIS is the merging of cartography, statistical analysis and computer science technology. A GIS can be thought of as a system (see EGIS)—it digitally creates and "manipulates" spatial areas that may be jurisdictional, purpose, or application-oriented. Generally, a GIS is custom-designed for an organization.
GOS	Government Off the Shelf

H I

IM	Instruction Memorandum
International Standards Organization	ISO is the developer and publisher of International Standards. ISO is a network of national standards institutes of 164 countries, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. ISO is a non-governmental organization that forms a bridge between the public and private sectors. ISO enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society.

IRM	Information Resource Management
ISO	See International Standards Organization
IT	Information Technology
ITIB	Information Technology Investment Board

JK

KA	See Knowledge Area
Knowledge Area	(KA) The Data Management Book of Knowledge is comprised of 11 Knowledge Areas. A Knowledge Area is a category of specialization for performing data management activities.

L

Logical Data Model	A logical representation of the business data requirements of an organization independent of hardware or software constraints. It documents, usually in a diagram, what data is required and how it should be organized, rather than what operations will be performed. It provides a foundation for data control with specific and accurate data definition. Once validated and approved, the logical data model can become the basis of a physical data model and inform the design of a database or geospatial dataset.
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M

Meta Data	(Also metadata) Meta Data is documentation about data or a data set. Metadata describes the content, quality, condition, limitation, source, and other characteristics of data. Metadata is vital in helping potential users to find needed data and determine whether a data set will meet their needs before they spend the time and money to obtain and process it. Metadata helps to establish the context of data for a shared understanding of the meaning of each data element.
Metadata	See Meta Data
Model	A model is a representation of something in the real world. It can be a diagram showing the flow of data between work processes or a diagram of the data and its relationships.

N

NOC	National Operations Center
NTC	National Training Center

O

OARDD	Official Agency Record Designation Document
OMB	Office of Management and Budget
Ontology	An ontology is the conceptual framework for a taxonomy and how we understand relationships among the topics.

P

Participation Type	A type that indicates how a role participates in completing tasks or deliverables, usually described as RASCI (responsible, approve, support, consult, inform).
Privacy Act	A law providing protections to people by establishing that no agency shall disclose any record that is contained in a Privacy Act "system of records" by any means of communication to any person or to another agency, except pursuant to a written request by, with the prior written consent to, the individual to whom the record pertains. The Privacy Act also contains limitations on the collection and dissemination of information by federal agencies.

Q R

RASCI	Stands for the 5 participation types: Responsible Approver Support Consult Inform. See Participation Type.
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S

SME	See Subject Matter Expert
Standard	An accepted measure of comparison for quantitative or qualitative value. An object that under specified conditions defines, represents, or records the magnitude of a unit. Commonly used and accepted as an authority.
Subject Matter Expert	Someone who is a domain expert with special knowledge or skills in a particular area or topic.

T U V W X Y Z

Tabular Data	Data that pertains to columns that are arranged in a table (in a database). It is sometimes used instead of the term Alphanumeric Data.
Taxonomy	A taxonomy is a way of defining groups of data on the basis of shared characteristics and giving names to those groups (categories).

Appendix 2: Bibliography

Adelman, S., Moss, L. & Abai, M. 2005. *Data Strategy*. Upper Saddle River, NJ : Addison-Wesley, 2005.

DAMA International. 2009. *Data Management Book of Knowledge (1st Edition)*. Bradley Beach, NJ : Technics Publications, LLC, 2009.

Appendix 3: Data Management Roles & Responsibilities

All employees create, update and use BLM data in their jobs and as such, have a responsibility for data since most BLM data can be made available to the public. Therefore, each employee:

- Is accountable for the integrity and quality of business data personally created and updated, including the documentation of metadata.
- Uses the best data available in conducting their duties.
- Implements policy and follows best data management practices as documented in the 1283 Handbooks.

In this Appendix, general responsibilities for specific roles as it relates to data are included below. Specific activities are further described with each of the Data Management Knowledge Areas (KA) in the appropriate chapter describing that KA. Many of the roles described below have other duties and responsibilities which are not directly related to data and as such, are not include below.

When a person is identified with a specific Data Management role such as a data steward, the data-related duties and responsibilities and related performance elements need to be clearly articulated in the person’s Employee Performance and Appraisal Plan (EPAP). Training information for data management can be found on the Data Management SharePoint site

See Page A-

A. Bureau Data Administrator (BDA) 2

B. Bureau Geospatial Program Manager 2

C. Data Steward 3

D. GIS Specialists and Analysts (Resource, Program, State Office) 4

E. Information Resource Management (IRM) Advisor 4

F. NOC Data Resource Branch 5

G. NOC Division of Information Resource Management (DIRM) 6

H. Bureau Privacy Officer..... 7

I. State/Center Privacy Officer 7

J. Resource / Program Specialist (Washington, State, District and Field Office) 7

K. State Data Administrator (SDA) 8

L. State Office GIS Manager 8

A. Bureau Data Administrator (BDA)
The Bureau Data Administrator is a technical expert with a corporate/national role. This individual promotes data as a valued resource.
Responsibilities
<ol style="list-style-type: none"> 1. Provides information management policy and leadership for the Bureau’s Data Management program. 2. Provides and promotes the enterprise data framework (architecture) for consistency in scope, meaning, and handling of data across the entire organization. 3. Oversees the management of the BLM’s corporate metadata, including the Federal Geographic Data Committee (FGDC) node; to support the organization’s data and metadata related goals and objectives. 4. Oversees procedures and processes to ensure timely, accurate, and shareable data across diverse program areas and organizations. 5. Serves as the Bureau’s representative on national data standards boards and committees. 6. Evaluates the Data Management program and State practices and provides yearly Section 515 report. 7. Oversees compliance to data standards. 8. Coordinates data sharing and data management activities across functional business areas. 9. Provides input into the Data Management training program. 10. Responsible for the BLM Data Architecture. 11. Support tracking and reporting for the Information Quality Act.

B. Bureau Geospatial Program Manager
The Bureau Geospatial Program Manager is a senior technical expert with a corporate/national role. This individual promotes the use of geospatial technologies and data to support the mission of BLM.
Responsibilities
<ol style="list-style-type: none"> 1. Provides oversight and leadership of BLM’s geospatial program activities including acting as coordinator for BLM State GIS Leads. 2. Coordinates WO geospatial staff in support of data management initiatives. 3. Provides data management support via enterprise Geospatial Information System and implemented through Strategic Planning for Geospatial Services which includes: <ul style="list-style-type: none"> o Supporting geospatial tools and infrastructure used to update and maintain BLM data o Supporting data standard development at the national level o Supporting the geospatial infrastructure necessary to data storage and delivery o Ensuring that geospatial data are included in BLM data storage and delivery plans 4. Provides geospatial data development support to BLM programs. 5. Supports establishing geospatial data sharing agreements within BLM and among external organizations. 6. Participates in the Bureau Data Architecture activities and helps to determine geospatial data requirements.

<p>B. Bureau Geospatial Program Manager</p>
<ol style="list-style-type: none"> 7. Supports activities to ensure the integrity and quality of BLM geospatial data. 8. Provides BLM Geospatial technical support to the DOI Geospatial Advisory Council (GAC), the BLM Data Advisory Committee (DAC), and the BLM Data Advisory Working Group (DAWG).

<p>C. Data Steward</p>
<p>The data steward manages the facts or information of some aspect of the BLM to ensure that information can be used to draw conclusions or make decisions. Stewards at the National, Center, State, and Field Offices are experts for a business data category, (e.g., geothermal, forestry, wild horse and burros, soils) and responsible for data requirements, standards, access rules, data quality, and other data activities on a national level for that data category across the Bureau.</p> <p>A data steward is a critical role at the BLM. The Steward is a resource specialist, who agrees to be responsible for data content of a resource or program at the local or national level. At the national level, there is only one data steward for a given business data category.</p> <p>The Steward ensures that pertinent data meets any defined data standards and accurately describes the resource for which they have responsibility. Data stewards are responsible for governing and managing data with proper regard to ensuring that others have access to the data they need.</p> <p>Data stewardship is primarily the job of the professionals who create and maintain data. Although they have significant support roles to play, stewardship is not the responsibility of Information Technology or GIS specialists.</p> <p>All mission-related data subjects require a national data steward.</p>
<p>Responsibilities</p>
<ol style="list-style-type: none"> 1. Creation of data standards and business rules for the data they are responsible. 2. Establishing quality assurance and quality control requirements. 3. Certifying the quality of the data to be published. 4. Ensuring that information meets the customer needs. 5. Establishing data access security requirements. 6. Ensuring official agency records requirements are being met. 7. Ensuring data documentation is developed and maintained including FGDC metadata. 8. Participating in the data management team for your geographic area. 9. Working and coordinating data activities with all data stewards across the Bureau who are responsible for the same subject area at the local and national level. 10. Being active advocates of data management.

D. GIS Specialists and Analysts (Resource, Program, State Office)
GIS personnel understand natural/cultural resource or resources with expertise in GIS technology.
Responsibilities
<ol style="list-style-type: none"> 1. Coordinates geospatial data management (internal and external) in their office. 2. Implements state/Bureau data standards with a geospatial component; may participate in the development of standards. 3. Creation/maintenance of geospatial metadata. 4. Work with data stewards to interpret business needs into GIS applications and derive geospatial data requirements. 5. Facilitate educational opportunities for the treatment, application, and value of geospatial data. 6. Provide consistent interpretation and application of Bureau GIS policies to the rest of the respective offices. 7. Manage local databases containing geospatial data. 8. Research potential geospatial data sources. 9. Provide input in the evaluation of geospatial data management practices.

E. Information Resource Management (IRM) Advisor
The IRM Advisor is the Directorate’s link to relating Information Technology (IT) issues to the business, and therefore, has a role in supporting data management activities at the national level. The Portfolio Manager may or may not be an IRM Advisor and oversees the Directorate’s portion of the BLM’s IT Portfolio.
Responsibilities
<ol style="list-style-type: none"> 1. Assists in determining data standard priorities and business rules. 2. Recommends, develops, and assesses the impact of changes to data standards, procedures, guidelines, and documentation as related to a particular project, including metadata standards. 3. Applies Bureau data architecture principles. 4. Works with Data Stewards to interpret business needs into applications. 5. Serves as the administrative arm of the DAC or DAWG, if their directorate is chairing one of the committees.

<p>F. NOC Data Resource Branch</p>
<p>The role of the NOC Data Resource Branch is the coordination of operational data management, which includes both business and technical aspects of data management. The personnel included in this are the Branch Chief of Resource Data, the Data Integration Section Chief, and other key data management personnel as determined by the Branch Chief.</p>
<p>Responsibilities</p>
<ol style="list-style-type: none"> 1. Coordinate data management activities with DIRM. 2. Identify all parties and notify them of their roles in the data management processes and ensure that responsibilities are understood and addressed. 3. Manage Data Documentation <ol style="list-style-type: none"> a. Management of the Corporate Metadata Repository (CMR), which includes metadata documentation of all national applications, documentation of all official data standards, business rules and change management. b. Create and Maintain Metadata (FGDC Compliant- spatial and Alpha numeric). 4. Coordination and maintenance of the enterprise data model, ensuring that all data models are documented in an accessible location. 5. Administer the use of Data Modeling software. 6. Ensuring that all national data standards have logical data models. 7. BLM Data Standards Development <ol style="list-style-type: none"> a. Managing the status of national data standards development and implementation. b. BLM Data Standards Implementation. c. Implement Data Quality Processes/Procedures and Evaluate Strategic Plans. d. Support for data standards efforts by researching the CMR, reviewing proposed standards for completeness and CMR requirements. 8. Reviewing business cases and other parts of the project life cycle for data requirements and assist in identifying business rules for data management. 9. Conduct Data Modeling/Data Analysis <ol style="list-style-type: none"> a. Providing project managers with a data analysis of relevant and common data elements to be used in their projects, as well as general assistance in other aspects of identifying and developing data requirements. 10. Management of the data store infrastructure. 11. Evaluate and apply Data Management best practices. 12. Administer Data Management Training Program. 13. Support Bureau Data Architecture. 14. Provides technical data support to the BLM DAC, and the BLM DAWG. 15. Accountable for all aspects of data within your program area, including quality, accessibility, completeness, timeliness, accuracy, and standards.

<p>G. NOC Division of Information Resource Management (DIRM)</p>
<p>The role of the Division of Information Resource Management (DIRM) is to provide Project Management, Business Analysis, Security and Engineering support application architecture design and development and database conceptual, logical and physical design to all of the Bureau's programs. The DIRM provides the technical framework to allow the integration of resource data into multiple applications and includes; the configuration management of software, hardware and the life cycle development design, implementation and operational support of enterprise system infrastructure. The Business aspects of the DIRM include collecting and managing system requirements, standards and computer system security to support Information Resource Management for the Bureau.</p>
<p>Responsibilities</p>
<ol style="list-style-type: none"> 1. Coordinate data management activities with NOC DRS. 2. Implementing data policy and best management practices. 3. Data Development through design, implementation, and maintenance of data solutions to meet the business needs. 4. Coordinate focused data activities within system development lifecycle (SDLC), including data analysis, design, implementation & maintenance of databases. 5. Data operations planning and control and support of structured data assets across the data lifecycle from acquisition, creation through archiving. 6. Oversight of Data Security planning, development and execution of security policies and procedures to provide proper authentication, authorization, access and auditing of data and information. This includes privacy, confidentiality and appropriate access of data. 7. Ensuring consistency of contextual data values with a “golden version” of these data value. 8. Provide data support and support knowledge workers engaged in reporting, query and analysis. 9. Plan assurance implementation and control activities that apply quality management techniques to measure, assess, improve and ensure the fitness of data for use. 10. Oversight during development of projects to ensure that data needs and requirements are documented. 11. Adherence to bureau requirements for metadata and data standards. 12. Accountable for all aspects of project-related data, including quality, accessibility, completeness, timeliness, accuracy, and standards. 13. Provide technical experts with detailed knowledge of database management, design, optimization, and operation. 14. Provides technical data support to the BLM Data Advisory Committee (DAC), and the BLM Data Advisory Working Group (DAWG)

H. Bureau Privacy Officer
The Bureau Privacy Act Officer supports data management for the Bureau and is responsible for the policy and oversight of matters involving the protection of privacy information owned by BLM.
Responsibilities
<ol style="list-style-type: none"> 1. Ensures there are policies in place to protect BLM owned privacy data. 2. Provides guidance on minimizing the collection of unnecessary Personally Identifiable Information. 3. Serves as a subject matter expert on matters involving the collections, storage and safeguarding of personally identifiable information. 4. Advises on any matters involving privacy information belong or collected by the Bureau.
I. State/Center Privacy Officer
The state and center Privacy Act Officers support the data administration by acting as the local subject matter experts on privacy related issues.
Responsibilities
<ol style="list-style-type: none"> 1. Ensures local compliance with privacy laws, regulations and policies. 2. Provides local guidance on minimizing the collection of unnecessary Personally Identifiable Information. 3. Serves as a conduit for coordinating privacy issues between the state and national levels.
J. Resource / Program Specialist (Washington, State, District and Field Office)
The role of the Resource/Program Specialist is to provide technical expertise on data within their discipline or functional business area.
Responsibilities
<ol style="list-style-type: none"> 1. Work with the designated data steward to determine consistent resource data requirements across the organization. 2. Direct their program (at all levels of the organization) to implement the data standard. 3. Facilitation of educational opportunities for the treatment, application, and value of spatial data. 4. Creation and maintenance of metadata to quality specifications. 5. Interpret and apply Bureau/state policies to state offices.

K. State Data Administrator (SDA)
<p>State or Center Data Administrators are responsible for the overall management, design, and documentation of data supporting BLM’s mission at the state level.</p> <p>Because of the responsibilities and critical nature of this role, each state is required to identify and support a data administrator for their state.</p>
Responsibilities
<ol style="list-style-type: none"> 1. Work with the Bureau Data Administrator on the development of data management and supports the development of policy for the Bureau. 2. Provides information management leadership, data modeling expertise, and custodianship of the state data models. 3. Implements data policy and Best Management Practices. 4. Develops consistent, documented, accessible data and metadata resources for the State with shareable data across programs. 5. Coordinates data sharing and data management activities across functional business areas. 6. Serves as representatives on State data standards committees; and support national efforts as required. 7. Facilitates data standardization among data sharing partners. 8. Documents business rules and data standards (which do not have corresponding national standards) for their State. 9. Manages State data store infrastructure.

L. State Office GIS Manager
<p>GIS Managers lead and/or support the development of data standards, geospatial databases, and metadata at the State level.</p>
Responsibilities
<ol style="list-style-type: none"> 1. Supports geospatial data development. 2. Supports establishing geospatial data sharing agreements. 3. Participate in Inter-agency geospatial data coordination/data development planning groups. 4. Supports data standards development at the State and National levels. 5. Support evaluating geospatial data management practices in BLM. 6. Support the geospatial data store infrastructure. 7. Participate in the Bureau Data Architecture activities and help determine geospatial data requirements.



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Release
1-1762

Date
12/5/2014

MANUAL TRANSMITTAL SHEET

Subject

H-1283-2 Data Administration and Management Handbook

1. Explanation of Material Transmitted: This is the second handbook in the series for Data Management. Handbook three will be available in Fiscal Year (FY) 2015. The handbooks will be organized based on the Data Management Body of Knowledge (DAMA International, 2009) that was developed by the Data Management Association (DAMA) professionals. The DMBOK will be adopted in principle with materials in these handbooks consistent with the authorities for data management activities identified in BLM Manual Section 1283, Data Administration and Management. This handbook covers Data Development and Design, Quality, Metadata and Business Rules.

2. Reports Required: None.

3. Material Superseded: None

4. Filing Instructions: File as instructed below.

REMOVE

INSERT

None

All of H-1283-2
(77 Pages)

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Business, Fiscal, and Information Resource Management



BUREAU OF LAND MANAGEMENT (BLM)

Data Administration and Management (Internal)

BLM Handbook H-1283-2

Table of Contents

Chapter I. Data Development	I-1
A. Concepts.....	I-1
1. Data Standards.....	I-1
2. External Data Standards.....	I-2
3. Data Models	I-2
4. Standardized Dataset.....	I-3
B. Goals	I-3
C. Major Activities	I-3
1. Develop Data Management Plan for a Project.....	I-3
2. Coordinate Data Standards Efforts.....	I-3
3. Conduct Data Development (Databases, Standards and Standardized Datasets)	I-3
4. Design Information Products	I-4
D. Roles and Responsibilities	I-4
E. Technology and Tools.....	I-5
Use of Computer Assisted Software Engineering (CASE) Tools.....	I-5
Chapter II. Data Quality	II-1
A. Concepts.....	II-1
1. Data Quality Dimensions	II-1
2. Acceptable Quality Levels (AQL)	II-3
B. Goals	II-3
C. Major Activities	II-3
1. Define Data Quality Requirements	II-3
2. Continuously Measure and Monitor Data Quality	II-4
3. Profile Data	II-4
4. Certify Quality of Data.....	II-4
5. Conduct Data Audits and Reviews.....	II-4
6. Clean and Correct Data Quality Defects	II-4
7. Respond to Challenges to BLM Data.....	II-5
D. Roles and Responsibilities	II-5
E. Technology and Tools.....	II-5
1. Data Quality Tool.....	II-5

Chapter III. Metadata..... III-1

 A. Concepts..... III-1

 1. Metadata..... III-1

 2. Metadata Repository III-2

 B. Goals III-2

 C. Major Activities III-2

 1. Determine Metadata Requirements for the Bureau..... III-2

 2. Document Metadata (Collect Data)..... III-2

 3. Document Feature Level Metadata (Collect Data) III-3

 4. Establish Corporate Metadata Repositories III-3

 5. Maintain Information in Metadata Repository..... III-3

 D. Roles and Responsibilities III-3

 1. Corporate Metadata Advisory Team (CMAT)..... III-4

 E. Technology and Tools..... III-5

Chapter IV. Logical Data Modeling IV-1

 A. Data Modeling Process IV-1

 1. Complete High-Level Business Process or Workflow..... IV-1

 2. Develop the Conceptual Data Model IV-2

 3. Develop the Logical Data Model IV-2

 4. Validate Logical Data Model IV-5

 5. Approve the Enterprise Entities IV-5

 B. Business Rules in a Data Model IV-5

Chapter V. Data Development Process V-1

 A. Propose a Data Development Project. V-3

 1. Develop the draft proposal V-3

 2. Determine the required deliverables and methods V-4

 3. Evaluate the proposal V-5

 4. Develop a project schedule V-5

 B. Data Standard Development Approach V-5

 1. Produce draft data standards documents V-7

 2. Evaluate the data standard documents V-7

 3. Approve the data standard..... V-8

- C. Standardized Dataset Development Approach V-8
 - 1. Produce Draft Standardized Dataset Documents V-9
 - 2. Evaluate Standardized Dataset Documents V-10
 - 3. Approve National Schema V-10
- D. Plan for Implementation V-10
 - 1. Develop an implementation plan..... V-10
 - 2. Execute the implementation plan V-11
- E. Standardized Dataset Implementation V-11
 - 1. Build Standardized Dataset V-12
 - 2. Create National Dataset..... V-12
 - 3. Certify Dataset..... V-12
- F. Develop Application (Database)..... V-12
- G. Data Change Management V-12
 - 1. Review Change Request..... V-13
 - 2. Review Necessity of Data/Retire Data Standards V-13
- Chapter VI. Database Design..... VI-1
 - A. Concepts..... VI-1
 - B. Goals VI-1
 - C. Major Activities VI-2
 - 1. Develop Database Design Plan VI-2
 - 2. Select Database Management System..... VI-3
 - 3. Determine Data Security and Privacy Requirements. VI-3
 - 4. Determine User Access Requirements VI-3
 - 5. Determine Backup and Recovery Procedures for all Environments..... VI-4
 - 6. Develop Physical Data Model..... VI-4
 - 7. Develop Migration Plan (optional) VI-5
 - 8. Develop database schema..... VI-6
 - 9. Conduct Performance Tuning VI-6
 - 10. Implement database VI-7
 - 11. Finalize Database Documentation VI-7
 - D. Roles and Responsibilities VI-8
 - E. Technology and Tools..... VI-8

1. Use of Computer Assisted Software Engineering (CASE) Tools..... VI-8

Chapter VII. Business Rules VII-1

A. Concepts..... VII-1

B. Goals VII-1

 1. Benefits of Documentation..... VII-2

C. Major Activities VII-2

 1. Determine Business Drivers..... VII-2

 2. Document Rules VII-3

 3. Implement Business Rules VII-4

D. Responsibility VII-4

Appendix 1: Glossary and Acronyms A1-1

Appendix 2: Bibliography..... A2-1

Appendix 3: Modeling, Symbology and Naming Conventions..... A3-1

Figures

FIGURE V-1: DATA DEVELOPMENT LIFE CYCLE..... V-1

FIGURE V-2: DATA DEVELOPMENT PROCESS..... V-2

FIGURE VII-1: BUSINESS RULE MODEL..... VII-2

Tables

TABLE I-1 DATA DEVELOPMENT ROLES & RESPONSIBILITIES I-4

TABLE II-1 DATA QUALITY ROLES & RESPONSIBILITIES II-5

TABLE III-1 METADATA ROLES & RESPONSIBILITIES III-4

TABLE VI-1 CRUD MATRIX EXAMPLE VI-4

TABLE APPENDIX-3-1 REPRESENTATIVE TERMS A3-8

Foreword

Because of the depth and breadth of the functions and concepts related to data management, there will be several handbooks developed for Data Administration and Management. The handbooks will be organized based on the Data Management Body of Knowledge (DAMA International, 2009) which was developed by Data Management Association (DAMA) professionals. The DMBOK will be adopted in principle with materials in these handbooks consistent with the authorities for data management activities identified in BLM Manual Section 1283, Data Administration and Management.

This is the second handbook in the series for Data Management. Handbook three will be available in Fiscal Year (FY) 2015.

Chapter I. Data Development

Data Development encompasses the analysis, design, implementation and development of solutions for the collection, use and maintenance of data. Logical Data Modeling is the method by which the Enterprise Data Framework and data standards are created and maintained. Design is a subset of project activities within the development life cycle of an application for designing the data solution components and implementing the components. (DAMA International, 2009) Data Development is an intensively collaborative function between Business and Information Technology (IT).

A. Concepts

1. Data Standards

Data Standards identify logical business data requirements and document what information is needed to meet those business requirements and to provide for high-quality data. A data standard should be defined before the data is collected. There are many advantages to having a standard:

- a) Better quality data, which is consistent across the organization;
- b) Having the right data to accomplish the task;
- c) Knowing what the data is once it is collected;
- d) Ability to reproduce the data and collect additional matching data at a later date that can be used in analysis;
- e) Ability to compile the data across the BLM without the need to convert or analyze differences between the data.

Data standards will be developed for all BLM data, regardless of implementation.

NOTE: Changes to the implementation of a data standard that do not affect the business data requirements are **not** changes to a data standard. For example, a data standard is not changed when it is implemented as a geodatabase. In this case, the data standard does not change into a geospatial data standard because the data is stored in a geodatabase.

All National Data Standards supersede state level data standards, with few exceptions. A state can extend a data standard to include local data requirements. The following situations can justify a state-level or regional standard:

- a) A resource (or a certain characteristic of a resource) is unique to one or a few BLM jurisdictions.
- b) No national standard exists or can be created quickly enough to meet a pressing business requirement. If a state decides to develop a data standard that can be considered national in scope, it must follow the same processes and templates as outlined in this handbook and involve the national data steward and other states in the development of the standard.
- c) BLM is one participant in a multi-agency cooperative study or land management effort, or has entered into a data collection and sharing agreement with external

partners (other Federal agencies, state government, Tribes, and non-Governmental organizations) and must conform to standards adopted for that particular purpose. This can also occur when a State standard is dictated to the BLM by law or agreement.

When a state-level or regional standard is justified, the national data steward for the particular data topic should be asked to help investigate alternatives and take part in the decision process. State-level or regional data standards must be developed and documented using the same processes as the National Data Standards. Adoption and use of a national standard is preferred, and managers who approve State or other standards for a specific purpose must document and be prepared to justify that decision.

When state-level or regional data standards are adopted, those standards should incorporate existing components of any related national data standard. That is, State and other standards may supplement the related national standard, but must be inconsistent with the related national standard. The resolution of any inconsistencies or technical conflicts must be resolved by the data standard adoption team as part of its regular deliberations.

2. External Data Standards

Most BLM data standards will be adopted from, or developed in cooperation with, other Governmental organizations or industry standards-setting bodies. OMB Circular A-119 authorizes and encourages Government agencies to participate in industry consensus standards groups to establish data standards that serve the needs of related Government agencies and of industry.

Whenever feasible, the BLM will adopt and not duplicate data standards from Federal Geographic Data Committee (FGDC), International Standards Organization (ISO), Federal Information Processing Standards (FIPS), American National Standards Institute (ANSI), data standards developed and adopted utilizing DOI Data Standardization Procedures, industry-sponsored consensus standards groups, and Federal and State agencies. No new data standard adoption effort will be undertaken if any such external opportunity exists.

Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," requires agencies to use FGDC data standards or to create an appropriate data standard using the FGDC processes, especially in support of the data themes established through OMB Circular A-16, "Coordination of Geographic Information and Related Spatial Data Activities." The BLM will adopt the appropriate FGDC data standards.

3. Data Models

A data model is a diagram which represents the data requirements of the BLM as a whole or, a specific category of data that crosses programs and functions. It uses symbols to represent these requirements for both the logical business view and the physical specifications for the data in a database.

Data modeling is a method for determining the data requirements of an organization. It provides a means to show the types of information required for the business of the BLM. Data modeling is used for both the business view (logical view) of data and for the design of

data structures (physical structures) that support the requirements. Data modeling can be intense and requires the involvement of Subject Matter Experts (SME) and data modelers to capture the data requirements of the organization.

4. **Standardized Dataset**

A standardized dataset is a national schema that consists of a shared set of attributes and domain values, capable of being seamlessly compiled to a National dataset. The implementation of a data standard results in a standardized dataset. A standardized dataset can be developed before the data standard *if* there is an immediate need for a national dataset.

B. **Goals**

- a) Identify and define data requirements for the Bureau,
- b) Design data structures and other solutions to meet Bureau requirements, and
- c) Ensure conformance to the Enterprise Data Framework and data standards.

C. **Major Activities**

1. **Develop Data Management Plan for a Project**

A **Data Management Plan** documents how data will be managed for each step in the data lifecycle, including the conversion, collection, quality and access to data will be managed for a project or a new or updated application. The Data Management Plan Template and the optional Data Management Plan Addendum template (if contractors are involved) are available on the [BLM Data Management SharePoint](#), in Handbook Materials (left panel).

Any time data is collected and maintained for a project or an application, a data management plan must be developed before collection of data begins, especially if a contractor is involved. The data management plan includes each step in the Data Lifecycle (for the Data Lifecycle, see H 1283-1, Chapter I: Data Management Overview).

2. **Coordinate Data Standards Efforts**

The Data Standards Coordinator (Coordinator) is responsible for ensuring that the priority data standards are being completed in a timely manner using the appropriate resources. The Coordinator will determine the level of effort required for each Data Advisory Council (DAC) priority data standard for the fiscal year and will work with the National Operations Center (NOC) Data Management Lead to determine team resource requirements and assign tasks to the rest of the NOC Data Management Team.

A status report of work on the data standards will be completed on a quarterly basis and provided to the Data Advisory Working Group (DAWG) by the Coordinator. More information on the DAC and the DAWG can be found in H 1283-1 Data Administration and Management (H 1283-1).

3. **Conduct Data Development (Databases, Standards and Standardized Datasets)**

It is a major responsibility of each BLM Business Data Steward to identify, assess, compile and maintain the status of standards and business data. The compilation of standards and

business data will indicate the timing and strategy for adopting and applying national standards. The compilation must be consistent with State or local extensions of those standards to meet BLM business needs.

BLM Business Data Stewards can adopt any workable combination of tactics for migrating toward the desired standards. The process and deliverables for developing data at the BLM is described in detail in Chapter 5, Data Development Process.

4. Design Information Products

Various information products are developed as part of an application or project and thus are not included in this handbook. The design and implementation of data warehouses and data marts for publishing data and making data available and accessible outside of a transactional application will be described in 1283-3 Handbook¹.

D. Roles and Responsibilities

Roles and Responsibilities for all data management functions are documented in Appendix B: Data Management Roles & Responsibilities in H 1283-1. The personnel in the following table have specific roles for Data Development, including Logical Data Modeling (Chapter 4), Data Development Process (Chapter 5) and Database Design (Chapter 6) in this handbook.

Data Development, Logical Data Modeling, Data Development, Database Design	Roles										
	Bureau Data Administrator	State Data Administrator	Data Steward	NOC Data Standards Coordinator	Data Modeler / Architect	NOC DM Lead	Database Administrator (DIRM)	Geospatial Program Lead	Business Analyst	Resource/Program Specialist	GIS Analyst
Develop Data Management Plan	S	S	A		C	C		C	S	R	
Coordinate Data Standards Efforts	I		C	R	S						
Conduct Data Development	I	S	S	S	S	R	I		S	C	
Design Information Product					S		C		R	C	
Complete High Level Process/Workflow Model	I	I	S		S				R	S	
Develop Conceptual Data Model	C	C	S	S	R				S	C	
Develop Logical Data Model	C		S		R		I		S	C	I
Validate Logical Data Model	A	S	R	I	C		I		I	I	I
Propose Data Development	I	I	R	S	R				S	C	I
Develop Data Standard	I	I	A	S	R		I				C
Develop Standardized Dataset			A	I	C					C	R
Develop Geospatial Products			A	I						C	R
Design and Implement Database			A				R		S		S
Implement Dataset			A	S		S				I	R

R-Responsible
 A-Approve
 C-Consult
 I-Inform
 S-Support

Table I-1 Data Development Roles & Responsibilities

¹ Handbook 3 will be available in FY2015.

E. Technology and Tools

Use of Computer Assisted Software Engineering (CASE) Tools

The BLM will strive to use automated tools to assist in the development and documentation of its business and data models. CASE tools will be used to develop the models and to maintain the enterprise data model for the BLM.

Chapter II. Data Quality

Data Quality is a critical component of the Bureau's Data Management Strategy. Bureau personnel rely on good quality data to make the best decisions about the management of federal land. The Data Quality report language contained in the FY2001 Omnibus Appropriations Act (Public Law 105-277) directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, utility, and integrity of information (including statistical information) disseminated by federal agencies."

A. Concepts

The definition given for data quality is the one in widest use today: "Data are of high quality if they are fit for their intended uses in operations, decision making and planning." (Juran, 1999) Data quality means that data is relevant to its intended uses and is of sufficient detail and quantity, with a high degree of accuracy and completeness, consistent with other sources, and presented in appropriate ways.

Data quality is not the same thing as information quality. While *data quality* ensures that data are fit for their intended uses in operations, decision making and planning, *information quality* describes the quality of the content of information systems, ensuring that the data presented has value and models the real world correctly for its planned use. Information is the meaning given to data or the interpretation of data based on its context; i.e. the finished product that results from this interpretation. In the guidelines of Section 515 of the Treasury and General Government Appropriates Act for FY2011, the term "information" is used primarily in the context of dissemination of information and correction of disseminated information.

The Congress and OMB have defined overall data quality as having the following characteristics:

Utility: Data is accurate, reliable, useful, and timely;

Integrity: Data is free from contamination (unauthorized access);

Objectivity: Data is unambiguous and collected under the same procedures and rules (reduces possible bias);

Relevancy: Data is collected and managed according to a standard set by the information customer;

Quality: Data meets the specifications the organization has identified.

1. Data Quality Dimensions

Data content quality cannot be measured without a quality definition. Data content quality is the degree to which the data values accurately represent the dimensions of the real-world object or event, and meet the needs of the information end users to perform their jobs effectively.

The following matrix lists the various dimensions of quality for an alphanumeric data element.

Dimension	Quality Dimensions Description	Example of Non-Quality Data
Validity	The degree to which the data conform to their definitions, domain values, and business rules.	A U.S. address has a state abbreviation of XR which is not a valid abbreviation (not in the valid state abbreviation list).
Non-Duplication	The degree to which there are no redundant occurrences or records of the same real world object or event.	One Applicant for a Permit has multiple applicant records (evident when an applicant gets duplicate, even conflicting, notices).
Completeness	The degree to which the required data are known. This includes having the required data elements (the facts about the object or event), having the required records, and having the required values.	An indicator for spouse is set to "yes", but spousal data are not present.
Relationship Validity	The degree to which related data conform to the associative business rules.	A property address shows a Michigan zip code, but a Florida city and state.
Consistency	The degree to which redundant facts are equivalent across two or more databases in which the facts are maintained.	The same person is represented in two databases or systems and has a different address or different dependents.
Concurrency	The timing of updates to ensure that duplicate data stored in redundant files are equivalent. This is a measure of the data float (the time elapsed from the initial acquisition of the data in one file or table to the time they are propagated to another file or table).	On Monday, an Applicant's change of address is updated in the Applicant record of origin file, but the record is propagated to the main Program database after the weekend cycle (Friday night). That record has a concurrency float of five days between the record-of-origin file and the record-of-reference database.
Timeliness	The degree to which data are available to support a given information consumer or process when required.	A change of address is needed to schedule an inspection but is not available to the field office, and the inspector leaves without the proper data.
Accurate (to reality)	The degree to which data accurately reflect the real-world object or event being described.	The hometelephone number for a customer's record does not match the actual telephone number.
Accurate (to surrogate source)	The degree to which the data match the original source of data, such as a form, application, or other document.	An applicant's income reported on the application form does not match what is in the database.
Precision	The degree to which data are known to the right level of detail (e.g., the right number of decimal digits to the right of the decimal point).	A measurement of water quality only recorded concentrations in parts per thousand whereas known contaminants can cause serious illness when found in concentrations of parts per million.
Derivation Integrity	The correctness with which derived data are calculated from their base data.	The total fees due for a Permit, do not match when totaling the fees from the detailed records.

The following are data quality dimensions that apply to geospatial data:

Dimension	Quality Dimensions Description	Example of Non-Quality Data
Completeness (Features)	How well the dataset captures all of the features it is intended to represent.	The number of river segments in the dataset do not match the actual number of river segments in the real world.
Positional Accuracy	Describes how close the locations of objects represented in a digital dataset correspond to the true locations for the real world entities.	The river feature is not within + or – 10 feet of where it is actually located as documented in the metadata.
Logical Consistency	The presence, absence or frequency of inconsistent data.	On a map, it appears a road is going through a large permanent lake.
Geometric Accuracy (Raster)	Defines whether the geometry of a raster dataset is located correctly in terms of a pixel or cell location.	The pixel values represent an area different than those displayed.
Radiometric Accuracy (Raster)	Described as the pixel values for each cell that are collected for each band of digital imagery.	The values of the pixel are not correct for the cell due to some introduced error from when the data was collected.

2. Acceptable Quality Levels (AQL)

AQLs are established to guide the collection, correction, and quality control of data supporting the BLM program activities. The results of data analyses will help the Bureau determine the minimum data integrity and quality levels it will accept for every database. Meeting or exceeding these data quality levels will improve decision-making, provide supporting evidence in judicial proceedings, and enhance data currency and maintenance over time.

B. Goals

- a) To continuously improve the quality of data which leads to better business decisions.
- b) To provide acceptable levels of data quality for all BLM data with defined processes for measuring, correcting, monitoring and reporting on the quality of data.
- c) To ensure that data quality controls are integrated into the development of systems and implementation of data standards.

C. Major Activities

1. Define Data Quality Requirements

Developing plans for ensuring the quality of the data and determining the quality levels is an integral part of the development of data standards and designing a database or converting to a new database. Data quality deliverables are documented in Chapter V Data Development.

The Data Stewards should use Quality Review Teams to assist them in developing target quality levels, the number of times per year quality is assessed, which quality dimensions to use to assess quality of data and what methods to use to assess the quality. Those teams

consist of SMEs familiar with the program and the data standards along with quality assurance personnel. SME Teams provide the relevant expertise and coordinate the review of Quality Assurance (QA) efforts and perform the data quality reviews. These teams are also responsible for the QA aspects of data for initiatives and programs throughout the life of the standard, with membership changing as needed.

2. Continuously Measure and Monitor Data Quality

Data will never be 100% correct. However, to ensure that the quality of BLM data improves over time, the quality must be measured on a regular basis. Regular measurement will ensure it meets the minimum level of quality needed for that dataset or database. Quality will be measured using the data quality metrics developed for the dataset, measure the quality of the data and determine how close it meets the appropriate quality levels.

3. Profile Data

Data profiling is a process to assess current data conditions, or to monitor data quality over time. It begins with collecting measurements about your data, and then looking at the results individually or in various combinations to see where anomalies exist. Data anomalies are the “needle in the haystack” for technology projects. Even the best systems have them, but they may not cause pain until a data migration or integration project comes along and you are unable to maintain acceptable data quality levels. Data profiling ensures that all your business decisions are based on reliable information. Profiling is also used to assess the quality of your data and provide the current quality level of the data.

4. Certify Quality of Data

The National Data Steward must certify data in order for the data to be used and published internally by the BLM or external parties. The National Data Steward determines the level of quality for each data element. A data profile is conducted on the dataset which documents the type and number of errors found in the dataset. If the National Data Steward is satisfied with the quality of the dataset, he or she will certify the data.

Chapter V Data Development Process includes the description of the certification of standardized datasets.

5. Conduct Data Audits and Reviews

Data Audits and Data Reviews are valuable tools used to check data quality and to improve data. Data Audits are formal assessments, while Data Reviews are unscheduled assessments of the adequacy of data collected and the processes used to collect and verify the accuracy of the data. The Data Quality and Assurance Control Plan (DQ/AC Plan) includes timeframes for audits and triggers for when a Data Review needs to occur.

6. Clean and Correct Data Quality Defects

Data cleansing (also referred to as data scrubbing) is the act of detecting and removing and/or correcting a database's dirty data (i.e., data that is incorrect, out-of-date, redundant, incomplete, or formatted incorrectly). The goal of data cleansing is not just to clean up the data in a database but also to bring consistency to different sets of data that have been merged

from separate databases. Sophisticated software is available to clean data using algorithms, rules and look-up tables, a task that was once done manually and was subject to human error.

If the errors are consistent and can be prevented through changes to business rules and edit checks during data entry, The data steward or system owner can request modifications to the application or form where this data is entered.

7. Respond to Challenges to BLM Data

The BLM has published Information Quality Guidelines in accordance with direction provided by the OMB and DOI’s Data Quality Guidelines. These guidelines provide a means for responding to challenges to BLM data.

D. Roles and Responsibilities

Roles and Responsibilities for all data management functions are documented in Appendix B Data Management Roles and Responsibilities in H 1283-1. The following have a specific role for the Quality Knowledge Area.

Data Quality	Bureau Data Administrator	State Data Administrator	Data Steward	Data Modeler / Architect	NOC Data Resource Branch	NOC DM Lead	NOC IRM	Resource/program Specialist
Define Data Quality Requirements	I	C	R	S		C		
Measure Data Quality	I	S	R		S			S
Certify Quality of Data	I		R			S		
Conduct Data Audits and Review	C	C	R		S		S	S
Clean and Correct Data Quality Defects			R		S		S	S
Continuously Measure and Monitor Data Quality			R		S		S	

R-Responsible
 A-Approve
 C-Consult
 I-Inform
 S-Support

Table II-1 Data Quality Roles & Responsibilities

E. Technology and Tools

1. Data Quality Tool

The software, Data Management Studio (also known as DataFlux) was selected as the BLM Enterprise Data Quality Tool. Its features include profiling, validation, cleansing, analysis and reporting. Information on support for this tool can be found on the BLM Data Management SharePoint, under Reference Materials (left panel).

Chapter III. Metadata

The BLM's data resources are high-value business assets that must be documented and maintained like other critical business assets. Metadata allows internal and external customers to improve business and technical understanding of data and data-related processes by helping customers:

- a) Find and access the data;
- b) Understand data that are found;
- c) Understand the reliability of data;
- d) Understand the intended use of the data;
- e) Know how and when the data were collected and by whom;
- f) Know how and when data are maintained;
- g) Understand any ways in which the data are manipulated, and
- h) See any warnings or disclaimers that may apply to the data.

All data requires metadata collected from one or more national metadata content standards. All BLM data must have metadata that meets DOI and BLM requirements. The BLM will continue to follow DOI Metadata Policy and update its own policy to reflect any changes made in the future. Currently alphanumeric (tabular) datasets will use Dublin Core for documenting metadata. Geospatial metadata policy for DOI and BLM states that BLM must follow Federal Geographic Data Committee endorsed metadata; this includes the Content Standard for Digital Geospatial Metadata of the Federal Geographic Data Committee (FGDC). The FGDC and the BLM will be migrating to International Standards Organization (ISO) metadata content standard.

The metadata content standards are not independent from the standards for data. Metadata standards must be applied as the data is collected, by completing the associated metadata in parallel. Because metadata content has to be collected with the data, a data standard itself must support the creation of the descriptive information that will be stored in the metadata record.

A. Concepts

1. Metadata

Metadata is typically defined as "data about data." More precisely, metadata is information about data, such as its definition, data type (for instance, whether it is spatial, alphanumeric, or graphic), how it was to be collected, accuracy standards, and who to contact for further information concerning the data. Metadata should be collected and maintained at the time the data is collected, created, updated or acquired. If metadata creation is put off until a later time, significant risks are incurred because the metadata will not be accurate or those knowledgeable about the data will no longer be available to help. A metadata record should be created in parallel with actions to acquire, modify, or quality-check data. Some metadata, such as those describing data standards, is completed prior to data acquisition.

The BLM has defined three main categories of metadata (not mutually exclusive) related to the BLM Enterprise Information Architecture:

Business Metadata defines logical entities and attributes, business rules, specifications, graphical models, project plans, report and query output, business descriptions of valid values, etc., in terms that are familiar and useful to the business community (non-technical).

Technical/Operational Metadata defines the technical and physical properties or characteristics of databases, tables/files, fields/columns, indexes, views, automated procedures (source code, DDL, SQL, etc.), report and screen layouts, configurations, protocols, security, etc.

Administrative Metadata defines the database and system maintenance activities (loads, refreshes, purges, etc.), roles and responsibilities for meta objects (owners, users, administrators, etc.), statistical analysis of data content and quality, metadata relationships (how the various types of metadata relate to each other), etc. This includes feature level metadata.

2. Metadata Repository

Metadata is stored with the data. Metadata should be made available and be easily accessed by appropriate internal and external customers and, in some cases, may be more centrally located than the data itself. The BLM needs to maintain a node or web page for geospatial metadata in accordance with the specifications provided by the Federal Geographic Data Committee (FGDC) as part of its implementation of Executive Order 12906.

B. Goals

- a) Increase value of mission-critical data for informed decisions.
- b) Increase value of historical and archived datasets through documentation of the metadata.
- c) Reduce time in finding required data to complete data analysis.
- d) Reduce risk of project failure through more complete understanding of corporate data.
- e) Reduce data redundancy through clear definitions of entities and attributes.

C. Major Activities

1. Determine Metadata Requirements for the Bureau

The Corporate Metadata Advisory Team (CMAT) is responsible determining the metadata requirements for the Bureau based on directives from the Department and the Administration. Requirements for specific Metadata Elements can be found on the [BLM Data Management SharePoint](#), under Reference Materials (left panel), Topic: Metadata.

2. Document Metadata (Collect Data)

The business metadata is developed during logical data modeling (see Chapter IV Logical Data Modeling). Metadata about attributes that have privacy and security characteristics are also identified at this time. Most technical metadata is developing during the design of a database (see Chapter V Database Design), including geospatial datasets or files. Administrative metadata is captured during assessment of the data and anytime data is updated.

Data standards include all three categories of metadata.

3. Document Feature Level Metadata (Collect Data)

When geospatial data is created or updated, additional metadata is required. Each time a feature such as a point, line or polygon is created, the following three major metadata items are documented:

The *Coordinate (Location) Source* identifies what was used to define or create the feature, such as a map, a mobile device, or another Dataset.

The *Defining Feature* identifies the actual physical or mapping characteristics (features) from which the arcs are derived. For example, it documents if the feature was created based on an existing feature, such as a river edge, river center line, or county boundary.

The *Accuracy Measure* describes in a specified unit measure, how close the actual location is to the spatial depiction. This can depend on what type of equipment was used to depict the location (coordinate source). Some equipment is more accurate than other equipment.

The BLM has a standardized list of Feature Level Metadata Domains values for the Coordinate Source and Defining Feature which can be found on the [BLM Data Management SharePoint](#), under Reference Materials (left panel). BLM requires that feature level metadata be reviewed and requirements determined at the time of data standard development and data collection.

4. Establish Corporate Metadata Repositories

Corporate metadata repositories (CMR) store the metadata about the data and datasets of the BLM.

5. Maintain Information in Metadata Repository

Metadata for both the logical and physical models are documented in a metadata repository. There may be more than one implementation of a data element. A logical attribute exists once in the repository and is linked to all of its physical implementations (systems, datasets).

D. Roles and Responsibilities

Roles and Responsibilities for all data management functions are documented in Appendix B: Data Management Roles & Responsibilities in H 1283-1. The following have a specific role for Metadata.

Metadata	Bureau Data Administrator	State Data Administrator	Data Steward	Data Modeler / Architect	GIS Specialist	NOC DM Lead	NOC IRM	Resource/Program Specialist
Determine Metadata Requirements for Bureau	R	S	I	C		C	I	I
Document Metadata		S	S	S		C		R
Document Feature Level Metadata	I		I		R	C		
Establish Corporate Metadata Repositories	R	S		C		S	C	
Maintain Information in Corporate Metadata Repository	I	I	S	R				

R-Responsible
 A-Approve
 C-Consult
 I-Inform
 S-Support

Table III-1 Metadata Roles & Responsibilities

1. Corporate Metadata Advisory Team (CMAT)

The CMAT is chartered as an advisory body to the Bureau Data Administrator. It provides leadership regarding all business functions within the BLM pertaining to the corporate metadata. The team coordinates and leads activities to ensure that corporate metadata is created, made accessible, and provides needed information about the BLM’s business and its information systems.

The CMAT will deal with those aspects of the standardization of all BLM data relating to metadata. The team’s responsibilities include, but are not limited to:

- a) Participating in the development and evaluation of metadata definitions and standards for use by the Bureau.
- b) Facilitating the development and coordination of Bureau activities related to metadata.
- c) Facilitating training including identifying need, directing development, and delivery of training.
- d) Promoting the publication of searchable metadata by guiding the development, use, and coordination of metadata repositories.
- e) Coordinating metadata standards and development with the Bureau Records Administrator as it relates to records, records retention, proprietary information, sensitive information and Privacy Act compliance.
- f) Providing a forum for sharing of metadata best practices.
- g) Interpreting higher level metadata rules and regulations (e.g. Federal Geographic Data Committee) for impact and implementation in the Bureau.
- h) Setting goals/standards for metadata quality.

The CMAT includes two State or Center Data Administrators, a National Data Steward, a State Data Steward, two GIS coordinator/specialists, a NOC Data Management representative, a geospatial metadata repository representative, an application/database development

specialist, a Corporate Metadata Repository (CMR) representative and the Bureau Data Administrator. The chair of the CMAT is one of the State Data Administrators. The National Operations Center Data Management representative will be the deputy chair. There is also a group that serves as advisors to the team and includes a WO IRM Advisor or Portfolio Manager, a Deputy State Director (Support Services representative) and a State Chief, Information Resources Management.

E. Technology and Tools

Metadata Repository Tools are critical to capturing and documenting the metadata. A Metadata Repository maintains the business metadata associated with data standards, logical and physical data models and data dictionary. The attributes in the data standards will be linked to where the attributes were implemented in a database, geospatial dataset or other implementation.

Chapter IV. Logical Data Modeling

This chapter outlines the steps involved in identifying the data requirements for a data standard or application. Techniques and tools have been developed to help the program specialist, data provider, and data consumer determine the types of information needed, the reason it is needed, the business activities and processes it supports, and any limitations put on the data to provide useful information for the business employee or customer. The goal in this chapter is to identify and document the data entities and attributes which, when combined, provide information.

Data Models according to DAMA (DAMA International, 2009):

- a) Help to facilitate communication and provide a means of understanding and demonstrating the data needs of the business.
- b) Document the data requirements with a single definition for each data item and business rules.
- c) Explain the data context and scope of purchased applications.
- d) Provide a means to show how different programs or functions may utilize the same data.

A. Data Modeling Process

The data modeling process is used when developing a data standard or during the analysis phase of an application. The process includes the following steps: 1) document a high-level business process, 2) develop the conceptual data model, 3) develop the logical data model, 4) validate the data model, and 5) approve the enterprise entities and attributes.

The analysis of business requirements and data needs are conducted according to Structured Methodologies, employing business process and data models to show the flow of individual business events and the data entered, accessed, or updated as a result of those events.

All BLM applications and data standards require a logical data model which fits within the BLM Enterprise Data Model. Database and system design does not start until the logical data model has been reviewed by the data stewards and the Bureau Data Administrator.

1. Complete High-Level Business Process or Workflow

The Data Modeler works with the SME at each level of the BLM, through interviews or facilitated sessions to document the major business processes within the scope of the data standard or application. A Business Process Model identifies what is being done, what information is needed (if any), what information is created or modified, and what data is passed on to the next activity as part of the process.

Depending on the complexity of the data standard, a Business Process Improvement (BPI) project or identification of the workflow may be necessary to fully understand the processes. An expert in data modeling must attend all BPI or workflow modeling sessions to capture the data requirements.

2. Develop the Conceptual Data Model

A **Conceptual Data Model** is usually represented as an entity relationship diagram. It shows major entities, description of the entities and relationships between entities. The description of the entity can include the type of data included in the entity. Relationships can be many-to-many and critical attributes may be included.

The Conceptual Data Model is usually developed in conjunction with the high-level business process model. The conceptual model represents the scope of data required to support those activities or events identified in the Process Model.

Once the basic entities and relationships are understood, the Data Modeler will review the Enterprise Data Model (EDM) to determine which entities are already approved and can be re-used for the data standard or application.

3. Develop the Logical Data Model

A **Logical Data Model** is in third normal form, follows naming conventions, and includes the metadata such as definitions for all entities and attributes and data related business rules. It does not represent the physical database design that is used to implement the data standard. The metadata will be documented in a Corporate Metadata Repository.

The Data Modeler is responsible for creating the Entity Relationship Diagram (ERD) for the Logical Data Model (LDM). Business SMEs are the ones who provide the expertise in what the process is while the data analyst furnishes the analysis and the format for documenting the model.

A business requirement is what the business wants from the information system. The business requirement specifies what the business needs and the high level requirements that the completed information system needs to address. Before meeting with the SMEs, the Data Modeler can use the following sources of data requirements:

Legislative Language: Congress often affects the work that we do and the data we need to collect. It also can affect what data can be collected and possible mandated reporting requirements. Congress may also, through its oversight role, determine what data needs to be kept and for how long.

Existing Applications, Handbooks and Other Materials: Talk to the SMEs and conduct research on the Intranet about what personnel use now for documenting their data. The Corporate Metadata Repository (CMR) should include metadata about existing applications and the data in those applications.

Data Profiling: The BLM has a Data Quality tool which can be used on existing applications to provide more detailed information on the application's data content. Information about the BLM Enterprise Data Quality Tool can be found on the [BLM Data Management SharePoint](#), under Reference Materials (left panel).

The content of planned reports and maps can be reviewed to determine necessary attributes. A draft LDM is developed based on this research. The Modeler will use any existing entities and relationships from the EDM which are within the scope of the standard or application to develop the initial draft model. Follow naming conventions for entities, attributes and

relationships, documented in the Appendix 3: Modeling, Symbology and Naming Conventions.

To complete the LDM, the Data Modeler works with the SMEs through various means to complete the LDM. Some of these methods include:

Facilitated Requirements Sessions: Working with the SMEs in a well-structured meeting can capture requirements quickly and with consensus. This often brings up differences between offices and between individual users in a forum where they can compare notes and determine why those differences exist. These are meetings specifically set up to not only analyze business processes but to get them down on paper for all to have a common reference.

Interviews with Customers or Employees: When actively seeking to understand our data needs, interviews of those currently collecting and using the data or completing the business processes can be invaluable. Interviewees can tell you what they do and why they do it.

Data and Business Modeling Sessions: These sessions are directed by an analyst who models the flow of the business (Process or Workflow Modeling) and captures the data requirements and relationships that assist the business (Data Models). Modeling provides a way to have the SMEs explain their work and the data needed to support it.

Normal Form is a condition of an entity relative to the satisfaction of a set of normalization theory constraints on its attribution. Normalization is the process of refining and regrouping attributes of entities according to the normal forms. The final data model must be in the third normal form outlined below.

First Normal Form (1 NF): A data object is in 1NF if, and only if, all underlying simple domains contain atomic values only. Each attribute of an entity must have exactly one value for each occurrence of the entity, no repeated occurrences, and no internal structures (the value of an attribute cannot be split into parts).

Example: An attribute such as Payment Amount cannot have more than 1 value for a given entity occurrence.

Second Normal Form (2NF): A data object is in 2NF, if and only if, it is in 1NF and every non-key attribute is fully dependent on the primary key (PK).

Example:

Entity: FACILITY

Attributes: Facility Name (PK); Current Date; Current Animals Held Quantity

This is not in 2NF as the Quantity is dependent on the Date & Name, not just the Name, so a 2nd entity is needed.

Third Normal Form (3NF): A data object is in 3NF if, and only if, it is in 2NF and every attribute (that is not a part of the primary key) is not dependent on the primary key. Two or more attributes are mutually independent if none of them is dependent on any combination of the others.

Example:

Entity: EMPLOYEE

Attributes: Employee Name: Employee Social Security Number, Employee Department Name; Employee Unit Name.

This is not in 3NF as the Unit Name is dependent on Department Name, so Department and Unit belong in separate entity and there would be a relationship from Dept/Unit to Employee.

The components of a logical data model are further described and documented in Appendix 3: Modeling, Symbology and Naming Conventions. The following review check list can be used to ensure the LDM is complete.

Entities:

- 1) Existing approved entities from the Enterprise Data Model were used where appropriate. Any changes to existing BLM entities were approved.
- 2) Each entity has a primary key (a unique identifier or a combination of foreign keys and other attributes that make each occurrence unique).
- 3) The entity names follow the standard naming convention for fundamental, associative and attributive entities.
- 4) Each supertype has at least two subtypes.
- 5) Reference entities are named appropriately.
- 6) All entities have at least one non-key attribute, unless it is an associative entity.

Relationships:

- 1) The relationship is named with a verb phrase from the parent to the child.
- 2) There are no many to many relationships between entity types.
- 3) Attributes
- 4) Attributes names follow the standard naming conventions.
- 5) Each attribute name ends with the appropriate representative term. The format of the attribute corresponds to the representative term.
- 6) All Code representative terms have their domain(s) appropriately documented.
- 7) Text and Name representative terms are used correctly.
- 8) Measure, Quantity and Amount representative terms are used appropriately.
- 9) Derived data is minimal. Any derived attributes include the calculation or derivation formula in the definition.
- 10) All attributes and entities are defined, using words other than the words in the name of the attribute or entity.

The LDM can change during the external review of a data standard because of comments from field personnel or discovering new data requirements during the design of the application. The LDM is not complete until the data standard is approved or the application is through final testing.

4. Validate Logical Data Model

To assist in the validation of the logical data model and to ensure all business data requirements are captured, an Entity/Process Matrix or Entities/Workflow Matrix is developed. The matrix correlates which processes create, read, update and/or delete (CRUD) entities.

Process/ENTIY	CUSTOMER	ORDER	PRODUCT	CUSTOMER ADDRESS
Add New Customer	C			C
Place Order	R	C	R	
Bill Customer	R	R	R	R
Modify Order	R	RU	R	

CRUD matrix with entites and processes.

Use cases can also be used to help validate the logical data model. A use case represents a discrete unit of interaction between a user (human or machine) and the system. This interaction is a single unit of meaningful work, such as Create Account or View Account Details.

Any changes to approved enterprise entities that occur during the development of the data standard or application must be reviewed by Data Stewards and the Bureau Data Administrator.


5. Approve the Enterprise Entities

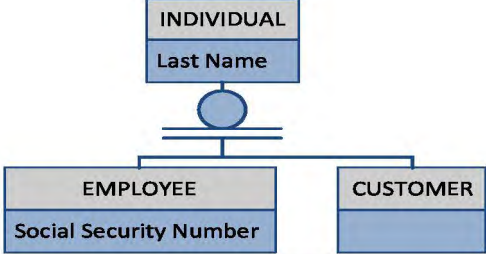
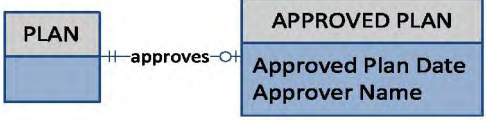
Once the data standard is approved or the application has completed final testing, the entities and attributes are approved by the Bureau Data Administrator and included in the Enterprise Data Model and a Metadata Repository.

B. Business Rules in a Data Model

Chapter VII Business Rules describes business rules in detail. Logical data models show the relationships between data entities and attributes which are business rules for collecting and maintaining data. There may be business rules that relate between a specific value of one attribute to a specific value of another attribute, which can either be shown in a normalized logical data model or documented separately. Action business rules are instructions on what to do when attributes contain certain values. These are difficult to define in a data model and are documented separately.

Examples of Data Business Rules in a Data Model

Data Model	Business Rule Description
	<p>A Customer places zero to many Orders. An Order can only be placed by One Customer. The organization can have customers that do not have orders. A Customer can place more than one order at a time.</p>

Data Model	Business Rule Description
 <pre> classDiagram class INDIVIDUAL { Last Name } class EMPLOYEE { Social Security Number } class CUSTOMER INDIVIDUAL < -- EMPLOYEE INDIVIDUAL < -- CUSTOMER </pre>	<p>An Individual can be an Employee or a Customer. Because the Last Name is in the Individual entity, last name is required for Employee and Customer. If the Individual is an Employee, a social security number is required. If the individual is a Customer, a social security number is not collected.</p>
 <pre> classDiagram class PLAN class APPROVED_PLAN { Approved Plan Date Approver Name } PLAN -- APPROVED_PLAN : approves </pre>	<p>If the plan is approved, it must have an Approved Plan Date and the Name of the person who approved it. There can be, at most, only one Approved Plan for a given Plan.</p>

Chapter V. Data Development Process

The data development process can follow one of two approaches (Data Standard Development Approach or Standardized Dataset Development Approach) based on the timeframe needs of the business, the availability of data, the complexity of developing a data standard and other considerations. The implementation of a data standard or standardized dataset depends upon the recommended solution, either a geospatial dataset or a new or modified application (database). The following diagram shows the high level cycle of the data development process.

The letters do not indicate order or flow. They are for cross reference to the detailed diagram and the text associated with each process.

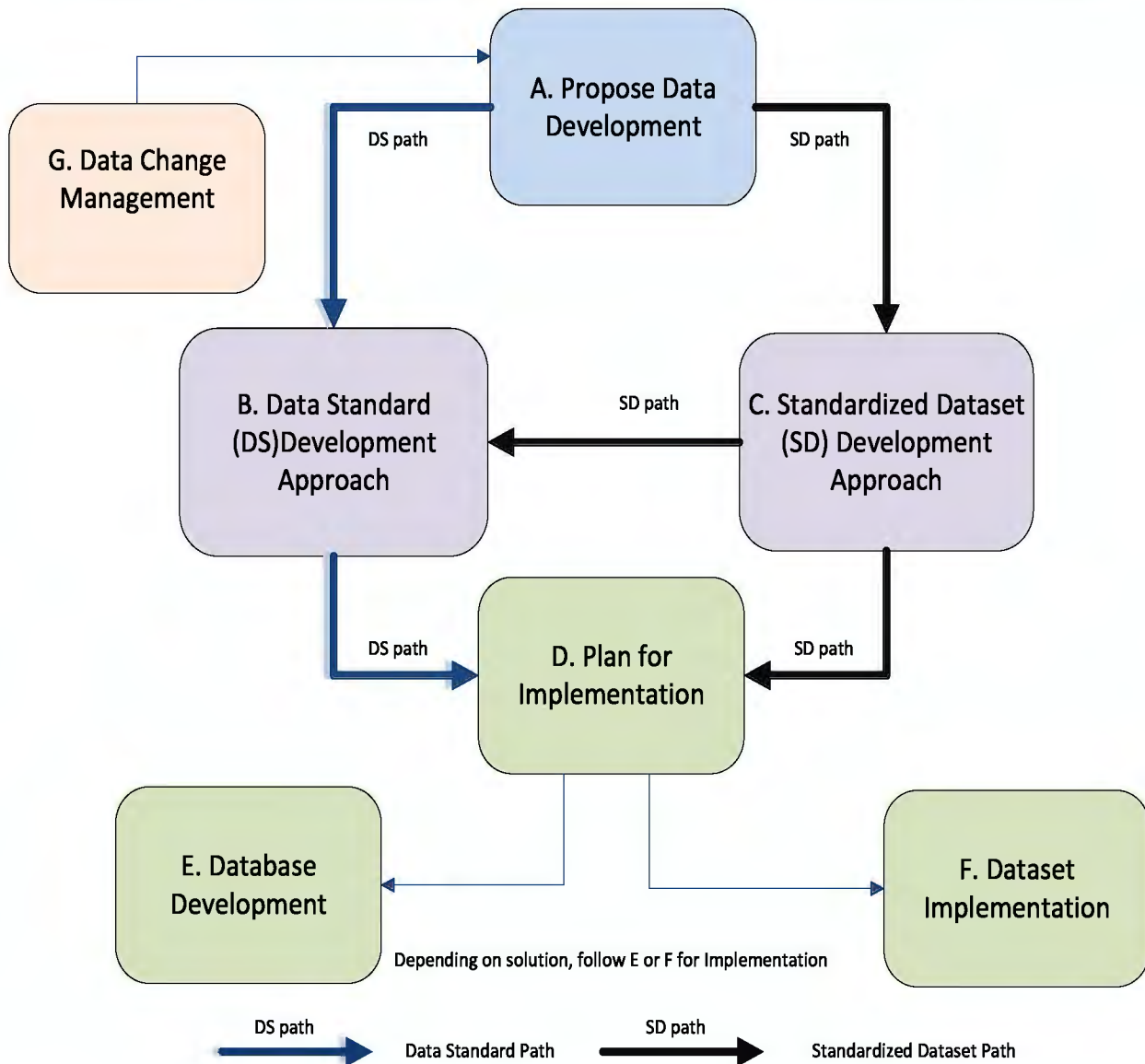


Figure V-1: Data Development Life Cycle

Each of the above major processes is shown in more detail in the following diagram. The steps are iterative and are described in detail in this chapter.

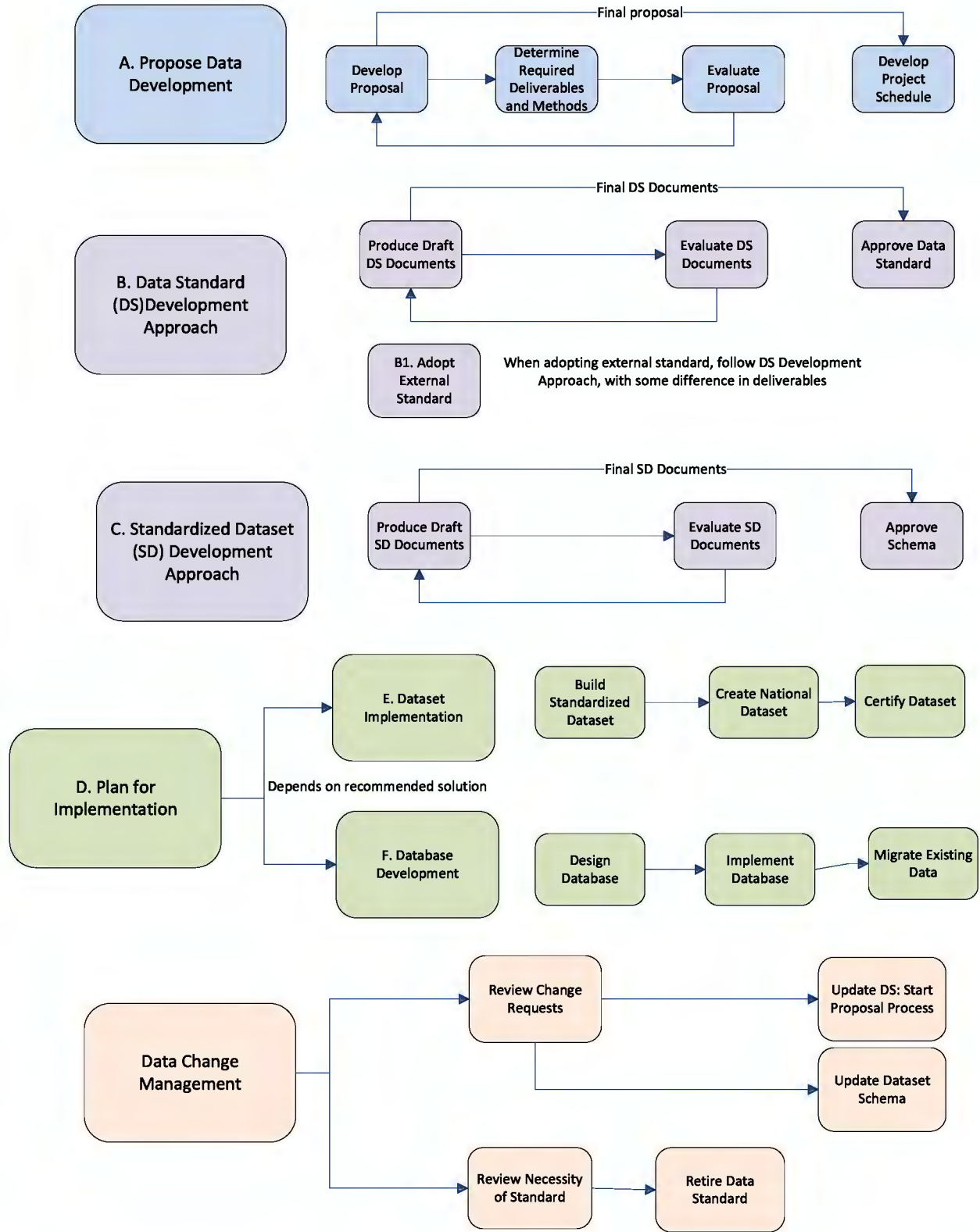


Figure V-2: Data Development Process

A. Propose a Data Development Project.

Once a specific dataset or data type has been made a priority, work can commence on the development of the data standard or a standardized dataset. In other cases, an existing data standard may require modifications and a data development proposal is required. A proposal is also required for the adoption of a data standard that was developed externally.

Proposing a new data development project will involve four steps: 1) develop the proposal, 2) determine the required deliverables and methods, 3) evaluate the proposal and 4) develop a project schedule.

Deliverables Produced:

- i) The **Data Development Proposal** sets out all the information needed by management to decide whether this effort should go forward. A proposal is desirable because of the significant commitment of labor and travel funds implied by some of this work, and to communicate to all interested parties the intended scope and participation by industry and government in the effort. An important element is to determine whether or not the standard should be developed first (Data Standard Development Approach) or that it is imperative that a standardized dataset (Standardized Dataset Development Approach) is available before the data standard can be completed. Also, a review of existing external standards can be conducted to see if one or more meets the needs of the BLM.

The desired content of a data development proposal includes information on the scope and need for the data specific business benefits, the overall high-level schedule and milestones, participants and stakeholders, data quality measures, and program impacts of completing the work. A list of deliverables is included and based on which one of the two approaches is taken. The Data Development Proposal Template can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).

- ii) The **Project Schedule** documents the tasks, time frames and who is responsible for completing each task and deliverable for the data development project.

1. Develop the draft proposal

The BLM Business Data Steward will identify a data development team leader (business representative), and obtain necessary management approvals. The data development team leader will nominate appropriate specialists to participate in a data development team. It is suggested that at least one team member be a member of the NOC Data Management team, in order to facilitate coordination with other ongoing standardization efforts.

This proposal will be coordinated with other data development efforts (usually through the NOC Data Management team). The team will consult with other organizations and NOC Data Management to ensure the new data effort does not duplicate existing or emerging standards, and to obtain the widest appropriate participation of government and industry in the data development process. Straightforward adoption of existing standards may dispense with the more formal elements of project management, but this adoption should not be seen as reason to skip formal elements of project management such as approvals or coordination processes as set out in this guidance.

2. Determine the required deliverables and methods

Determine the required deliverables and methods for completing the work. Based on the approach, specific deliverables are required. All BLM data standards require a Data Standard Report, Domain Document, Data Quality Assurance and Control Plan, and Metadata Description. For a standardized dataset the deliverables are a Standardized Dataset Report, Domain Document, Data Quality Assurance and Control Plan and Metadata Description. Other deliverables may or may not be required depending upon the final plans for implementation of the dataset.

In cases where a standard is developed cooperatively with another agency or an industry consensus standards organization, the particular standard development process may be dictated by that organization or by an agreement of all parties involved. For example, if a standard is being developed under the umbrella of the American National Standards Institute (ANSI), the ANSI processes will be appropriate. In other cases, FGDC procedures may be followed for geospatial-related standards. Detailed guidance for every step of the FGDC process can be found at: http://www.fgdc.gov/standards/standards_publications/.

The process should include at least the following:

- a) Establish team administration rules and agreements to govern membership, resolution of disagreements, and meeting schedules.
- b) Coordinate and interact with related standards development or maintenance efforts. Review existing standards and formats, as well as common practices in the field, to determine whether, and to what extent, this effort can build on existing standards and experience.
- c) Maintain continuing informal review by a broad spectrum of cross-program professionals in the affected fields, in order to migrate successive drafts toward a consensus that serves most business needs, and that will survive formal review in subsequent steps.
- d) Perform formal project management. This is especially important in this particular step, because the constant reviews early in the project may very well yield recommendations to expand or redirect the scope of the standard. Changes in scope may be perfectly appropriate. However, the data standard adoption team leader must ensure that any proposed change in scope is evaluated for impacts on the work breakdown structure, schedule, budget, and risks.
- e) Create thorough documentation of team meetings, decisions, and products. These must be managed and maintained according to guidelines for records management, during and after the project.
- f) Perform formal testing of the draft standard, against a challenging variety of datasets.
- g) Conform to OMB Circulars A-16 and A-119, Executive Order 12906, and any other relevant directives.
- h) Ensure that the effort complies with all DOI and Government-wide directives concerning implementation of the Extensible Markup Language (XML), including mandatory creation of XML vocabularies.

- i) Develop implementation cost estimates, i.e., the direct cost of changing a standard and obtaining new consensus; the costs to BLM in lost productivity during the conversion; and the costs associated with modifying databases, data content, metadata, and automated applications that employ affected data.

3. Evaluate the proposal

Formal evaluation of the draft proposal is the first opportunity to engage all the reviewers who represent stakeholders in this project. The data development team leader will ensure that reviewers get this opportunity, and that their concerns and suggestions are considered. The review process must include the appropriate levels of management. When a final proposal is ready, the data development team leader will forward it to the BLM Business Data Steward for approval. Generally, the Data Management team will publish both the draft and final proposals. If the Standardized Dataset Approach is taken, it must be reviewed by the Bureau Data Administrator for national datasets.

If approval is received, the approved proposal advances to the next step, either the Data Standard Development Approach, starting on page V-5 or the Standardized Dataset Development Approach, starting on page V-8.

4. Develop a project schedule

Major data development efforts may best be managed as formal projects. In those cases, the data development team will develop a scope, strategy, work breakdown structure, schedule, and budget for BLM participation in adopting the standard, and will track progress and costs throughout. The team will identify stakeholders, within and external to BLM, who will be included in reviews of team products. If the solution is an application with a database, the project schedule for the application needs to include the steps as documented in this handbook.

B. Data Standard Development Approach

After the proposal for developing a data standard is completed, produce the standard itself, perform reviews, and officially establish the standard. Developing the new data standard involves four major steps: 1) produce draft data standard documents, 2) produce implementation guidelines (optional), 3) evaluate the data standard documents, and 4) approve the data standard. These steps can be iterative, with several versions of the document being developed and reviewed.

Deliverables Produced:

- i. The **Data Standard Report (DS Report)** is the required document for a new or revised BLM National Data Standard. The DS Report is what the BLM uses to accomplish the DOI Data standards requirements. The draft report includes four main parts: 1) general description of the standard, 2) characteristics of the datasets, 3) A logical data model (see Chapter IV Develop the Logical Data Modeling), 4) business Rules for use of the data as described in detail in Chapter VII Business Rules.

The introduction to this report updates the information from the proposal document about scope, purpose, benefits, stakeholders, criteria, and implementation costs. It describes the participants, processes, comments, and conclusions of the study itself.

There are data-related business rules which are captured in the logical data model (see page IV-5) and there are other business rules which are relevant to the data standard. These business rules show up as part of the regulations or guidance to the programs (e.g., Code of Federal Regulations, BLM Manuals, Handbooks, Instruction Memoranda (IMs), and other guidance material). Some rules may not be documented, and may be commonly assumed or known informally by senior managers or seasoned program specialists. Once the data modeling is completed and the rules documented, they can help in developing data standards for the data to be captured, managed, and maintained.

The Data Standard Report Template can be found on the BLM Data Management SharePoint, under Handbook Materials (left panel).

- ii. A **Data Standard Domains** document describes data elements in the data standard that have a specific list of valid values that must be used. The Data Standard Domains Template can be found on the **BLM Data Management SharePoint**, under Handbook Materials (left panel). The data modeler and GIS analyst or database administrator are both responsible for the Domain Document, ensuring that the logical and implemented domain values are documented.
- iii. The **Data Quality Assurance/Control Plan (DQAC Plan)** outlines the processes for the assessment of quality of the initial dataset or database and for its continuous improvement over time. It includes the acceptable quality level of the initial dataset or database, how often the data will be reviewed each year, how audits will be conducted and the process for ensuring data quality improves and errors are corrected as soon as possible. The Data Quality Assurance and Control Plan template can be found on the **BLM Data Management SharePoint**, under Handbook Materials (left panel).
- iv. The **Implementation Guidelines** document is included with the development of the data standard; however it acts as a bridge to the step, Plan for Implementation. This document is designed to assist BLM users in understanding the data standard by providing an actual physical data design example. This is particularly important for the geospatial datasets since the Implementation Guidelines show the features and feature datasets along with complete domain tables.

The additional benefit of using this document is that many people in the BLM are not trained to be able to read, use, and implement a database from a logical data model. The steps for 'de-normalization' can be interpreted in multiple ways and different hardware and software platforms often result in variations during the implementation stage. Providing a bridge document that converts the documented standard to an implementation design allows the BLM users to more rapidly and consistently implement the data standard across the whole organization. The template for the Implementation Guidelines can be found on the **BLM Data Management SharePoint**, under Handbook Materials (left panel).

- v. An **Empty Geodatabase** (GDB) for spatial data is created with GDB topology rules (data integrity rules between spatial components) applied. This can be used by the GIS staff to review how the data standard was implemented. Example data may be included in the empty Geodatabase to aid in the understanding and use of the geodatabase schema.
- vi. The **DQAC Checklist** is a corresponding document with the DQAC Plan. It is a spreadsheet that documents the quality check for each attribute in each feature class and/or data table in the dataset. In some cases, the attribute's value must be correct for each feature. The DQAC Checklist template can be found on the **BLM Data Management SharePoint**, under Handbook Materials (left panel).
- vii. Metadata Requirements are included in the **Metadata Description**. The Metadata Description is the characterization of the dataset, including its intended use and limitations. It includes a brief narrative summary of the dataset, the intentions with which the dataset was developed and the purpose of the dataset.
- viii. The **Comments Resolution Report** documents the comments and the resolution of each comment received during the review period(s) of a data standard. Comments can be made on the Data Standard Report, Domain document, Implementation Guidelines and the empty GDB.
- ix. An **Instruction Memorandum (IM)** formally identifies and declares the standard. The IM is usually issued from the office where the principal business Data Steward resides, following BLM processes and templates. The Template for the Data Standard IM can be found on the BLM Data Management SharePoint, under Handbook Materials (left panel).

1. Produce draft data standards documents

The data development team and the team leader perform the majority of the work involved in developing the data standard. This team may include members from outside the BLM and can be led by a representative of another organization. In such a case, the BLM data team leader is appointed, and manages the BLM team participation and approval processes.

The data modeler works on the business data requirements, including a logical data model for the data standard. The data modeler will also complete most of the draft Data Standard Report, which documents the logical metadata elements. The DQAC Plan and Metadata Description are completed by the GIS Analyst or the Business Analyst in conjunction with the business data steward(s).

If there is a geodatabase, a GIS Analyst is responsible for developing the national schema and an empty geodatabase. Example data may be included in the empty Geodatabase to aid in the understanding and use of the geodatabase schema.

2. Evaluate the data standard documents

After a draft Data Standard report has been completed by the team, it is sent to the stakeholders for their review and comment. The data development team will determine its stakeholders early in the project, and will update this list as needed throughout the project. The teams evaluation should be guided by any criteria, requirements, or directives regarding

the data that may be provided by the business component of the BLM or other participants. These criteria, at a minimum, would include the original statement of requirements that initiated this data development effort. The evaluation process also may include sending the draft report to reviewers from the public, other affected agencies, and any regulatory bodies that could be affected. For example, a river management commission may be vitally interested in the exact nature of water quality data that will be collected after a new standard is adopted.

The data development team leader will consolidate all stakeholder comments into a record document or memorandum, with an indication of the appropriate disposition of each. Depending on the extent of revisions required, the team leader then will pass the comments back to the data standard adoption team with instructions either to redraft the standard, or prepare a final standard report. If a redraft is required, the result must be routed back through the evaluation process. Otherwise, the data standard documents are finalized in preparation for issuance of the Instruction Memorandum.

3. Approve the data standard

The final, fully-reviewed Data Standard Report is forwarded to the appropriate BLM Business Data Steward who will coordinate approval steps with others who may have approval authority. An approved final data standard, which will be surnamed and issued as an Instruction Memorandum, is routed by the BLM Business Data Steward to the next process step, Plan for Implementation, starting on page V-10. The data standard is also routed to the appropriate representative maintaining the BLM metadata repository to ensure the standard is properly recorded.

The adopted final standard is routed to the appropriate representative for inclusion in the BLM national metadata repository.

C. Standardized Dataset Development Approach

A standardized national schema will be created following the proposal for developing a standardized dataset if the standardized dataset development approach is selected. The standardized national schema consists of a shared set of attributes and domain values, capable of being seamlessly compiled to a National dataset.

There are various ways to complete the standardized national schema. One method is for states and field offices to provide their existing schemas and domains for the dataset for some data analysis. Once there is an understanding of existing schemas a common set of attributes can be agreed to. Next, there is an evaluation of the domains to determine which ones to use. The team will then determine the best method for compiling the national dataset. States can either change their schema to meet the common schema or the NOC can convert the data to the common schema when compiling the national dataset.

Developing the new standardized dataset involves three major steps: 1) produce draft dataset documents, 2) evaluate the dataset documents, and 3) agree to national schema. These steps can be iterative, with several versions of the schema being developed and reviewed.

Deliverables Produced:

- i. A **Standardized Dataset Report** documents the Common National Schema, domain values and business rules associated with the standardized dataset. It includes a data

dictionary and a diagram of the schema. The schema will help ensure that the standards are applied as desired. It will also document the process for providing data from the states to the national dataset. The template for this can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).

- ii. An **Empty Geodatabase** (GDB) with GDB topology rules applied. In the case of spatial data, this may be required. Example data may be included in the empty Geodatabase to aid in the understanding and use of the geodatabase schema.
- iii. The **Data Quality Assurance/Control Plan (DQAC Plan)** outlines the processes for the assessment of quality of the initial dataset or database and for its continuous improvement over time. It includes the acceptable quality level of the initial dataset or database, how often the data will be reviewed each year, how audits will be conducted and the process for ensuring data quality improves and errors are corrected as soon as possible. The Data Quality Assurance and Control Plan template can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).
- iv. The **DQAC Checklist** is a corresponding document with the DQAC Plan. It is a spreadsheet that documents the quality check for each attribute in each feature class and/or data table in the dataset. In some cases, the attribute's value must be correct for each feature. The DQAC Checklist template can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).
- v. Metadata Requirements include the **Metadata Description**. The Metadata Description is the characterization of the dataset, including its intended use and limitations. It includes a brief narrative summary of the dataset, the intentions with which the dataset was developed and the purpose of the dataset. The DQAC Checklist template can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).
- vi. The **Comments Resolution Report** documents the comments and the resolution of each comment received during the review period of a standardized dataset report. Comments can be made on the Standardized Dataset Report, Domain document, QA/QC Plan, and the empty GDB.
- vii. An **Instruction Memorandum (IM)** formally identifies and declares the dataset. The IM is usually issued from the office where the business Data Steward resides. The Template for the Standardized Dataset IM can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).

1. Produce Draft Standardized Dataset Documents

The major work of developing the standardized dataset will be performed by the data development team and the team leader. The team will request existing schema designs from the states and field offices. The team will work with the states and field offices to determine which elements need to be part of the common national schema based on national business requirements. These will be documented in the Standardized Dataset Report. The valid values for attributes with domain values will be analyzed and shared, and an agreed to list of domain values will be documented. The Data Quality Plan and Metadata Description are completed by a GIS Analyst or a Business Analyst in conjunction with the data steward(s).

If there is a geodatabase, a NOC GIS Analyst will be responsible for developing the national schema and the empty geodatabase.

2. Evaluate Standardized Dataset Documents

After a draft team report has been completed, it is sent to the stakeholders for their review and comment. (The data development team will determine its stakeholders early in the project, and will update this list as needed throughout the project.) Their evaluation should be guided by any criteria, requirements, or directives regarding the data that may be provided by the business component of the BLM or other participants. These criteria, at a minimum, would include the original statement of requirements that initiated this data development effort.

The data development team leader will consolidate all stakeholder comments into a record document or memorandum, with an indication of the appropriate disposition of each comment. NOC data staff will provide support for this task. Depending on the extent of revisions required, the team leader then will pass the comments back to the team with instructions either to redraft the schema, or prepare a final report. If a redraft is required, the result must be routed back through the evaluation and review process. Otherwise, the documents are finalized in preparation for implementation.

3. Approve National Schema

The final, fully-reviewed Standardized Dataset Report is forwarded to the appropriate BLM Business Data Steward who will coordinate approval steps with others who may have approval authority.

D. Plan for Implementation

The implementation of a data standard or standardized dataset depends on the recommended solution. A data standard can be implemented as a stand-alone geospatial dataset or in an alpha-numeric or geospatial application. Both may require migration of existing data. Orderly migration of the Bureau's legacy data to new standards will support data sharing and re-use, reduce data duplication and costs, and supporting the Bureau's transition to a more efficient Enterprise Architecture. However, migration can be costly, complex, and disruptive, if changes are not carefully planned and shared. The quality of the data needs to be carefully managed to ensure that is of the same or better quality when migrated.

Deliverable Produced:

- i. The Data Development Implementation Plan is an aid to planning, tracking, and reporting on the progress that teams are achieving in collecting and providing data in the new standardized schema. An Implementation Plan is required for implementing a standardized dataset. The details in the document should include the timelines for activities and identify the responsible parties. An Implementation Plan for data in an application is also required to as part of project plan for application development.

1. Develop an implementation plan

Implementing a new standard or standardized dataset normally is a long-term process. All new data that is collected will conform to the new schema. Modifying existing datasets into

conformity will proceed only as business needs dictate. Collection of new data to the standard may require significant changes to existing software and databases, and may be delayed. Business needs may dictate that an existing dataset be retrofitted to the new standard immediately, while other datasets transition only as new data replaces old. These business needs are incorporated into an implementation plan.

Once the finalized standardized dataset and schema have been approved, the data development team will coordinate the creation of a practical implementation approach, in close cooperation with the BLM Business Data Steward and all stakeholders. Extensive coordination is required because only BLM business interests can specify priorities and long-term schedules, and make credible estimates of the costs and labor required. If this step is performed effectively, the development and evaluation of the implementation plan will be simplified.

Having outlined a general approach, the team can proceed to develop a formal implementation plan. The implementation plan should include all the elements of a project plan, to include scope and objectives, success criteria, methods, responsibilities, work breakdown, schedules, budgets, and risk assessment. It also includes documenting the metadata, certifying the data and publishing the data

This plan will receive widespread review by the established list of stakeholders, and any concerns will be addressed. The final implementation plan will be submitted for BLM management approval and funding. The plan will be implemented by an Instruction Memorandum.

2. Execute the implementation plan

An approved implementation plan will be executed under leadership of the BLM Business Data Steward. The BLM Business Data Steward and data development team leader will decide whether the data development team should be retained over the entire implementation period, and in what capacity.

Direct responsibility for leading data migration of the geospatial data to new standardized dataset needs to be assigned to a project team at the State level for specific datasets. Frequently, multiple datasets from the States will require migration in a coordinated fashion, to minimize the very real potential for business disruptions.

E. Standardized Dataset Implementation

To implement a standardized dataset, the steps are: 1) build the standardized dataset, 2) create the national dataset and 3) certify the dataset.

Deliverables Produced:

- i. The **DQAC Checklist**, which was developed in an earlier step in both the Data Standard and Standardized Dataset approaches, is now used to document the errors found in the initial dataset submitted to the NOC.
- ii. **Data Certification** is a statement signed by the National Data Steward and in some cases, each of the State Data Stewards that the data contained in the dataset is of sufficient business quality for publication (internal and possibly, external). The Data

Certification template can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).

- iii. A **Standardized Dataset Implementation Instruction Memorandum** (IM) or Information Bulletin (IB) formally announces and approves the Implementation Plan. The IM is usually issued from the office where the Data Steward resides, following BLM processes and templates. When a new data standard replaces an older version, one IM may be used to retire the older version and implement the updated version.

1. Build Standardized Dataset

Each administration state or field office is responsible for making their data available to the NOC in the national schema provided for the standardized dataset. The dataset from each state will be checked for quality using the DQAC Checklist. The results of the quality check with the errors and the number of errors will be provided to each state. The state will need to correct any topology or schema problems that prevent it from loading to the national dataset. The state will also need to correct errors where a specific attribute's value must be correct as documented in the DQAC checklist.

NOTE: A state can extend the standardized dataset to include attributes specific to their state, but will provide only those attributes to the NOC that are included in the national schema.

2. Create National Dataset

Each state's dataset is combined into a national dataset following procedures as developed by the NOC. The data quality is determined for the national dataset using the DQAC Checklist. The results are provided to the states and to the Data Steward(s). Other workflows may be appropriate depending on the national dataset.

3. Certify Dataset

The National Data Steward, and in some cases, the State Data Stewards review the results in the DQAC Checklist. If the data are of sufficient quality, the Data Steward(s) will complete the Data Certification form and approve the data for internal, and possibly, external publication.

F. Develop Application (Database)

Information Technology (IT) applications (or systems) are developed for business personnel to capture, maintain and store data related to their work. The BLM currently has several applications at the local, state and national level that include databases with much redundancy of the same types of data. Overtime, the plan is to create data standards for all national data needs and integrate those into existing and planned applications. The process for developing databases is documented in Chapter VI Database Design.

G. Data Change Management

After the data standard or standardized dataset has been in use, the business community may find that modification is necessary. There may be changes in business requirements due to new legislation or judicial rulings that may require changes in the data or some relationship to other

data. A change board, consisting of the national and state data stewards, should be established to ensure that the course of action decided upon is appropriate for the level of change requested. The change board should meet at least once a year.

1. Review Change Request

The data stewards will review the change requests on an annual basis unless there is a critical need to change the standard more quickly. If the needed modifications are substantial enough to warrant a major revision of the Standard, the National Data Steward for the program will follow the process documented in detail in Chapter V Data Development. Examples of major changes include business data requirements that alter or add new business rules and/or add or change entities and attributes in the data standard. If Items are minor in nature and can be incorporated into the existing standard with minimal effect on the field, then the data standard can be updated as well as the Geodatabase or database. Implementation guidelines and an implementation plan must be provided to the field. Minor changes include:

- a) Addition of domain values that do not affect the definition of the attribute. A change in the domain values that can be easily converted by BLM personnel.
- b) Addition of a data element to the Geodatabase or database that is already documented in the data standard and the values are only expected on any new or updated records or features.

To request a change to a data standard, document the data standard name and the detailed change request and submit to the email group BLM_Data_Standards@blm.gov.

If a change is requested for an approved standardized dataset that as yet does not have a data standard, the Standardized Dataset Approach is followed.

2. Review Necessity of Data/Retire Data Standards

A data standard or standardized dataset may outlive its usefulness to the organization or it may be superseded by one developed outside of the organization. When this occurs, the BLM should officially retire the data standard or dataset by use of an IM while also, if appropriate, identifying the replacement for the dataset.

Deliverable Produced:

- i. Retired Data Standard IM documents the reasons why the data standard is no longer required by the BLM, usually because the data are no longer mission critical or the data are now covered by another external data standard.

Chapter VI. Database Design

Database design and implementation builds on the information gathered during the conceptual and logical modeling phases and imposes the database concepts and features specific to the Database Management System (DBMS) chosen and the needs of the application being developed.

Database design is a set of iterative activities within a systems development lifecycle (SDLC) that includes design, description, and specification of data designed for developing data solutions. It includes the development information products (screens and reports) and the interfaces for data access.

This handbook will not include information on technology because of the myriad of choices for data solutions.

A. Concepts

Database design is the specification of data for automated business data processing. It uses models to enhance communication between Information Technology (IT) and the business. Usually a database approach is considered if there are multiple processes, users and data sources. The design of the application schema will determine the usability and query ability of the application.

A database is a collection of data that is organized for a particular purpose. Flat file databases store all data in a single table, usually in a grid-like format. Relational databases are a better choice for some applications, because they make data viewing and manipulation easier by eliminating unnecessary duplication of data. Unlike flat files, which store all data in a single table, relational databases separate data by subject into different tables that are then related by common fields. The primary goal of a good relational database design is to make sure that your data can be easily maintained over time. Object modeling is also a choice in developing an application. However, a database design is also required for an object model. A geodatabase is a database designed to store, query, and manipulate geographic information and spatial data; it can include alphanumeric tables and uses the same types of DBMS.

Physical modeling deals with the conversion of the logical or business model, into a relational database model. When physical modeling occurs, objects are being defined at the schema level. A schema is a group of related objects in a database. A database design effort is normally associated with one schema.

B. Goals

- a) To create a well-designed, high-performing, efficient database that provides the necessary data for business to perform its work.
- b) To ensure that all factors such as backup and recovery, security, and privacy have been met to be able to create and maintain the data with quality and integrity.

C. Major Activities

Physical database design is a multi-step process. The process can be modified to meet the specific needs of the business and the database. However, as a general rule, each step should be considered carefully, even if the decision is made that the step is not applicable to this particular database. Although listed sequentially, many steps will most likely be executed simultaneously at times. Each step may be revisited throughout the development, test and production phases as new information and requirements are identified. As the database is designed, it can affect the logical data model if new data requirements are discovered.

If a “NoSQL” database is developed, some of the tasks documented below are not required. “NoSQL” is a type of database which does not adhere to the traditional relational database management system (RDMS) structure; it does not have a schema. “NoSQL” is not a relational database as it is not built on tables and does not employ Structured Query Language (SQL) to manipulate data.

1. Develop Database Design Plan

A database design plan is required prior to actually constructing the physical database to ensure the needs of the business are met. Database planning and management should be an ongoing task for the organization. Each of the tasks associated with the effort may be revisited multiple times during the development and the full lifecycle of the database. The database design plan includes information on:

- a) The hardware and environment required necessary to support database development and implementation.
- b) The disk space and storage requirements which are crucial to the short term and long term success of a database.
- c) The DBMS chosen, which heavily impacts the physical database schema and database instance. Each DBMS uses a unique API, query language, referential integrity constraint structure, and database user structure as well as having different hardware and operating system needs. The DBMS will have one of the largest impacts on physical database design.
- d) The maintenance of the database and application being developed throughout all stages of the lifecycle as well as maintenance of the various database COTS products used throughout the entire project.
- e) The security needs of the data in the database. Procedures for security requirements can be found in the 1264-1 IT Security Handbook. If the data will contain Personally Identifiable Information (PII), financial information or proprietary information, the security needs of the database will increase. Plan for conducting a Privacy Impact Assessment for the database.
- f) Documentation on backup and archiving requirements procedures. Understand the types of emergencies that can reasonably be expected and how they will be addressed during each phase of physical database design, implementation and production. Estimate how much change will occur in the data and database schema at each stage of

database design and implementation and what types of backups are needed to protect data integrity and minimize downtime or redundant work due to data loss.

- g) Requirements for databases that will be used for a finite period of time and will be decommissioned. Determine if there is a known replacement system or points of contact for program or entity in charge of the replacement system.

Deliverable Produced:

The **Database Design Plan** is a simple outline or plan laying out the high level requirements for the database and the interaction between the database and the application layer. The database design plan is a living document and should be reviewed annually. The information contained in the database design plan is derived from the research and decisions made while working through the steps identified in this handbook. By spending time upfront doing careful planning, obstacles, pitfalls and improvement opportunities will be identified when it is the easiest and cheapest to fix. The Database Design Plan template can be found on the [BLM Data Management SharePoint](#), under Handbook Materials (left panel).

2. Select Database Management System

The BLM has several options for the DBMS, including geospatial databases (GDB). Things to consider for the DBMS include:

- a) The type of database: transactional or warehouse or both,
- b) ingest rate and pattern,
- c) update and delete rates and patterns,
- d) retention policies,
- e) data access patterns, data organization and data retrieval patterns,
- f) availability of trained administrators or ability to train administrators,
- g) compatibility with application, technical specifications of business data (spatial vs. non-spatial, BLOB/CLOB support, etc.)

3. Determine Data Security and Privacy Requirements.

BLM must follow all appropriate Departmental and Bureau policy and guidance in developing the data security requirements. As with all other database management processes, this plan should be revisited on a periodic basis to ensure that changes and updates to policy are included in the database management plan.

A Privacy Impact Assessment is also conducted, following the appropriate Departmental and Bureau policy and guidance.

4. Determine User Access Requirements

A key component for data access is a CRUD matrix. CRUD stands for (C)reate, (R)etrieve/Read, (U)pdate, (D)elete. The purpose of a CRUD matrix is to show who or what should have what type of access on a particular table or object. One axis shows the who (user or process) and the other axis shows the database object (table or view). Each individual box will contain any combination of C, R, U, D or nothing at all indicating that user/process should have no access to the table or view.

Production Table	User Type		
	DBA	HR Manager	HR Staff
Employee	CRUD	CRU	CRU
Department	CRUD	CRU	R
Bonus Amount	CRUD	CRU	RU
Employee Grade	CRUD	CRU	RU

Table VI-1 CRUD Matrix Example

5. Determine Backup and Recovery Procedures for all Environments

A database backup and recovery plan is an insurance plan for your data and databases. Development of a solid database and recovery plan will require close consideration of the importance of data and therefore the threshold for lost data, how quickly the database and/or data must be restored, amount of data contained in the database, volatility of data, retention period for backups, storage location(s) for the backups, hardware availability for storage of backups, availability of staff to perform backup and recovery and scheduling of backups. The backup and recovery plan will vary in complexity from database to database and environment to environment.

BLM must follow all appropriate Departmental and Bureau policy and guidance in developing the Backup and recovery plan for each database. As with all other database management processes, this plan should be revisited on a periodic basis to ensure that changes and updates to policy are included in the database management plan.

6. Develop Physical Data Model

A physical data model is created from the logical data model (see Chapter IV Logical Data Modeling.) This may include de-normalization of the logical data model to meet performance, reporting and data access requirements. De-normalization reverses some of the normalization done in the logical model that can be justified because of improvement in performance for retrieval, update and insertion times. De-normalization can mean redundancy of data elements and reduced data quality. If there are supertypes and subtypes, the supertype and subtypes may either be merged into one table with optional columns; or the attributes in the supertype may be removed and its attributes are added to each of the subtypes.

During the conversion from logical to physical database models, the sometimes lengthy full-word descriptive titles used in the logical data model are shortened for simplicity and to avoid table name and column name length issues. Standard naming of database objects improves clarity and understanding. Each DBMS has specific naming rules regarding length of a name, which if any special characters are allowed, whether upper or lower case letters are maintained, etc. As such it is difficult to provide a specific naming convention for database objects. These limitations can also occur within some commonly used commercial software packages. BLM IRM policy and guidelines for physical database naming conventions will be followed for all database development regardless of data type and DMBS involved. Based on the software that is selected for the database, tables and columns (data elements) are given standardized names (see Column / Data Element / GIS Attribute Naming Convention on page A3-12) based on the DBMS restrictions for naming data elements.

One of the first steps taken when creating the physical database tables is to identify the primary keys for each table. At the physical database model level, the focus is no longer on information design but table design. Therefore, the primary key on a physical table may be implemented differently than indicated on the logical data model. For each table, primary keys, surrogate and alternate keys are selected. For each column, default values; primary and alternate keys and indices, super type subtyping (merge, collapse). Foreign keys are also indexed.

Columns not found on the logical data model are frequently added to the physical tables to support auditing operations, calculations, GUI display and additional comment fields. As these additional columns are added to the physical database model, verify that the information is not actually stored elsewhere, is not redundant, is not being added solely to facilitate application development, verify the column names follows the naming convention and the new columns are accounted for in the Database Security Plan, Database Backup and Recovery Plan as necessary. If a column is being added to facilitate application development, the addition should be tabled and addressed during database performance and tuning activities.

Also during this step, the information products are developed. This includes screens, user interfaces, data access, and reports.

Deliverables Produced:

- i. **Updated Database Design Plan**
- ii. **Updated Logical Data Model** (optional) if changes to the logical data model were found during design.

7. Develop Migration Plan (optional)

Data extraction, transformation and loading (ETL), also referred to as data migration, is a multi-step process which extracts data, usually from an external source, transforms the data from the source database to fit the format and needs of the target database and then finally loads the transformed data into the target database. ETL or data migration may occur at many points during the various phases of development, test, integration and even production. Frequently, transformation includes data quality checks and possible improvements.

A data migration or ETL plan should address what data needs to be migrated and when, what the possible sources of data will be and if there are any known issues with acquiring that data, what tools will be used including graphic user interface (GUI) tools, scripting languages and DBMS specific tools, the expected number of employees that will be involved in the data migration effort, what skill sets will be required and if any additional training will be necessary. If the ETL effort will take place in stages or steps, clearly identify what data objects will be migrated and when. Address what types of testing will be necessary to ensure the data is migrated completely and correctly. The logical data model is an excellent source for identifying the data objects and the relationships between those data objects. During this stage, the goal is to develop a schedule and identify the various sources of data and possibly begin writing pseudo code. It will not be possible to start performing the actual ETL or data migration until the physical database model is identified or until the physical database objects have been created.

Deliverable Produced:

- i. **Updated Database Design Plan** includes the data migration information to the database design plan.

8. Develop database schema

During initial database schema development it may be possible to designate how tables and associated indexes will be stored both at the physical and logical levels. When possible, separate the indexes from the tables to improve database read and write times. If stored together, performance may be degraded, especially in high transaction rate databases.

Check constraints, foreign key constraints, views and triggers can be leveraged to enforce the business logic at the database level. Each constraint has an impact on overall database performance and the benefits of data integrity vs. database performance must be weighed. Depending on whether the data in the database will be accessed via an application only or through an external script or command line can greatly impact the level of business logic enforcement warranted in the database.

If the database will only be accessed by an application, it may be entirely feasible to develop a physical database schema that contains few if any check and foreign key constraints. However, if there is a chance the data will be created, modified or deleted via any other access method, including external scripts or DBMS command line, at least minimal database integrity constraints should be implemented. If the application will be designed to do very little enforcement of business data logic, then those logic tests should be implemented in the database. Ultimately, each database and application must find the appropriate level and location of data integrity enforcement appropriate to the system.

Deliverables Produced:

- i. **Database schema** is the structure of a database system, described in a formal language supported by the DBMS. In a relational database the schema defines the tables, columns in each table, and the relationships between the columns and tables.
- ii. **Updated Database Design Plan**
- iii. **Updated Logical and Physical Data Models (optional)** if changes to the logical or physical data model were found during design.

9. Conduct Performance Tuning

The performance of a database is impacted by an almost limitless number of possibilities. One of the largest factors contributing to poor database performance is a poorly designed database schema. Poor database design can result from an inadequate understanding of the data and the relationships in the data, poor implementation of the database schema including too many or too few associative tables, improperly distributed tables and indexes at the logical or physical database level.

The majority of DBMS automatically create primary key indexes on the designated primary key of each table. Additional indexes can be created to improve data retrieval speeds. Improved retrieval can decrease data insert and update speeds because of the additional writes necessary to maintain the index(es). The number and order of columns in an index can greatly

impact retrieval speeds, especially during queries requiring a sort. Indexes also require additional data storage and will increase the overall size of your database.

Views can be used to speed data retrieval and facilitate report writing, provide another perspective of certain data or summarize data. Views are based on queries and data retrieval speed from a view will be impacted by the number of joins required to retrieve all the requested data as well as the indexing on those tables and the amount of data in those tables.

The database schema may change over time as testing of the database occurs. These changes may affect the logical data model and database design and schema.

Deliverables Produced:

- i. **Updated Database Design Plan**, updates based on changes to database design, including views, functions, triggers, stored procedures, and information products (screens/reports).
- ii. **Updated Logical and Physical Data Models (optional)** if changes to the logical or physical data model were found during design.

10. Implement database

The Migration plan is followed to move the data from the old database to the new database. The data must be checked for quality, following data quality checks as documented in the Data Quality Plan. Once the quality has been reviewed by the data steward(s), it is certified for release for implementation.

11. Finalize Database Documentation

If implementation has caused a change in definition, confirm updated definitions of the data items are correct and update the data dictionary. If implementation has resulted in an improper change to definition, address error in implementation; carefully document either circumstance in the database design document.

Complete and accurate documentation created during the development process will make it easier to maintain, recover and/or expand the database and application. The tool(s) used to create the documentation is secondary to the purpose of providing information to users and developers of the system after the initial developers and users have moved on to new projects. Complete, accurate and usable documentation prevents the loss of tribal knowledge as developers and architects leave the project.

Finalization of the database documentation should be relatively easy if the documentation was updated throughout the development process. Each of the deliverables detailed previously is part of the final documentation package. A final push to update the appropriate documents to include the latest changes to the database and relevant portions of the application is necessary.

Deliverables Produced:

- i. **Final Database schema**
- ii. **Final Database Design Plan**
- iii. **Final Logical and Physical Data Models**

D. Roles and Responsibilities

Roles and Responsibilities for all data management functions are documented in Appendix B: Data Management Roles & Responsibilities in H1283-1.

The Division of Information Resource Management (DIRM) at the National Operations Center (NOC) is responsible for the tasks documented in this chapter.

E. Technology and Tools

1. Use of Computer Assisted Software Engineering (CASE) Tools

The BLM will strive to use automated tools to assist in the development and documentation of its business and data models. CASE tools will be used to develop the models and to maintain the enterprise data model for the BLM.

Chapter VII. Business Rules

This chapter defines the Bureau approach for identifying, defining, and constructing business rules and provides:

- a) Guidelines for collecting and submitting business rules.
- b) Definitions and examples of business rules.

Guidance for business rules collection ensures that business rules are collected and documented in a uniform and common manner. An approach is provided for collecting information that contains the context, rationale, and enterprise architecture significance of business rules. Within this document, the terms “data” and “information” are used interchangeably.

A. Concepts

Business rules describe the limitations put on the business either by practice or by legal authority. They provide a formal structure for understanding the business operation. There are generally two perspectives from which business rules are described:

From a business perspective, business rules are operating principles that define and control business activities and the products and services they deliver. Business rules typically define who can take what actions and under what circumstances, and are generally expressed in terms of policy, procedures, and guidelines. SMEs are the main sources for information on these types of business rules.

From an information system and data perspective, business rules dictate how data is managed and accessed. These types of rules specify constraints on the creation, update, use, archival, and disposal/deletion of data. These types of rules may be created by the SMEs and Data Stewards, but may also be created by the developer and data experts for a particular application in conjunction with the SMEs and Data Stewards.

B. Goals

Identifying and documenting business rules generally occurs during business process analysis, Business Process Improvement (BPI) and/or system requirements development. We collect business rules to:

- a) Analyze what information the business needs to support its activities.
- b) Identify and document the Bureau’s business priorities and policies.
- c) Provide traceability and accountability for business decisions to our public.
- d) Gain an understanding of the Bureau’s national and state information technology (IT) needs in relation to the actual business processes they support.
- e) Improve and support data quality and integrity by defining and documenting the data requirements needed by the BLM.
- f) Document business knowledge, which can be used to educate and train new employees.
- g) Provide better communication within BLM business units, as well as between the BLM and private businesses and other government agencies (i.e., establish a platform

for business collaboration/partnerships) which will facilitate the exchange of information.

1. Benefits of Documentation

Administration priorities, laws, regulations, and technology often change. The systems and business processes that help us meet business objectives are affected by those changes. Documented business rules help to identify the impact of such changes. Understanding where business rules are redundantly implemented helps to identify overlaps in operational procedures, thereby aiding business process reengineering. While it can involve a tremendous amount of work, documenting business rules provides a basis for identifying areas where the Federal Government can consolidate business functions, allowing agencies to make better business decisions.

C. Major Activities

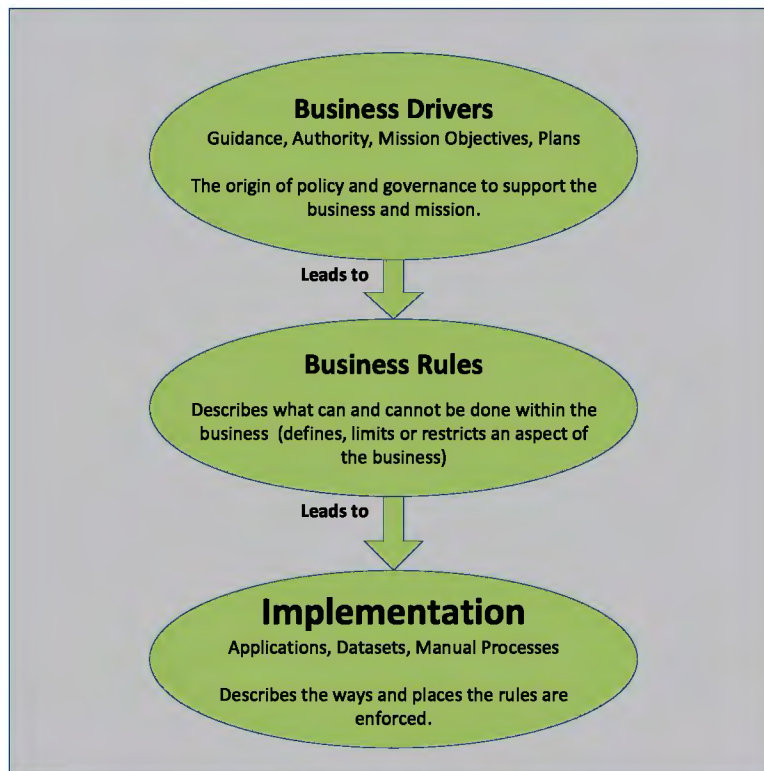


Figure VII-1: Business Rule Model

The Business Rule Model shown in Figure VII-1 above demonstrates the overall concept for business rules. The following describes the concepts shown in the Figure.

1. Determine Business Drivers

Business drivers are the policies, rationale, motivators, and governance procedures that define and shape the business. When collecting business rules, the source of the driver should always be identified for traceability and validation. Business drivers provide insight into why the

BLM does what it does, what it can and cannot do, and how it does it. *Why* the BLM does what it does can be thought of as rationale. Rationale focuses on the reasons (business drivers) behind the business activities, and what external and internal forces direct the business to do.

The origins of the drivers are:

- i. **Authority.** A law, decision, etc., that defines a specific mission requirement or position and high-level constraints. It can be in the form of a Public Law, Executive Order, Congressional Act, Code of Federal Regulations, etc.
- ii. **Mission.** The high-level goals or outcomes the business is meant to achieve. The mission tends to drive objectives, plans, and guidance.
- iii. **Objectives.** A statement of an attainable, time sensitive and measurable target or state the enterprise intends to maintain, sustain or improve.
- iv. **Plans.** Documented procedures and tactics for a course of action (e.g. strategic plan, land use plan, work plan). Plans indicate the ongoing operational activity and describe what the business is or will be doing on a day-to-day basis.
- v. **Guidance.** The directions and procedures that provide the framework and means to implement the mission, objectives, and plans of the business. Internal and external policies, procedures, directives, manuals, and handbooks are examples of guidance.

2. Document Rules

Rules define, limit, or restrict some aspect(s) of the business. Rules assert business structure and influence business behavior and are governed by the Business Drivers. Rules focus on what can/cannot be done within the business to meet its mission. Standards also specify rules about format and content of information about items in which the business is interested. The types of rules are defined as follows:

- i. **Guidelines** are business statements containing instructions, practices, recommendations, etc., that are not mandatory, but are desired for the business activities. Words or phrases in these statements include optional, recommended, might, could, may, should, etc. Guidelines often set the boundaries or limits for acceptable or desired results from the business activities (e.g., Before a Land Use Plan is prepared, there must be a Pre-Plan showing the types of concerns the specific plan will attempt to address). Examples of sources for guidelines are Best Management Practices, Standard Operating Procedures (SOPs), technical notes, or information bulletins. Quite often, guidelines become *mandatory* overtime.
- ii. A **Business Term** is a word or phrase with a specific meaning for the business in some designated context. Business terms refer to items of significance to the business, such as: case (Case Recordation context vs. Law Enforcement context), plan (Land Use Plan context vs. Project Management context), assessment (Dams Inspection context vs. Land Withdrawal Actions context), or customer (Grazing Billing context vs. Contracting context). A business term can reference a specific business concept. Business terms are independent of how they are represented within the information resource. Ultimately, as business terms are documented, the BLM will possess a valuable “glossary” of its business vocabulary.

- iii. **Standards** specify restrictions on the results actions can produce, conditions on actions, or impose limits. Words or phrases in these statements include must, must not, will, cannot, etc. Standards include mathematical calculations, inferences, facts (a statement of business-relevant observations), and dynamic aspects of the business.

3. Implement Business Rules

Implementation of business rules is the act of putting the techniques and measures in place to execute both automated and manual business processes governed by the business rules. The activities and methods that are implemented to make the rules a reality can be categorized as “actions.” Actions describe how and where the rules are enforced or carried out.

Implementation statements include detailed computations or technical controls, limitations, or restrictions on the data, and may be carried out manually, automatically (computer systems), or both manually and automatically. For example:

Automatic (computer system). Computer applications used to perform a logically related set of activities that collectively executes the business rules. For example, “The annual rental fee for grazing land is calculated as: $\text{annual_fee} = \text{number_acres} \times \text{rental_rate}$, as stated in the RAS System Specification document.”

Manual. A logically related set of activities that collectively accomplish a measurable business goal not using a computer application environment. The intent here is to collect information about the way business rules are implemented without the aid of automation. For example, “We must get the customer’s name and address in order to complete the EOI form, as stated in the EOI Operations Handbook.” Not all manual processes affect data. Many required procedural business activities do not create or maintain data (e.g., rules of employee conduct, rules around the personal use of BLM equipment, how to submit an application).

D. Responsibility

SMEs and Program Leads, functioning as Data Stewards, document the business rules for their respective subject areas and are responsible for the creation and maintenance of business rules. Managers and supervisors also need to ensure that business rules are created and maintained. Data management professionals (data administrators, managers, architects and analysts) assist by outlining the business rules process, documenting the rules in the proper format, and ensuring the rules are stored in the Corporate Metadata Repository (CMR).

Appendix 1: Glossary and Acronyms

A

Access	The ability to view, inspect, or copy Bureau records or data.
Access Rights	The permissions on the computer that allow the user to read, write, update, and delete data.
Accuracy	<p>Accuracy to reality: A quality dimension measuring the degree to which a data value (or set of data values) correctly represents the attributes of the real-world object or event.</p> <p>Accuracy to surrogate source: A measure of the degree to which data agree with an original, acknowledged authoritative source of data about a real-world object or event, such as a form, document, or unaltered electronic data received from outside the organization.</p>
Alphanumeric Data	Any data that do not indicate the location on the ground. It is a combination of alphabetic and numeric characters (can also be called tabular data).
American National Standards Institute	(ANSI) A volunteer organization composed of over 1,300 members (including IT companies) that coordinates the development of U.S. voluntary national standards in both the private and public sectors for the computer industry. It is the U.S. member body for ISO
ANSI	See American National Standards Institute
Atomic Level	Defines attributes that contain a single fact. For instance, "Full Name" is not an atomic-level attribute because it can be split into at least two distinct pieces of data, i.e., "First Name" and "Last Name."
Attribute	<p>A property or characteristic of an entity (also referred to as a data element or data item).</p> <p>ESRI defines an attribute as non-spatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. In the 1283 handbooks, the term ESRI attribute will be used to distinguish the two different definitions.</p>

B

BEA	See Bureau Enterprise Architecture
Bureau Enterprise Architecture	(BEA) A model of the way the BLM currently operates.
BLM	Bureau of Land Management
Business Rule	Statement of policy, procedures, and guidelines that define or constrain an aspect of the business and provide the structure for conducting BLM business. (Example: A Herd Management Area must be associated with a Herd Area.)
Business Term	Word or phrase that has a specific meaning for the business in some designated context such as a case, a business plan, assessment or customer.

C

CDE	See Common Data Element, is also known as Standard Data Element
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Certified Data	Data that has been reviewed and approved by the data steward as having acceptable quality and can be published.
CMAT	Corporate Metadata Advisory Team
CMR	See Corporate Metadata Repository
Common Data Element	CDE
Completeness	A quality dimension measuring the degree to which the required data are known. (1) <i>Fact</i> completeness is a measure of data definition quality expressed as a percentage of the attributes about an entity type that must be known to ensure that they are defined in the model and implemented in a database. For example, “80 percent of the attributes required to be known about customers have fields in a database to store the attribute values.” (2) <i>Value</i> completeness is the first measure of data content quality expressed as a percentage of the required columns or fields of a table or file that actually have values in them. For example, “95 percent of the columns for the customer’s table have a value in them.” Value completeness is also referred to as <i>Coverage</i> . (3) <i>Occurrence</i> completeness is the second measure of the data content quality expressed as a percentage of the rows or records of a table or file that should be present in them. For example, “95 percent of the households which DOI needs to know about have a record (row) in the household table.”
Concurrency	A quality dimension measuring the degree to which the timing of equivalence of data is stored in redundant or distributed database files. The measure data concurrency may describe the minimum, maximum, and average data float time from when data are available in one data source and when they become available in another data source; or it may consist of the relative percent of data from a data source that is propagated to the target within a specified time frame.
Confidential/Proprietary records	Information submitted to the Government in expectation of confidentiality, the release of which would result in substantial competitive harm to the submitter.
Consistency	A data quality dimension expressed as the degree to which a set of data is equivalent in redundant or distributed databases.
Constraint (database)	A Constraint is a rule residing in the database’s data dictionary governing relationships and dictating the ways records are manipulated.
Corporate Metadata Repository	(CMR) The repository that contains the metadata on BLM data including logical information (data standards, entities, attributes, definitions, formats and domains) and physical information (tables, columns, database design, primary keys).
Corporate Data	Data used by or for the BLM, which is considered the property of the BLM. Also refers to data that is used statewide or at least by more than one office
COTS	Corporate off the Shelf

D

DAC	See Data Advisory Committee
DAMA	Data Management Association, the international organization of data management professionals

Data	The things representing facts, ideas, or values which may be processed to produce information.
Database	A defined, automated, shared and centrally managed collection of data. A database is a collection of interrelated data stored in a structured manner.
Dataset	(also Data set) A group of data elements in a table, flat file or a relational database used for statistics, set theory.
Data Administration	The high level function within the BLM for planning, coordinating, and managing BLM's corporate data resource to meet existing and future data and information needs.
Data Advisory Committee	(DAC) The governing body for data management activities at the BLM.
Data Advisory Working Group	(DAWG) The group that provides recommendations for data priorities to the Data Advisory Committee (DAC).
Data Dictionary	A repository of data (metadata) defining and describing the data resource. A repository that contains metadata. An <i>active</i> data dictionary, such as a catalog, is one that is capable of interacting with and controlling the environment about which it stores data or metadata. An <i>integrated</i> data dictionary is one that is capable of controlling the data and process environments. A <i>passive</i> data dictionary is one that is capable of storing metadata or data about the data resource but is not capable of interacting with or controlling the computerized environment external to the data dictionary.
Data Element	(Data Item). The smallest unit of data that has meaning in processing information. Data elements that describe an entity are called attributes.
Data Integrity	A measurement of how well data is maintained in the data resource after it is captured or created
Data Management	(DM) The process and procedures required for all data BLM collects or acquires.
Data Model	A data model is a diagram showing definitions that represents the enterprise data and their interrelationships in a specific and consistent way. It is a definition of the structure, rules, and constraints on data required by an enterprise to conduct all of its business functions. The data model contains entities, attributes, relationships, primary and foreign keys, and rules governing the data. This can be an entity relationship diagram, a conceptual, semantic or physical data model.
Data Modeling	Data modeling is the practice of analyzing and representing the data in a meaningful fashion, easily understood by nearly anyone in the enterprise. Also see logical data modeling.
Data set	See Dataset
Data Standard	The rules by which data are described and recorded.
Data Steward	The data steward manages the facts or information of some aspect of the BLM to ensure that information can be used to draw conclusions or make decisions. Data Stewards at the National, Center, State, and Field Offices are experts for a business subject area,
Data Subject Area	Department of Interior data is divided into high-level groups of business data called Data Subject Areas.

Datum	A geodetic datum is a reference from which measurements are made. In surveying and geodesy, a datum is a set of reference points on the Earth's surface against which position measurements are made, and (often) an associated model of the shape of the earth (reference ellipsoid) to define a geographic coordinate system.
DAWG	See Data Advisory Working Group
Derivation Integrity	A quality dimension measuring the correctness with which derived data are calculated from their base data.
Derived Data	Data that are created or calculated from other data within the database or system.
Dimension	See Quality Dimension
DM	See Data Management
DMBOK	Data Management Book of Knowledge
Domain	Reference Data that has a set or range of valid values for a given attribute or field, or the specification of business rules for determining the valid values. Also see Reference Data.

E

EDF	See Enterprise Data Framework
EGIS	See Enterprise Geographic Information System
Enterprise Data Framework	(EDF) The Enterprise Data Framework is the high-level structure of BLM's critical data that categorizes and provides a common business vocabulary of business entities. It is the basis on which subsequent work on conceptual models, logical models and applications or data standards is completed.
Enterprise Data Model	A logical data model that represents the view of all data for the Bureau. Also called Corporate Data Model.
Entity	A person, place, thing, event, or concept of interest, about which descriptive data is defined, collected, or recorded.
Entity Relationship Diagram	A diagram that graphically represents the entities (data) and relationships (connections between entities) for a specific project, subject area or business area.
ERD	See Entity Relationship Diagram

F

Feature	A representation of a real-world object on a map, such as a point, line or polygon.
Feature Class	A homogeneous collection of common features, each having the same spatial representation, such as points, lines, or polygons, and a common set of attribute columns.
Feature Level Metadata	Metadata that provides information about the accuracy and source of the feature.
FGDC	Federal Geographic Data Committee

FOIA	Freedom of Information Act
Foreign Key	The data element in an entity that holds the value found in the primary key of another entity is called a Foreign Key. (E.g., a state code in an address that ties to a STATE CODE REFERENCE entity.) The child entity on the “many” side of the relationship inherits the primary key of the parent entity. A foreign key is made up of the attributes that appear in the child entity that make up the primary key of the parent entity.

G

Geodatabase	A database designed to store, query, and manipulate geographic information and spatial data.
Geospatial	Data that represents a place on the earth, in one or more dimensions.
Geospatial Data	Data of, relating to, involving, location or place. Often used in the context of Geographic Information Systems (GIS) and map products.
Geographic Information System	A geographic information system (GIS) allows someone to visualize, question, analyze, interpret, and understand data to reveal relationships, patterns, and trends.
GIS	See Geographic Information System
GOS	Government Off the Shelf
GPS	Global Positioning System

HI

Identifiable Form	In relation to the Privacy Act, this term means that information in an IT system or online collection that directly identifies an individual (e.g., name, address, social security number) or by which an agency intends to identify specific individuals in conjunction with other indirect data elements such as a combination of gender, race, birth date and geographic indicator).
Identifier	This is an attribute that is considered a designed primary key (see Primary Key); it is an invention of the data modeler. An Identifier can be created when an entity contains several attributes (possibly from foreign keys) that are required to make an occurrence of an entity unique or if any attribute that makes up a primary key can be optional.
IM	Instruction Memorandum
Index (database)	An index is an object that allows for fast retrieval of table rows. Each primary key and foreign key requires an index in the database to improve retrieval of one or more rows in the database.
Integrity (Data)	The security of information; protection of the information from unauthorized access or revision, to ensure that the data are not compromised through corruption or falsification.
International Standards Organization	ISO is the world's largest developer and publisher of International Standards. ISO is a network of the national standards institutes of 164 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. ISO is a non-governmental organization that forms a bridge between the public and private sectors. ISO enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society.

IRM	Information Resource Management
ISO	See International Standards Organization

JK

KA	See Knowledge Area
Knowledge Area	The Data Management Book of Knowledge is comprised of 11 Knowledge Areas. A knowledge area is a category of specialization for performing data management activities.

L

Logical Data Model	A logical representation of the business data requirements of an organization independent of hardware or software constraints. It documents, usually in a diagram, what data is required and how it should be organized, rather than what operations will be performed. It provides a foundation for data control with specific and accurate data definition. Once validated and approved, the logical data model can become the basis of a physical data model and inform the design of a database or geospatial dataset.
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M

Master Data	Master data is “data about the business entities that provide context for business transactions.” (DAMA, 2009). It is the ‘highly’ shared data of the bureau. This would include individuals, organizations, addresses and financial structures. This data helps to provide the context for transactional data.
Meta data	See Metadata
Metadata	(or meta data) Metadata is documentation about data or a dataset. Metadata describes the content, quality, condition, limitation, source, and other characteristics of data. Metadata is vital in helping potential users to find needed data and determine whether a dataset will meet their needs before they spend the time and money to obtain and process it. Metadata helps to establish the context of data for a shared understanding of the meaning of each data element
Model	A model is a representation of something in the real world. It can be a diagram showing the flow of data between work processes or a diagram of the data and its relationships.

N

NOC	National Operations Center
Non-Duplication	A quality dimension that measures the degree to which there are no redundant occurrences of data.
NTC	National Training Center

O

Object	An object has a well-defined boundary that encapsulates data, state and behavior (task).
OMB	Office of Management and Budget

P

Participation Type	A type that describes the participation by various roles in completing tasks or deliverables, usually described as RASCI (responsible, approve, support, consult, inform).
Physical Name	Names of data elements or tables that are utilized in the software. The names should only be abbreviated to accommodate the particular software system being used. All physical names are linked in the documentation to the Logical data element or entity they represent.
PIA	See Privacy Impact Assessment
Precision	A quality dimension measuring the degree to which data are known to the right level of granularity (e.g., the right number of decimal digits right of the decimal point, time to the hour or the half-hour or the minute, or the square footage of a building is known to within one square foot as opposed to the nearest 100s of square feet).
Primary Key	All entities need to have an attribute, or set of attributes, and foreign keys that make each occurrence of the entity unique. The Primary Key is designed to identify an individual occurrence of that entity. Also called Unique Identifier.
Privacy Act	A law providing protection to people by establishing that no agency must disclose any record that is contained in a Privacy Act "system of records" by any means of communication to any person or to another agency, except pursuant to a written request by, with the prior written consent to, the individual to whom the record pertains. The Privacy Act also contains limitations on the collection and dissemination of information by federal agencies.
Privacy Impact Assessment	Privacy Impact Assessment is an analysis of how information is handled: (1) to ensure handling conforms to applicable legal, regulatory, and policy requirements regarding privacy, (2) to determine the risks and effects of collecting, maintaining, and disseminating information in identifiable form in an electronic information system, and (3) to examine and evaluate protections and alternative processes for handling information to mitigate potential privacy risks.

Q

QAP	Quality Assurance Plan
QA/QC	See Quality Assurance (QA) See Quality Control (QC)
Quality Assurance	(QA) QA is the process of profiling the data to discover inconsistencies, and other anomalies in the data and performing data cleansing activities to improve the quality .Two principles included in QA are: "Fit for purpose", the data should be suitable for the intended purpose; and "Right first time", mistakes should be eliminated.
Quality Control	(QC) QC is the process of controlling the usage of data with known quality measurement—for an application or a process. This process is usually done after a data quality assurance process.
Quality Dimensions	Dimensions are categories of desirable quality attributes about data. Quality dimensions are accuracy, correctness, currency, completeness, derivation integrity, non-duplication and timeliness.

R

RASCI	Stands for the 5 responsibility types: Responsible, Approver/Accountable, Support, Consult, Inform
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Redundant Data	Data that contains the same information which is entered into multiple sources or systems.
RDBMS	See Relational Database Management System
Reference Data	Reference data are data that have a controlled list of values. These values are “used to classify or categorize other data. Also see Domain.
Referential Integrity	Integrity constraints that govern the relationship of an occurrence of one entity type or file to one or more occurrences of another entity type or file, such as the relationship of a customer to the orders that customer may place. Referential integrity defines constraints for creating, updating, or deleting occurrences of either or both files.
Relational Database Management System	(RDBMD) Software that lets you create, update, and administer a set of data.
Relationship	A relationship is the business rule between two entities that denotes how they ‘relate’ or ‘correspond’ to each other. Relationships show optionality (minimum) and cardinality (maximum) between two entities.
Relationship Class	A relationship between any feature class and table within your geodatabase created by using tools in ArcCatalog. These tools can be used to create simple, composite, and attributed relationship classes.
Relationship Validity	A quality dimension measuring the degree to which related data conform to the associative business rules.
Reverse Engineering	Reverse engineering is the process of examining and recovering data or source code from a file and using it to build or update a data model or to discover business rules.

S

Schema	The structure of a database described in a formal language supported by a specific database management system (DBMS) and refers to the organization of data to create a blueprint of how the database will be constructed (divided into tables) with integrity constraints.
Sensitive Information	Information or data that requires protection due to the risk and magnitude of loss or harm which would result from inadvertent or deliberate disclosure, alteration, or destruction. The term includes information or data whose improper use or disclosure could adversely affect the ability of an agency to accomplish its mission, privileged data, and data not releasable under the Freedom of Information Act.
SME	See Subject Matter Expert
Spatial Data	See Geospatial Data
Spatial Dataset	A Spatial Dataset is one that has information that ties to longitudes and latitudes. It can be created by digitizing off a 1:100,000 scale map, with Geospatial Positioning Systems, or hand entered. Because it relates directly to the ground, additional metadata is collected to make it useful to those needing it.
Standard	An accepted measure of comparison for quantitative or qualitative value. An object that under specified conditions defines, represents, or records the magnitude of a unit. Commonly used and accepted as an authority.

Standard Data Element	A data element that has been identified as one that is used across Bureau applications and datasets. Datasets and applications that use this data element should match the type and size specified.
Standard Name	A context-free, shareable atomic level information item that references a business fact. It is the name of an attribute (data element) or entity that does not belong to any particular business application. It has a definition. The entity has the same attributes regardless of where it is used and the attribute has a standard size, format and set of domain values.
Standardized Dataset	A standardized dataset is a national schema that consists of a shared set of attributes and domain values, capable of being compiled to a National dataset seamlessly. The implementation of a data standard results in a standardized dataset
Subject Matter Expert	Someone who is a domain expert with special business knowledge or skills in a particular area or topic.

T

Table (database)	A table in a database is a set of columns that contain data. A table is the physical representation of an entity or entities in a logical data model. A table contains rows and columns. The columns are the data elements (attributes) and each row represents one record in the database.
Tabular Data	Data that pertains to columns that are arranged in a table (in a database). It is sometimes used instead of the term Alphanumeric Data
Theme	A set of related geographic features such as streets, parcels, or rivers, along with their attributes. All features in a theme share the same coordinate system, are located within a common geographic extent, and have the same attributes. Themes are similar to layers.
Timeliness	A quality dimension measuring the degree to which data are available when information consumers or processes require them.

U

UML	See Universal Markup Language
Unique Identifier	See Primary Key
Universal Markup Language	(UML) An integrated set of diagramming conventions for creating object models.

V

Validity	A quality dimension measuring the degree to which the data conform to defined business rules, including definitions and domain values. Validity is not synonymous with <i>accuracy</i> , which means the values are the correct values. A value may be a valid value but still be incorrect. For example, a customer date of first service can be a <i>valid</i> date (within the correct range) and yet not be an <i>accurate</i> date. Also see Relationship Validity.
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W X Y Z

XML	Extensible Markup Language
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Appendix 2: Bibliography

Booch, G., Rumbaugh, J. and Jacobson, I. 1999. *The Unified Modeling Language User Guide*. Upper Saddle River, NJ : Addison-Wesley, 1999.

DAMA International. 2009. *Data Management Book of Knowledge (1st Edition)*. Bradley Beach, NJ : Technics Publications, LLC, 2009.

Juran, J.M. and Godfrey, A.B. 1999. *Juran's Quality Handbook, Fifth Edition*. New York, NY : McGraw-Hill, 1999.

Appendix 3: Modeling, Symbology and Naming Conventions

As BLM develops the Enterprise Data Model, and creates and implements national data standards, it is critical that the names of data items² (logical and physical) are standardized. There are benefits for creating and using a unique, standardized name for each data item that has the same meaning across databases and geospatial datasets.

Benefits:

- a) To create an Enterprise Data Model that represents the data needs of the organization.
- b) To create a national data dictionary that is shared across the BLM with a shared understanding of the metadata (definitions, formats, domain values).
- c) Ability to combine data across states into one national database.
- d) Ability to simplify national reporting and easily combine data from local datasets and different databases.
- e) Ease of public understanding of data at different levels of the BLM.
- f) Well-documented, consistent metadata that can be used for legal issues.

There are naming conventions for each type of data item. In the logical world, business terminology is used to name data items. In the physical world of data, there are limitations on names of data items because of the software used. Logical attribute names can be shortened to fit these limitations through the use of abbreviations or acronyms. The physical name must help convey the meaning of the attribute.

The BLM has a list of current abbreviations and acronyms which can be found in the [Glossary_Terms_Abbreviations](#) spreadsheet available on the [Data Management SharePoint](#) (under Reference Materials, left panel). Use these acronyms or abbreviations when shortening logical names to meet the needs of the software. If there is no abbreviation for a word or term available in the current list, use the [Abbreviation_Guidelines](#) also found on the [Data Management SharePoint](#) (under Reference Materials, left panel).

One or more entities may be combined to create a table. An attribute is implemented as a column in a table for most relational database management (RDBM) tools. In the geospatial world, one or more attributes are implemented in a dataset. The BLM uses ESRI software for geospatial data. ESRI software also uses the term attribute. To help clarify the use of the word “attribute”, this appendix will use “attribute” when discussing logical data elements and “ESRI attribute” when discussing ESRI implementation of attributes.

² Data items: entities, attributes, columns, tables, datasets, feature classes

Table of Contents for Naming Conventions

See page A3-

- A. Entities 3
 - 1. Entity Description 3
 - 2. Symbology and Naming Convention..... 3
- B. Relationships 4
 - 1. Relationship Description..... 4
 - 2. Naming Convention 4
 - 3. Symbology / Notation 4
- C. Attributes 5
 - 1. Attribute Description 5
 - 2. Additional Types of Attributes / Data..... 5
 - 3. Naming Conventions 6
 - 4. Representative Term 6
 - 5. Attributes in a Reference (Domain) Entity 8
 - 6. Attribute Definition..... 8
- D. Data Standard Name and Abbreviation..... 8
 - 1. Naming Convention 8
- E. Relational and GeoDatabases 9
 - 1. Geodatabase Schema Naming Convention – data standards 9
 - 2. Geodatabase Schema Naming Convention – other datasets 9
 - 3. Geodatabase Feature Dataset Naming Convention..... 9
 - 4. Geodatabase Feature Class Naming Convention 10
 - 5. Geodatabase Related Table Naming Convention 10
 - 6. Geodatabase Relationship Class Naming Convention..... 10
 - 7. Domain Table Naming Conventions 11
 - 8. Guidance Table Naming Conventions 11
 - 9. Database Tables Naming Conventions 12
 - 10. Column / Data Element / GIS Attribute Naming Convention 12
 - 11. Standard Abbreviations for Representative Terms 13
 - 12. Trigger Naming Convention 13
 - 13. Index Naming Convention 14
 - 14. Stored Procedure 14

15. View Naming Convention..... 15

A. Entities

1. Entity Description

Entities are the persons, places, events, concepts, or things the organization is concerned about. They provide the data objects that are recorded and tracked by the organization.

There are different types of entities:

A **Fundamental (or Basic) Entity** is a person, place, event, concept, or thing that is not dependent on the existence of another entity.



An **Attributive Entity** is an entity that is dependent (the Child) on the existence of one other entity (a Parent) and resolves when an attribute can have more than one value based on the identifier.

An **Associative (or Characteristic) Entity** is an entity that is dependent on existence of two entities.

Reference or Domain Entity (also known as a Look-up table). This type of entity represents a list of values or domain used as a reference table.

Super and Sub Type Entities. When an entity represents all classes (supertype) or a subset of all classes (subtype). The super type entity contains the shared attributes and relationships for all entities in the group and the two or more subtype entities contain its unique attributes and/or relationships.

2. Symbology and Naming Convention

Entity Type	Symbology	Naming Convention	Examples
All Entity Types	rectangle 	All Capital Letters. Avoid the use of abbreviations, acronyms, special characters, prepositions, articles, and conjunctions	FACILITY HERD MANAGEMENT AREA
Fundamental	Same as above	Noun or Noun Phrase	ORDER, PROJECT
Attributive	Same as above	Fundamental Entity Name + Noun	PROJECT PHASE
Associative	diamond in rectangle 	Combination of the names of the 2 entities it is associated with. The order depends on the nature of the association. There are exceptions to this naming convention, may have business term that is appropriate.	ORDER ITEM
Reference	Same as Attributive	ATTRIBUTE NAME + "REFERENCE" see page	STATE REFERENCE, PRODUCT TYPE REFERENCE
Super Type Sub Type	Same as Attributive Entity Type	Super Type: same as fundamental Sub Type: Qualifier + Super Type Name	PLAN (Super Type), MANAGEMENT PLAN and LAND USE PLAN (Subtypes)

B. Relationships

1. Relationship Description

A relationship is the line between two entities that demonstrates an association between two entities. It is based upon and represents business rules and provides the reason why two entities are related. All entities must have at least ONE relationship to another entity. Relationships have cardinality and optionality.

Optionality: This denotes the minimum number of occurrences an entity has to another entity. The minimum is either Zero (0) or One (1). If the minimum is zero, it indicates that the occurrence entity can be optional. If the minimum is one, the occurrence of the entity is mandatory. This is symbolized as a 0 or a | on the line.

Cardinality: This denotes the maximum number of occurrences an entity has to another entity. The maximum is either One (1) or Many (M). The entity that has 1 occurrence is the parent entity; the entity that can have many occurrences is the child entity. This is symbolized as a “|,” >” or “<” on the line.




Relationships indicate which entity is considered a Parent and which is a Child. The Parent entity is the one that has the single value. The Child is the entity that can have many occurrences for the One Parent entity. ORDER includes 1 to Many ORDER ITEMS. The ORDER is the parent; the ORDER ITEMS are the children.


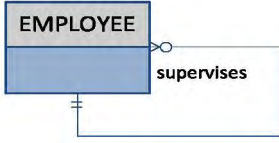
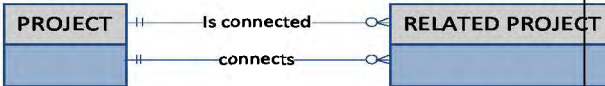
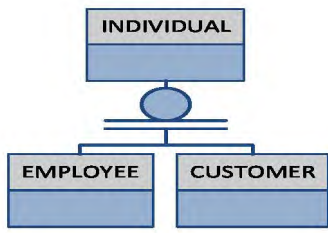
When an entity has a relationship with itself, it is either single recursive (1-to-many relationship with itself) or double recursive (a many to many relationship with itself).

2. Naming Convention

All lower case, only letters	
Active verb phrase: parent to child (the child to parent relationship does not need to be included; however it is read as a passive verb phrase.	
The cardinality is shown closest to the entity rectangle; the optionality is shown further from the rectangle. When reading a relationship, one says the verb phrase, optionality, and then cardinality.	

3. Symbolology / Notation

Relationship	Notation	Examples
0:M (optional to many values)	0 <	 <p>“Customer places zero to many orders”</p>
1:M (a least one value, can have many values)	<	 <p>“Customer places one to many orders”</p>
1:1(one and only 1 value)		 <p>“Order is placed by one and only one Customer”</p>

Relationship	Notation	Examples
0:1 (zero or 1 value)	0	 <p>“Order is placed by zero or one Customer”</p>
Single recursive		 <p>“An Employee supervises zero to many Employees” “An Employee is supervised by one and only one Employee”</p>
Double recursive		 <p>“A Project is connected to zero to many Related Projects”</p>
Supertype/subtype		 <p>“ Individual can either be a Customer or an Employee”</p>

C. Attributes

1. Attribute Description

An attribute is any detail that serves to qualify, identify, classify, or quantify a particular entity. It can be said it is the adjective that helps to describe an entity. An attribute belongs to the entity and only one entity. It has **only one** valid value for an occurrence of an entity at any given time. However, the same value of an attribute may describe more than one entity occurrence.

2. Additional Types of Attributes / Data

Derived data. Derived data values are determined from relationships or calculations. Derived data elements would not be included on the logical model if it can be calculated from the value of one or more attributes or occurrences of an Entity attribute. Derived data can be collected as a business rule (e.g., a royalty amount is calculated as 12.5% of the gross tonnage of a mineral commodity). It can also be included in the physical design for the database. For example, Total Expense Amount can be calculated by adding Event Expense Amount for each relevant entity occurrence. If Birth Date is an attribute, an Age data element would be derived from today’s date and would not be included as an entry.

Primary Key (PK). All entities need to have an attribute, or set of attributes, and/or foreign keys to make each occurrence of the entity unique. The Primary Key identifies an individual occurrence of that entity. A primary key value is never ‘blank’ or null. If the primary key is a linking of several attributes no part of the primary key can be blank. If any part of the primary key is optional or null, use an Identifier (see below).

Identifier: This is an attribute that is considered a designed primary key; it is an invention of the data modeler. An Identifier can be created when an entity contains several attributes (possibly from foreign keys) that are required to make an occurrence of an entity unique or if any attribute that makes up a primary key can be optional.

Foreign Key (FK). The child entity on the “many” side of the relationship inherits the primary key of the parent entity. A foreign key is made up of the attributes that appear in the child entity that make up the primary key of the parent entity. The foreign key enables navigation between the two entities.

3. Naming Conventions

The name of the attribute consists of 4 parts. The 4 parts are combined to create the full attribute name.

Part	Required	Description
Object Class	Required	The first word(s) in the attribute name; usually the entity name or other prime word.
Property Term	Usually	A term specific to the attribute that helps define the content.
Qualifier Terms	Optional	One or more adjectives that make a name unique to the context; the qualifier can either be between the Object and Property or between the Property and RepTerm.
Representative Term (RepTerm)	Required	The last word in the attribute name. One of a controlled set of words (see Representative Term, below) that represents the domain of the attribute.

The attribute is all capital letters, single case, one space (no underscores) between each word. Avoid the use of abbreviations, acronyms, special characters, prepositions, articles, and conjunctions. Some examples: PROJECT NAME, PERSON FIRST NAME, PROJECT STATUS START DATE.

4. Representative Term

Representative terms are used as part (word) of an attribute name to denote the class of attributes. They provide information on the types of values (data types or formats) that attribute can represent. For instance, an attribute designating “Amount” would be represented in U.S Currency with two digits to the right of the decimal allowed.

Representative Term	Definition	Typical Data Type / Format
Amount	A monetary value.	Numeric, with 0 or 2 digits to right of decimal
Code	A combination of one or more numbers, letters, or special characters substituted for a specific meaning.	Alphanumeric, maximum size based on domain values
Coordinate	One of a set of values which identifies the location of a point.	Decimal degrees, minutes, second.

Representative Term	Definition	Typical Data Type / Format
Date	The notation of a specific period of time. Use a qualifier to describe if the date is just the year: Year Date	Stored as YYYYMMDD, can be presented differently based on use.
Identifier	A value that uniquely identifies an occurrence of an entity. An Identifier is usually a designed key which is a combination of one or more numbers, letters, or special characters which designates a specific object and/or entity, but has no readily definable meaning.	Not formatted in the LDM – this is determined during design
Measure	The measurement of something. Use qualifiers to indicate the type of measure: Length Measure, Weight Measure, Degree Measure. If the specific type of measure is known use that as a qualifier: Feet Measure, Gram Measure, Pound Measure. If the specific type of measure can vary; be expressed in more than one type for a specific attribute value, use a UNIT OF MEASURE REFERENCE entity to describe the domain values for types of measure.	Numeric, can have zero or more digits to the right of the decimal
Name	A designation of an object and/or entity expressed in a word or phrase; this is how something is labeled, it is not a description. Use the RepTerm Text if it is a description.	Alphanumeric, size depends on maximum length of the values of attribute
Number	A non-computational numeric value, often used as a synonym for Identifier (e.g. Social Security Number, Phone Number, etc.)	Alphanumeric
Quantity	A non-monetary numeric value.	Whole numbers only
Rate	A quantitative expression that represents the numeric relationship between two measurable units. Use a qualifier with rate for a specific type such as Percentage Rate.	Numeric, can have digits to right of decimal. Percentages are in 00.0% format
Text	An unformatted character string generally in the form of words. Example for Text vs. Name: Horse Color Name: black Horse Color Text: a light black with small speckles of white	Alphanumeric, size depends on maximum length of the values of attribute

Representative Term	Definition	Typical Data Type / Format
Time	A notation of a specified chronological point within a period.	HHMMSS

Table Appendix-3-0-1 Representative Terms

5. Attributes in a Reference (Domain) Entity

The attributes in a reference entity can be represented in more than one way, depending on whether or not the set of domain values are codes or names. All domain values must include the values of what they represent, either a description or a name.

Attribute	Description	Examples
“Attribute” Type Code or “Attribute” Code	The code that stands for the name or description.	
“Attribute” Type Name or “Attribute” Name	The name that stands for the description or the name that is represented by the code.	STATE CODE STATE NAME
“Attribute” Type Text	The description that is represented by the code or the name.	PLAN TYPE NAME PLAN TYPE TEXT

6. Attribute Definition

An attribute requires a unique definition that clearly explains what the attribute means. Use sentences, not phrases. The first sentence of the definition must begin with the representative term (i.e. The name of..., The code that represents...). It cannot be circular where the words in the attribute name are used to define the attribute.

D. Data Standard Name and Abbreviation

1. Naming Convention

A Standard Name is always singular and in title case, with a space between each word. It does not have a maximum or minimum length. Avoid the use of abbreviations, acronyms, special characters, prepositions, articles, and conjunctions unless it is common practice to do so.

From the standard name, an abbreviation (or acronym) is determined. The abbreviation is used as a prefix to aid in data management. It allows the BLM to easily identify, organize and sort by data items (such as feature classes, domains and tables) related to a specific data standard. It is 3-4 characters, in an attempt to control the length of physical names.

Dataset Abbreviation:

Must be a unique 3-4 character abbreviation for each data standard based on the data standard name. Check the list of existing acronyms found in the document Glossary_Terms_Abbreviation on the BLM Data Management SharePoint, under Reference Materials (left panel).

E. Relational and GeoDatabases

The following naming conventions are used in the development of relational and geodatabases (GDB). The software used for the database may include limitations on how things are named (e.g. character limits for database elements).

1. Geodatabase Schema Naming Convention – data standards

The GDB may be exported into an XML file with all uppercase characters (by software default).

General Format: dsa_vx_date.xml

Part of Name	Description	Required?	Size	Format
Data Standard Abbreviation (dsa)	Use the dataset abbreviation for the data standard.	Yes	3-4	lower case alphanumeric
Version (vx)	To differentiate each version of the GDB. Versions may be created as the result of pilot testing and subsequent edits to the GDB; from software upgrades; or changes to the data standard.	No	2-4	lower case alphanumeric
Release Date	Full date of release is appended to the end of the file name.	Yes	8	yyyymmdd ³

EXAMPLE: Visual Resource Inventory (VRI) Data Standard is VRI_v1_20100128.xml.

2. Geodatabase Schema Naming Convention – other datasets

General Format: abc_def_vx_date.xml

Part of Name	Description	Required?	Size	Format
Standard Abbreviations (abc_def)	Use standard abbreviations to name the dataset; existing abbreviations can be found Glossary_Terms_Abbreviation on the BLM Data Management SharePoint , under Reference Materials (left panel).	Yes	3-4	lower case alphanumeric
Version (vx)	To differentiate each version of the GDB. Versions may be created as the result of pilot testing and subsequent edits to the GDB; from software upgrades; or changes to the data standard.	No	2-4	lower case alphanumeric
Release Date	Full date of release is appended to the end of the file name.	Yes	8	yyyymmdd

3. Geodatabase Feature Dataset Naming Convention

These naming conventions are for feature classes which may be related topologically, or represent similar types of information.

General Format: dsa_dsname

³ This data format (yyyymmdd) is used to help sort the schema versions.

Part of Name	Description	Required?	Size	Format
Data Standard Abbreviation(dsa)	Use the dataset abbreviation for the data standard.	Yes	3-4	lower case alphanumeric
Data Standard Qualifier (dsqname)	To differentiate one feature dataset from another in the data standard. This can be one or more abbreviated words, using an underscore between words.	No	4-12	lower case alphanumeric

4. Geodatabase Feature Class Naming Convention

Use the historical feature class to document changes in boundaries over time - these changes usually occur by feature.

General Format: dsqname_pt (or) dsa_hist_dsqname_poly

Part of Name	Description	Required?	Size	Format
Data Standard Abbreviation (dsa)	Use the dataset abbreviation for the data standard.	Yes	3-4	lower case alphanumeric
Historical Qualifier	If this is a historical feature class	No	4	hist
Data Standard Qualifier (dsqname)	To differentiate each feature class in the data standard. This can be one or more abbreviated words, using an underscore between words.	No	4-12	lower case alphanumeric
Suffix for Feature Type or Feature Level Metadata	point: pt line: ln polygon: poly feature level metadata for polygons: arc	Yes	3-4	pt ln poly arc

EXAMPLES: vri_sqr_arc (and) vri_sqr_poly (and) vri_hist_sqr_poly

5. Geodatabase Related Table Naming Convention

This convention is when a table provides additional information about a feature, usually when an attribute can have more than one value per feature.

General Format: dsa_dsqname_tbl

Part of Name	Description	Required?	Size	Format
Data Standard Abbreviation(dsa)	Use the data standard dataset abbreviation for the data standard.	Yes	3-4	lower case alphanumeric
Data Standard Qualifier (dsqname)	A word or phrase that further describes what this table contains. This can be one or more abbreviated words, using an underscore between words.	Yes	4-12	lower case alphanumeric
Suffix Type	Use abbreviation: tbl	Yes	3	tbl

EXAMPLE: vri_iop_sqr_tbl

6. Geodatabase Relationship Class Naming Convention

This would link one element of the geodatabase to another element of the geodatabase, usually between a feature class and a related table.

General Format: dsa_dsqfcname_dsqtblname_rel

Part of Name	Description	Required?	Size	Format
Data Standard Abbreviation (dsa)	Use the dataset abbreviation for the data standard.	Yes	3-4	lower case alphanumeric
Data Standard Qualifier for the feature class (dsgfcname)	Use the same data standard qualifier name (or derivative) of the feature class that has the relationship.	Yes	4-12	lower case alphanumeric
Data Standard Qualifier for the table (dsqtblname)	Use the same data standard qualifier name (or derivative) of the table that has the relationship.	Yes	4-12	lower case alphanumeric
Suffix Type	Use abbreviation: rel	Yes	3	rel

EXAMPLE: vri_sqr_u_iop_rel

7. Domain Table Naming Conventions

Domains are either specific to a data standard, or are shared across more than one data standard. The two types of domains use different naming conventions so that each type of domain can be easily grouped. .

General Format:

DOM_DOMNAME (for domains shared across databases)

DSA_DOM_DOMNAME (domain specific to one database)

Part of Name	Description	Required?	Size	Format
Data Standard Abbreviation (DSA)	Required for domains specific to a database: Same abbreviation as for the data standard. The dataset name is not included for shared domains.	Only for Specific	3-4	upper case alphanumeric
Domain	Use abbreviation: DOM	Yes	3	DOM
Domain Name (DOMNAME)	Start with the reference entity name from the data standard report. (This should match the GIS attribute name or database column name). Use an underscore between each word.	Yes	4-12	upper case alphanumeric

EXAMPLES: VRI_DOM_SQ_CODE (and) DOM_DEF_FEATURE_TYPE

8. Guidance Table Naming Conventions

In ESRI, domain tables only have 2 columns. If there is a reason to document additional information on domain values or other data (such as when to use a domain value) that is best shown in additional columns; a guidance table can be created. These tables are normally pre-populated and included in the geodatabase schema xml file.

General Format: dsa_dsqname_tbl

Part of Name	Description	Required?	Size	Format
Data Standard Abbreviation (dsa)	Use the dataset abbreviation for the data standard.	Yes	3-4	lower case alphanumeric

Part of Name	Description	Required?	Size	Format
Data Standard Qualifier (dsqname)	This could be the same domain name. Use the Reference entity name from data standard report. Use standard abbreviation(s) based on attribute name; use underscore between each word.	Yes	4-12	lower case alphanumeric
Guidance	Use abbreviation: gde	Yes	3	gde

EXAMPLE: vri_class_asgn_gde.

9. Database Tables Naming Conventions

A table is the primary structure in a relational database. A table contains columns (data elements) and records. A column represents a characteristic of the table subject. A record represents a single instance of the table subject and contains each field, whether or not that field contains a value. Each table should contain a single field, or combination of fields that makes up the primary key. The primary key uniquely identifies a record within the table. A single table should never contain duplicate fields or redundant data.

Logical entity names can be shortened to fit these limitations through the use of abbreviations or acronyms. The physical name must help convey the meaning of the table. Use standard abbreviations as documented in the Glossary_Terms_Abbreviations spreadsheet available on the [Data Management SharePoint](#) (under Reference Materials, left panel).

One or more entities may be combined to create a table. An attribute is implemented as a column in a table for most relational database management (RDBM) tools.

10. Column / Data Element / GIS Attribute Naming Convention

The following are suggestions for physical names for attributes represented as a column or field in a database or an ESRI attribute in a feature class. The length of the physical name is usually limited by the database management system.

Physical Data Element Type	Naming Convention	Example
Standard Column Name	Use standard abbreviations and acronyms which can be found in the spreadsheet Glossary_Terms_Abbreviations available on the Data Management SharePoint (under Reference Materials, left panel). Always include the abbreviation for representative term (RepTerm) as the last part of the physical name. See page A3-13. Separate each word or abbreviation with an underscore, or what is appropriate for the database management system.	Inventory Aircraft Flight Date becomes: IVTY_ARCRT_FLGT_DT Herd Management Area Name becomes HMA_NM

Physical Data Element Type	Naming Convention	Example
Derived Columns	In the logical model, derived attributes are avoided. In the physical model, results of calculations and formulas can be included. Try to include the word Calculated, Sum, or Total in the name (or its abbreviation). Data can be derived from an optional relationship, and can result in a column which indicates the value of Yes or No.	TTL_EXP_AMT TTL_ADOPTED_HORSE_QTY ANIMAL_PRVSLY_ADOPTED_IND
Primary Keys	The primary key uniquely identifies a row in the table or feature class. If it is a designed key, the name needs to end with ID.	ALLOTMENT_ID BLM_UNIT_ID
Foreign Keys	A foreign key is a primary key of a table that has a relationship to the table in which the foreign key resides.	Use the same name as in the table where the Primary Key resides.

11. Standard Abbreviations for Representative Terms

All representative terms (RepTerm) have an abbreviation that is used in creating physical names for the attributes during database or geospatial database design. There are also abbreviations for additional representative terms that are for physical database design only.

RepTerm	Abbreviation	RepTerm	Abbreviation	RepTerm	Abbreviation
Amount	AM	Measure	MST	Rate	RT
Code	CD	Name	NM	Time	TM
Date	DT	Number	NR	Text	TX
Identifier	ID	Quantity	QY	Year Date	YR

Physical RepTerm	Abbreviation	When Used
Date Time	DT TM	For system generated date time stamps
Indicator	IND	For columns that have a domain or Yes or No
Object	OBJ	The content is a file name, URL, etc.

12. Trigger Naming Convention

A Trigger is that initiates an action (i.e., fires an action) when an event (INSERT, DELETE or UPDATE) occurs. Since triggers are event-driven specialized procedures, they are stored in and managed by the DBMS. A trigger cannot be called or executed; the DBMS automatically fires the trigger as a result of a data modification to the associated table. Triggers are used to maintain the referential integrity of data by changing the data in a systematic fashion. Triggers always depend on a base table and can't exist on their own. Link the base table name with the trigger name.

General Format: trg_AaaaBbbb_Cccccc

Part of Name	Description	Required?	Size	Format
trg	To indicate it is a trigger	Yes	3	Lower case
Aaaa	Trigger Action	Yes	X ⁴	Title case
Bbbbb	Object Action being performed	Yes	X ⁴	Title case
Cccccc	Use one of following terms: Insert, Update or Delete	Yes	5-6	Title Case

EXAMPLE: trg_ValidateData_Insert

13. Index Naming Convention

An Index is used to help identify a unique record. Indices make it faster to find specific records and to sort records by the index field, the field used to identify each record.

General Format: idx_tbAAAA_Bbbbbb_De

Part of Name	Description	Required?	Size	Format
idx	To indicate it is an index	Yes	3	Lower case
tb	To indicate it is a table	Yes	2	Lower case
AAAA	Table name	Yes	X ⁴	Upper case
Bbbbb	Column (data element) name	Yes	X ⁴	Title case
D	U - Unique; N - Non Unique	Yes	1	Upper case
e	c - Clustered, n - Non Clustered	Yes	1	lower

EXAMPLE: idx_tbPLS_MTPLinks_Mtrid_U_N

14. Stored Procedure

A Stored Procedure is a database operation that is stored with the database server. Storing the procedure on the server means that it is available to all clients. And when the procedure is modified, all clients automatically get the new version.

General Format: spr_AAA_BbbbCcccDddd

Part of Name	Description	Required?	Size	Format
spr	To indicate a stored procedure	Yes	3	Lower case
AAAA	A group number, to group several stored procedures	No	3	Upper case

⁴ X: Most RDBs have a name space limit (such as 30 characters), so limit the name of the table and column names to fit within this constraint.

Part of Name	Description	Required?	Size	Format
Bbbbb	Stored Procedure Action	Yes	6	Title case
Cccc	Stored Procedure Noun	Yes	X ⁴	Title Case

EXAMPLE: spr_InsertUserInfo

15. View Naming Convention

A View is a particular way of looking at a database. A single database can support numerous different views. Typically, a view arranges the records in some order and makes only certain columns visible. Different views do not affect the physical organization of the database.

Views represent instances of multiple entities, and are often plural. Views can also summarize data from existing tables.

General Format: vwAAA_BbbbbCcccc

Part of Name	Description	Required?	Size	Format
vw	To indicate it is a vw	Yes	2	Lower case
AAAA	Dataset Abbreviation	Yes	3-4	Title case
Bbbbb	View Class Object or Table	Yes	X ⁴	Title case
Ccccc	View Class Qualifier	Yes	X ⁴	Title Case

EXAMPLE: vw_ZipCodesGrazing , vwPLS_MeridianQuadrantsCadastral



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MANUAL TRANSMITTAL SHEET

Release
1-1773

Date
2/22/2016

Subject

H-1292-1, Communication Tower Climbing and Safety, Internal

1. Explanation of Materials Transmitted: The Communication Tower Climbing and Safety Handbook is revised to update roles, responsibilities, requirements and procedures to establish or sustain an agency climbing program.
2. Reports Required: None
3. Materials Superseded: This version replaces the BLM 1292-1 Communications Tower Climbing Program Handbook, version 1.0, dated 08/19/2011.
4. Filing Instructions: File as directed below.

REMOVE

All of Handbook 1292-1
(Version 1.0, Rel. No. 1-1735)

INSERT

All of Revised Handbook 1292-1
(Total: 26 pages)

Ron Dunton

Assistant Director
Fire and Aviation

COMMUNICATION TOWER CLIMBING AND SAFETY



BLM Handbook 1292-1 (I)

Table of Contents

CHAPTER 1 – OVERVIEW	1-1
1.1 PURPOSE	1-1
1.2 OBJECTIVE	1-1
1.3 AUTHORITY	1-1
1.4 SCOPE	1-1
1.5 RESPONSIBILITY	1-2
1.6 POLICY	1-4
1.7 FILES AND RECORDS MAINTENANCE.....	1-4
Chapter 2 – ELIGIBILITY AND REQUIREMENTS	2-1
2.1 GENERAL.....	2-1
2.2 MEDICAL STANDARDS	2-1
2.3 CLIMBING PERFORMANCE TRAINING	2-2
2.4 RADIO FREQUENCY HAZARD TRAINING	2-2
2.5 FIRST AID, CARDIOPULMONARY RESUSCITATION AND AUTOMATED EXTERNAL DEFIBRILLATION.....	2-2
2.6 CHECK-IN AND CHECK-OUT PROCEDURES	2-3
2.7 LETTER OF AUTHORIZATION.....	2-3
2.8 MINIMUM CLIMB REQUIREMENTS	2-3
Chapter 3 – CLIMBING SYSTEMS AND EQUIPMENT	3-1
3.1 GENERAL.....	3-1
3.2 FALL PROTECTION EQUIPMENT.....	3-1
3.3 INSPECTIONS	3-1
3.4 CLIMBING EQUIPMENT.....	3-1
3.5 INVENTORY AND DISPOSAL PROCEDURES.....	3-1
3.6 PERSONAL PROTECTIVE EQUIPMENT	3-1
3.7 PERSONAL FALL ARREST SYSTEMS.....	3-2
3.8 FIXED LADDER SAFETY CLIMBING SYSTEMS.....	3-3
Chapter 4 – PERFORMANCE OF WORK	4-1
4.1 GENERAL.....	4-1
4.2 MEDICAL CONDITION	4-1
4.3 PERFORMANCE OF COMMUNICATION TOWER WORK.....	4-1
4.4 PERSONAL CONDUCT.....	4-1
4.5 ELECTRICAL SAFEGUARDS FOR PERSONNEL PROTECTION	4-1

Chapter 5 – TOWERS, ANCHORAGES, AERIAL DEVICES AND LADDERS	5-1
5.1 GENERAL.....	5-1
5.2 TRUNKING RADIO SYSTEM SHARING.....	5-1
5.3 EQUIPMENT SHARING.....	5-1
5.4 AERIAL DEVICES	5-2
5.5 LADDERS	5-2
5.6 ROOF TOPS	5-2
Chapter 6 – RESCUE PROCEDURES.....	6-1
6.1 GENERAL.....	6-1
6.2 RESCUE EQUIPMENT AND METHODS	6-1
6.3 WORKSITE RESCUE EQUIPMENT.....	6-1
 GLOSSARY	 G-1
 APPENDIX I – APPOINTMENT LETTER	 A-1
APPENDIX II – TOWER WORK SAFETY MEETING CHECKLIST	A-2
APPENDIX III – REGULATIONS AND STANDARDS	A-3
APPENDIX IV – QUICK REFERENCE GUIDE.....	A-4

Chapter 1. Overview

1.1 Purpose

This handbook provides requirements and guidelines that apply to personnel employed by the Bureau of Land Management (BLM) who climb communication towers as an official duty, as well as all personnel who climb communication towers owned by the BLM.

1.2 Objectives

The objectives of this handbook are to:

- Define administrative, medical and performance requirements for BLM employees performing official duties on communication towers;
- Define equipment requirements; and
- Define method to review a state communication tower climbing program.

1.3 Authority

- A. The Occupational Safety and Health Act (OSHA) of 1970 (29 U.S.C. § 651).
- B. Fall Protection Systems Criteria and Practices (66 FR 5277, 29 CFR ; January 18, 2001)
- C. Medical Qualification Determinations (5 CFR Part 339; January 1, 2011)
- D. Executive Order 12472, as amended, *Assignment of National Security and Emergency Preparedness Telecommunications Functions* (49 FR 13471, 3 CFR; April 3, 1984).
- E. Executive Order 12856, *Compliance with the Emergency Planning and Community Right-to-Know Act* (58 FR 41981; August 3, 1993).
- F. Departmental Manual (485 DM 27) *Safety Management*.
- G. Bureau Manual (MS-1112) *Safety and Health Management* (P)
- H. Bureau Manual (MS-1220) *Records and Information Management* (P)
- I. Bureau Manual (MS-1292) *Radio Communications Management* (I)

1.4 Scope

- A. All personnel employed by the BLM must follow all requirements in this handbook when performing official duties on communication towers.
- B. Personnel contracted by the BLM must be trained and perform competently when climbing communication towers. Contractors will verify that their employees: are

capable of performing duties proficiently; use equipment that meets original equipment manufacturer specifications; and screen the capabilities of each employee at the work location prior to ascending a communication tower. Contractors must also follow all local policies required by the state, county or municipality based on the geographical location in which the work is to be performed, as required by their business license.

- C. Emergency situations (imminent threat to human life due to the lack of communications services) may require expedited repair. In this situation, every effort must be made to perform the work in accordance with this handbook. Performing emergency work that does not comply with this handbook or Code of Federal Regulations (CFR) must be reported to the state safety officer and the state/center communication tower climbing coordinator (CTCC) within 3 calendar days. The report must include who, what, when, where and why the work was performed; the information is used to update risk management assessments and shared as a lesson learned in order to improve coordination and safety throughout the BLM.

1.5 Responsibility

A. Assistant Director, Business and Fiscal Resources – Responsible for radio site leasing and rights of way assistance to the states/centers to manage access to communications facilities.

B. Assistant Director, Minerals and Realty Management – Responsible for policy related to Bureau-owned radio facilities.

C. Director, National Operations Center (NOC) – Responsible for the Compliance, Assessment, Safety, and Health Evaluation (CASHE) program.

D. State/Center Directors – Responsible to establish and maintain a tower climbing program that complies with OSHA and the guidelines provided in this handbook. Each state director appoints a state CTCC in writing.

E. Assistant Director, Fire and Aviation (AD FA) – Responsible to provide state offices/centers with policy, guidance and direction regarding land mobile radio (LMR). The AD FA has oversight of the policy function of the national radio program and authorizes policy for radio program management. In collaboration with the NOC, the AD FA has oversight of the Radio Infrastructure Condition Assessment Safety Health and Environmental (RI CASHE) audits. The AD FA has oversight of the national radio preparedness reviews conducted in states and determines the methodology to assess radio program preparedness and safety. These reviews will assess the overall condition of the radio program within the states. The AD FA is responsible to advise employees and the public of any safety or health risks found during the reviews and work with states through the National Radio Operations Branch (NROB) to correct the findings.

F. The National Radio Operations Branch Chief – Responsible to provide leadership at a national level for the BLM land mobile radio program. The NROB chief provides guidance and direction for communication tower climbing and safety to meet Bureau business needs and recommends methods to review compliance. The chief prepares and interprets policy and collaborates with Washington Office programs to develop policy, national level agreements and

both interagency and intra-agency partnerships. The chief determines policy compliance through LMR program assessments, RI CASHE audits, radio preparedness reviews, customer surveys and actions pursuant to this handbook and the BLM MS-1292, *Radio Communications Manual*.

G. The Radio Leadership Committee (RLC) – Provides national leadership and coordination to promote safe, effective and efficient radio operations.

H. State Communication Tower Climbing Coordinator – Responsible to establish and maintain a program requiring climbers to be properly equipped, trained and monitored for compliance with this handbook. Each CTCC shall maintain records of climbs performed by BLM employees that take place within their state(s). Each CTCC should strive to improve knowledge and experience when appointed as the subject matter expert for all matters pertaining to climbing communication towers in their jurisdiction. All CTCC personnel will verify that communication tower climber (CTC) personnel are trained by a NROB-approved training provider and climbs are performed by authorized personnel (including contracted personnel that climb BLM-owned towers in their jurisdiction). Each CTCC will assist BLM contracting personnel in their jurisdiction to develop scope(s) of work that require contractors to use trained and capable employees that do not climb communication towers alone.

I. State Radio Program Lead – Responsible to provide communication tower climbing personnel in their jurisdiction with a calibrated portable radio frequency monitor for use when requested (see 1292-2 handbook). A state radio program lead will usually be appointed as the state CTCC. If this is not the case, the state radio program lead should work closely with the CTCC to assess compliance with policy.

J. Direct Supervisors – Responsible to work with the CTCC in their jurisdiction to confirm each CTC under their direct supervision has met all policy requirements before providing a letter of authorization. The direct supervisor of a CTC is the only person who may provide a letter of authorization; a letter of authorization is valid for the current fiscal year only.

K. Job Supervisors – Responsible to perform as a CTC and provide instruction to crewmembers and may include personally performing work on the communication tower. The job supervisor must be proficient in identifying risks at the job site, selection of climbing equipment/systems and proper use of personal protective equipment (PPE). The job supervisor should be the CTC that is most familiar with the conditions, situation and risks at the job location. The job supervisor will meet with all tower workers prior to a climb to complete a tower work safety meeting checklist (refer to Appendix II) and prepare/review a risk management worksheet for the specific activity at the specific location/facility (BLM Form 1112-5). The job supervisor will submit a completed checklist to the state CTCC no later than seven calendar days following the climb. If a work crew member identifies a safety concern, the job supervisor shall stop all work until the issue is mitigated or resolved. As the job progresses, the job supervisor will maintain situational awareness and adjust work activities to mitigate risk.

L. Contracting Officer (or their representatives) – Responsible for preparing or managing a contract requiring climbing on BLM-owned communication tower(s), and for working with the CTCC to verify contractors meet BLM policy requirements prior to the contractor climbing.

M. Communication Tower Climber – Responsible to perform duties in accordance with this handbook, the site specific risk management worksheet (BLM Form 1112-5) and tower climbing performance training. All CTC personnel and ground crew members work under the guidance of the job supervisor. Additionally, they identify and report changes in work conditions that affect any member of the work crew when observed/discovered. The ultimate responsibility for determining whether or not to climb a communication tower is with each CTC. Every CTC has the responsibility to refuse a climb if they feel the risk is too high or the communication tower is not structurally reliable and/or unsafe to climb. Workers (on the ground or climbing) shall immediately notify the job supervisor of health or other conditions that could adversely affect the safe performance of duties.

N. Communication Tower Climbing Instructor (CTCI) – Responsible to maintain knowledge and proficiency in communication tower climbing techniques, the BLM risk management process and changes in governance and industry that influence communication tower climbing activities. A CTCI is a BLM employee approved by the NROB to provide instruction to approved BLM employees. A CTCI is formally appointed for a period not to exceed 2 years.

O. Safety Managers – Responsible to assist in the development of the State Communication Tower Climbing Program. The safety manager, in cooperation with the CTCC, will perform periodic spot checks to verify policy compliance. The safety manager will assist job supervisors and state radio program leads to verify: that a risk management worksheet (RMW) is prepared and current for all BLM tower locations; review authorizations for CTC personnel; and assist in the selection and purchase of personal protective equipment. State safety and health managers will assist with all aspects of the program and review document, including the RMW.

1.6 Policy

The state radio programs will provide adequate support to safely maintain the BLM-owned communication systems that support the BLM mission. When a communication tower supports the weight of a climber, the actions listed below will be taken:

- climbers comply with all policies governing the performance of a climb;
- use adequate and serviceable equipment when climbing;
- CTC personnel manage risk in accordance with agency policy; and
- The BLM will manage and review administrative and field work to confirm the safe and healthful working conditions of state communication tower climbing and safety programs.

1.7 Files and Records Maintenance

Medical and agency forms/letters (of communication tower climbers) will be managed according to agency records management policies and guidance to safeguard personally identifiable information routinely transferred between offices and agencies.

A website will be identified and maintained by the NROB to share medical clearance information for communication tower climbers.

See BLM Manual 1220, *Records and Information Management*, Schedule 18, for specific

policies and procedures.

Chapter 2. Eligibility and Requirements**2.1 General**

The direct supervisor of a communication tower climber and state communication tower climbing coordinator for that jurisdiction will work together to verify BLM employees that climb communication towers are: medically cleared, properly trained and adequately equipped. When all requirements are met as specified in this chapter, the employee may receive a CTC letter of authorization from their direct supervisor for the current fiscal year.

2.2 Medical Standards

The purpose of the CTC medical clearance process is to prevent occupational injuries due to medical conditions that may adversely affect safe and efficient job performance, both as an individual climber and a team member. The medical clearance process focuses specifically on occupational fitness for duty and applies to all BLM personnel that intend to climb communication towers.

Medical examinations are required for some applicants (pre-placement) as well as incumbents. Prior to attending tower climbing (performance) training, climbers must be medically cleared/qualified by the BLM. The CTCC will remain up-to-date on each CTC (and CTC candidate/trainee) medical clearance status in their jurisdiction.

Medical examination information will be managed online by contracted personnel and other agency personnel authorized to view medical examination information for that jurisdiction.

A. Medical Examination Schedule:

1. New employee: Baseline examination
2. Incumbent: Periodic examination every 3 years and annual self-certification in non-exam years.
3. Special: Discretion of the direct supervisor of a CTC specifically related to the employee's continued capacity to meet the physical or medical requirements of a CTC, or as recommend by an examining physician.

B. Medical Clearance Procedure:

1. The direct supervisor of the CTC (or trainee) will coordinate with their CTCC to request a medical examination via electronic mail from the NROB.
2. The CTC (or trainee) will be contacted by a medical examination office to schedule an appointment.
3. The CTC (or trainee) will arrive at the medical facility for the scheduled appointment that the CTC (or trainee) scheduled with the medical examination office.
4. The medical review officer will review the examination results and determine if the

CTC (or trainee) meets the medical standards of a CTC; the NROB will be notified of the medical review officer's determination.

5. The NROB will relay the clearance determination to the CTCC.
6. The CTCC should work with the NROB to prepare waiver requests when required.
7. The CTCC will notify the NROB when communication tower climbers are approved by their direct supervisor. The CTCC must provide all documents regarding personnel assigned as CTC personnel to the national preparedness team member(s) reviewing the radio program and/or the NROB upon request to include all tower work safety meeting checklists (see Appendix II).

2.3 Climbing Performance Training

Prior to attending climbing performance training, a BLM employee must be:

- Approved to attend climbing performance training by their direct supervisor
- Recommended by the state communication tower climbing coordinator
- Medically cleared/qualified by an agency medical review officer

Each CTC should remain familiar with the information in this handbook, as well as with training curriculum intended to provide and maintain a knowledge base for safe climbing.

A. Initial Training. Employees must successfully complete an NROB-approved climbing performance course. The initial course shall include fall protection regulations (refer to Appendix III), including the hierarchy of fall protection and rescue planning/theory. Additionally, the training shall also include individual performance of tower climbing and rescue as a competent climber. All CTC personnel will provide training certificates to their direct supervisor and the CTCC upon successful completion.

B. Refresher Training. Employees must successfully complete an NROB-approved tower climber refresher course tri-annually (at least once every 3 years). The course must include both field and classroom environments. Information will be similar to the initial tower climbing course, but with less detail and focused on industry and regulation changes to methods, equipment and techniques. Curriculum for the training is for a competent climber. All CTC personnel will provide training certificates to their direct supervisor and the CTCC upon successful completion.

2.4 Radio Frequency (RF) Hazard Training

All CTC personnel will complete RF Hazard Training annually to accurately evaluate and understand the risks of RF exposure. Every climber must sustain compliance with requirements of BLM Handbook H-1292-2 *Radio Frequency Exposure Awareness Program*.

2.5 First Aid, Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillation (AED)

All CTC personnel shall maintain a current, BLM-approved first aid, CPR and AED

certification. All employees working at remote field locations beyond reasonable access to a medical facility (15 minutes and/or 10 miles) must be trained to render first aid (reference 29 CFR 1910.151).

2.6 Check-in and check-out procedures

All personnel who perform field work must be trained on the local check-in and check-out procedures in accordance with the BLM 1112-2 *Safety Handbook*. This training will address communications services available, such as cellular phone or satellite communications.

2.7 Letter of Authorization

Only CTC personnel approved by their direct supervisor shall climb a communication tower. Approval is provided to each CTC by that employee's direct supervisor when the employee has met the medical and training requirements. Each approval letter is valid for the current fiscal year only (sample approval letter provided as Appendix I).

2.8 Minimum Climb Requirements

A CTC must perform a minimum of two successful communication tower climbs each fiscal year, one of which must be a rescue (or practice rescue). A CTC who does not meet this annual requirement will not climb until successfully completing refresher training.

Chapter 3. Climbing Systems and Equipment

3.1 General

This handbook is based on Code of Federal Regulation (CFR), Occupational Safety and Health (OSHA) guidelines, and agency-specific requirements. All CTC (and trainee) personnel must remain proficient in the inspection and use of their equipment. Altering or modifying personal protective equipment (PPE) from its original manufactured design or condition is prohibited.

3.2 Fall Protection Systems

Employers shall provide and install fall protection systems as specified in 29 CFR 1926.502.

3.3 Inspections

Fall protection equipment shall be inspected prior to every climb and at least annually. The CTC (and trainee) is responsible for PPE inspection, adjustment, fit and use in accordance with manufacturer's specifications and recommendations.

3.4 Climbing Equipment

- A. Storage. When not in use, all climbing equipment will be stored in a dry, dark, secure area and protected from cuts, abrasions, and chemicals.
- B. Manufacturer recommendations. Employees will use manufacturer shelf life, lifecycle replacement and load limitations provided by the manufacturer.
- C. Manufacturer instructions. Climbers shall follow all equipment instructions provided by the manufacturer.

3.5 Inventory and Disposal Procedures

- A. Inventory list. A complete list of all equipment used and maintained by individual CTC personnel will be submitted to the CTCC no later than October 1st each year. Locally issued (unique) serial numbers will be provided by the CTCC for that jurisdiction for equipment without a unique manufacturer serial number. When equipment is added or removed from the individual climbers list, an updated list will be provided to the CTCC within three working days.
- B. Equipment stressed. If equipment is stressed due to impact loading (for example, deceleration devices that have been deployed) or does not pass inspection, it will be immediately removed from service and tagged "Do Not Use." Unserviceable equipment will be removed from the climber's inventory list then destroyed as soon as feasible.
- C. Disposal procedures. Equipment disposals will be coordinated with the CTCC for that jurisdiction.

3.6 Personal Protective Equipment

Personal protective equipment is intended to protect individuals during both climbing activities and work on the ground. Detailed information for job related risks and mitigation are provided in risk management worksheets.

- A. Head Protection. During elevated work, all personnel, including the ground and tower crew, shall wear American National Standards Institute (ANSI) -approved hard hats/helmets with chinstraps.
- B. Foot Protection. All CTC personnel performing elevated work will wear footwear with:
 - 1. Upper minimum of 4 inches high
 - 2. Reinforced toe
 - 3. Non-slip sole with reinforced shank
 - 4. Puncture, cut and abrasive-resistant [upper and lower] material
- C. Hand Protection. Leather work gloves are recommended when climbing.
- D. Eye Protection. Safety goggles/glasses shall be used whenever eye safety is at risk.
- E. Hearing Protection. Ear protection should be used whenever noise presents a risk.
- F. Clothing. Appropriate work clothing consists of coveralls, pants, and shirts made of material suitable for outdoor working conditions. Tower climbing with shorts and/or without a shirt is prohibited. Clothing shall be free from snag hazards such as large loops, rips, and holes. Clothing should not be overly restricting or too loose.
- G. Communication Devices. Hands free, voice activated radio headsets should be worn by the climber(s) and personnel on the ground to provide communications during the work; hand signals are the alternate method. Radios must operate on BLM-authorized frequencies for the area of work. (Refer to BLM Manual Section 1291 for details)
- H. Radio Frequency (RF) Monitor. All CTC personnel will wear a calibrated radio frequency level monitoring device to provide awareness of RF radiation levels when working on a site with active transmitters or the level of RF exposure is suspected to exceed maximum permissible exposure for the general public. (Refer to *Radio Communications Manual H-1292-2* for details.)

3.7 Personal Fall Arrest Systems

Deceleration distance must be considered when designing a personal fall arrest system (PFAS). Equipment shall be inspected for serviceability prior to each use by the CTC (or trainee) that uses it. Defective components shall be marked, removed from service (29 CFR 1926.502) and destroyed as soon as feasible. Personal fall arrest system components must be made of synthetic

fibers and have self-locking connectors.

- A. **Lanyards.** Lanyards are the most common item used with a body harness as a PFAS. Use lanyards with deceleration devices whenever possible to reduce the arresting force to the climber's body.
1. The free fall limit for a lanyard is 6 feet, based on a length that does not exceed 1800 pounds of force.
 2. The maximum length for a lanyard to deploy with a deceleration device is 42 inches.
 3. Self-retracting lanyard/lifelines provide a method to minimize a free fall distance. Although heavier than a lanyard with a specific length, the benefits should be considered when designing a PFAS.
 4. Locking lanyards shall be equipped with self-locking connectors.
 5. A knot will not be tied in a lanyard, positioning belt or harness.
 6. Protect lanyards from sharp edges and other components on communication towers that can damage the synthetic material or connector(s).
- B. **Body harnesses.** Harnesses used by CTC personnel shall be certified by the manufacturer to meet all OSHA standards and regulations. Different body harness designs are available to accommodate different body sizes and types of work. The climber may use personal preference in selecting the most appropriate harness to wear.
- C. **Connectors.** All connectors on personal fall arrest equipment shall have self-locking connectors.

3.8 Fixed Ladder Safety Climbing Systems

Systems typically consist of fixed rail, tube or tensioned cables that are permanently installed on the fixed ladder or structural components of the communication tower. The component (slider) connects to the D ring on the chest or belt buckle area of the body harness. The connection between the slider and the attachment point on a body harness shall not exceed 9 inches and shall be activated within two feet of a fall.

Systems will be inspected (from ground level) prior to use. Binoculars or a looking-glass are recommended for the inspection.

Chapter 4. Performance of Work

4.1 General

A risk management worksheet (RMW) will be completed for each site that requires climbing and will identify specific work tasks to be performed and the condition of the tower. An RMW is required for all radio infrastructure (RI) sites and is coordinated by the site point of contact (see Handbook 1292-3 for details). Prior to work, the job supervisor will inspect and set up the work site as part of the tower work safety meeting checklist.

4.2 Medical Condition

Individuals must inform the job supervisor of any changes in their health status that may affect safe and efficient job performance. Workers may not climb if they have taken medication that will impair their judgment or performance or are ill, dizzy, drowsy, etc. All workers, especially the job supervisor, should be aware of any changes in medical status since the last medical examination.

4.3 Performance of Communication Tower Work

- A. Climbing. Two CTC personnel (minimum) must be on site during any climb.
- B. Job Supervisors will conduct a tower work safety meeting (see Appendix II) prior to a CTC climbing the communication tower specified in the RMW.
- C. Inspection.
 1. The pre-climb inspection shall include the evaluation of the climbing equipment, each CTC and the emergency equipment.
 2. A structural condition assessment of the tower shall be performed by the job supervisor from ground level prior to each climb; use of binoculars or a looking glass is recommended. The assessment will include visual inspection of: tower legs, bracing and members, climbing facilities, platforms and catwalks, flanges and fasteners and welded connections. New risks (not identified in the RMW) must be mitigated; the RMW approver must be notified prior to climbing the tower of the details of new risk(s) and the impact to the safety of all employees at the location.
- D. Attachment. Climbers will use fall protection with 100% proper attachment at all times when working 4 feet or more above ground level. Attachment to an appurtenance for an anchorage (ex: antenna standoff) is prohibited.

4.4 Personal Conduct

Unsafe climbing practices and unnecessary risk must be eradicated to ensure the safety of all personnel at the worksite. Prohibited climbing practices follow:

- A. Power lines: Do not climb near energized electrical conductors.
- B. Horseplay: Do not distract climbers or play pranks.

C. Throwing objects: Do not throw tools, parts or other objects.

D. Anchor points: Do not use antenna systems, wire/cable, conduit and/or appurtenances.

4.5 Electrical Safeguards for Personnel Protection

Whenever BLM employees are climbing/working within close proximity to an electrical power line or a service drop, risk of electrocution must be mitigated. If the risk cannot be mitigated, the work will be postponed until an electrician verifies the power lines are not energized.

Chapter 5. Towers, Anchorages, Aerial Devices and Ladders

5.1 General

Towers should be designed to eliminate or minimize the need for climbing. When personnel climb, they must take necessary measures to prevent both falls and dropping objects. Manufacturer inspection requirements will be followed throughout the life of communication towers (see Handbook 1292-3). If original manufacturer specifications/documents are not available, a maintenance and condition assessment (normative) will be performed in accordance with the current revision of the ANSI/Telecommunications Industry Association-222. All records must be retained for the life of each BLM-owned communication tower.

5.2 Towers and Anchorage Considerations

Some communication towers are considered unsafe to support the weight of a climber due to structural design and safety factors. An engineered anchorage or certified anchorage will be used for connecting loads when feasible.

Bucket trucks and aerial lifts will be used when practicable for communication towers that are not authorized to be climbed.

- A. Wooden poles with antenna systems are not authorized to be climbed.
- B. Rohn 25 towers (or equivalent size) are not authorized to be climbed.
- C. Rohn 45 towers (or equivalent size) may not be climbed unless the tower has engineered anchor points designated by the manufacturer. A structural condition assessment must be performed by the job supervisor prior to climbing. The markings of the engineered anchor point(s) must be identified in the site specific RMW.
- D. Guyed and self-supporting towers larger than Rohn 45 (or equivalent size) may be climbed after a structural condition assessment is performed by the job supervisor.
- E. Monopole structures may be climbed after a structural condition assessment is performed by the job supervisor.

5.3 Anchorages

Anchorage shall meet the minimum requirements of an engineered system for each CTC attached. An engineered system shall be in compliance with the mandatory criteria for PFAS in the 29 CFR-1910.66 (references provided in Appendix III).

- A. Anchors. Anchors may be: welded (closed) eyebolts, rigging points, slings, ropes or other attachments that are integral parts of a manufactured communication tower, or installed by CTC personnel. All anchors must be specifically identified in an RMW by their description and location on the communication tower. Energy absorbing properties of a PFAS - when incorporated into the anchorage design - are intended to reduce the force imposed onto the anchor.

B. Anchorage. All anchorages will be designed to withstand a static load of 22.2 kN (5,000 pounds) or the maximum anticipated impact load multiplied by an overload capacity factor of 2.0 for one CTC.

5.4 Aerial Devices

Devices include powered platforms, personnel lifts, vehicle-mounted work platforms, bucket trucks or other devices used for elevated work that are self-supporting (independent of the structure or facility). Walking surfaces shall be composed of anti-skid materials. Aerial devices will be inspected annually and visually inspected prior to each use. All manufacturer instructions and recommendations must be followed.

- A. Training. Prior to operating a specific aerial device, users must successfully complete agency approved training for the specific device.
- B. Bucket and platform anchorages. Anchorages shall bring an employee to a complete stop and limit the maximum deceleration distance an employee travels to 3.5 feet (1.07 m). Platform anchorages shall have sufficient strength to withstand twice the potential impact energy of an employee free fall distance of six feet (1.8 m), or the free fall distance permitted by the system, whichever is less.
- C. Inspections. Aerial devices will be inspected prior to use to ensure adequate strength and good working condition. Reference 29 CFR 1910.268(b) (6) for more detail.

5.5 Ladders

Two CTC personnel will be present on site any time a ladder is climbed over four feet high to perform work on communication towers and/or antenna support structures. Installation, inspection and maintenance of ladders will comply with 29 CFR 1910.268 and the manufacturer instructions/recommendations.

- A. Fixed Ladders. Ladders are permanently installed on many of the BLM communication towers and antenna support structures. Transitioning from a fixed ladder to the actual communication tower shall be accomplished while maintaining 100 percent attachment of the fall arrest system. Fixed ladders are more stable than portable ladders and should be used when feasible.
- B. Portable Ladders. Due to their instability, portable ladders shall always be used by two CTC personnel: one CTC holding the ladder while the other CTC climbs to work on antennas. The use of ladders will comply with 29 CFR 1917.119 and 29 CFR 1910.268(h).

5.6 Roof Tops

Roofs with mounted antennas are required to have anchorage points, guard rails, nets or other safety devices/systems in place. Consider aerial devices in the risk mitigation process. Refer to 29 CFR 1910.66 for powered platforms for building maintenance regulations.

Chapter 6. Rescue Procedures

6.1 General

As required by CFR 1926.502(d) (20): when PFAS are used, the employer must ensure that a CTC can be promptly rescued or can rescue themselves should a fall occur. The techniques taught in the NROB-approved tower climbing performance courses will be used when performing a rescue. The availability of rescue personnel, capabilities of aerial devices and ladders (and/or other equipment) shall be inspected, operationally checked and pre-staged by the job supervisor before a CTC climbs.

6.2 Rescue Equipment and Methods

Rescue equipment will be used to provide controlled descent. The rescue equipment must be capable of providing rapid recovery of a CTC at the maximum work height and supporting the maximum rescue weight. The rescuer will provide for 100% attachment of the victim at all times; if feasible, a CTC must report every climb that was not performed with 100% attachment to the CTCC in their jurisdiction within 3 days following the (reportable) climb.

- A. Rescue devices. Rescue devices shall be attached to the victim's D ring on the chest, back (dorsal ring) or higher on the CTC body harness to reduce the potential for physical harm to the CTC if at all possible.
- B. Rescue Methods. Manufacturer instructions and rescue methods/procedures taught at tower climbing performance courses approved by the NROB will be performed for rescues. Though time takes priority in most elevated rescues, maintain situational awareness to prevent an "incident within an incident" situation.

6.3 Worksite Rescue Equipment

Equipment selected to support the rescue plan for the site will be inspected and staged prior to climbing a communication tower/antenna support structure. Descent systems/devices will be installed on the first climb of the day and be readily accessible so CTC personnel will be prepared for a rescue situation.

Glossary

Aerial device: Any piece of equipment utilizing a bucket or platform to place the worker(s) at an elevated work position.

Anchorage: A secure point of attachment for lifelines, lanyards or deceleration devices.

Attachment: A device such as a tie, band, or fastening that joins one thing to another.

Body belt (safety belt): A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body harness: Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

Buckle: A device for holding the body belt or body harness closed around the body.

Carabiner: A connector component generally comprised of a trapezoidal or oval shaped body with a normally closed gate or similar arrangement that may be opened to permit the body to receive an object, and when released, automatically closes to retain the object.

There are generally three types:

- a) The locking type (required by the BLM) with a self-closing, self-locking gate which remains closed and locked until intentionally unlocked and opened for connection or disconnection; or
- b) The non-locking type (not permitted by the BLM) with a self-closing gate which remains closed, but not locked, until intentionally opened by the user for connection or disconnection; or
- c) The manual locking type (not permitted by the BLM) with a self-closing gate which remains closed but not locked (unless purposely locked by the user) until intentionally opened by the user for connection or disconnection.

Certified Anchorage: An anchorage/anchorage connector on a communication tower/antenna support structure that has been certified by a licensed structural engineer to have a minimum breaking strength of 5,000 pounds (22.2 kN).

Climbing: The vertical (ascending and descending), horizontal and resting movements performed to access an elevated work position during a climb.

Communication Tower: A steel tower erected for communication equipment to be fastened to. Types are tubular pole structures and latticed structures that are guyed or self-supporting.

Communication Tower Climber (CTC): A full time BLM employee authorized by their direct supervisor to climb communication towers and antenna support structures for the BLM.

Communication Tower Climber Trainee: A full time (career or seasonal) BLM employee that

has been medically cleared and authorized to attend tower climbing performance training.

Communication Tower Climbing Coordinator (CTCC): A full time BLM employee formally appointed by their state director (or delegate) to provide oversight of the state communication tower climbing program; advises BLM programs in their jurisdiction regarding requirements when contracting communication tower climbing services or external agency support.

Communication Tower Climbing Instructor (CTCI): A full time BLM employee that has been authorized to provide instruction in methods and techniques for tower climbing performance; provides instruction in other radio related policy pursuant to performing climbs on communication towers for the BLM using curriculum approved by NROB. A CTCI is provided a formal letter of appointment by the NROB.

Competent Climber: One who (because of training, experience, and authority) is capable of identifying hazardous and/or dangerous conditions in the surroundings or working conditions of steel antenna towers and antenna support structures and has been trained to report those specific conditions to agency personnel for corrective action.

Also a term used by commercial training providers to define personnel trained to: select/install climbing equipment, reference regulations and identify hazards associated with climbing.

Connector: A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or D-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

Deceleration device: Any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest or otherwise limit the energy imposed on an employee during fall arrest.

Deceleration distance: The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Drop zone: The area around a communication tower in which items will likely impact the ground if dropped by a CTC using the tower to support their weight; formula is .5 feet out from each tower leg for each vertical foot above ground level.

Energy (shock) absorber: A component whose primary function is to dissipate energy and limit deceleration forces on the body during fall arrest. Such devices may employ various principles such as deformation, friction, tearing of materials or breaking of stitches to accomplish energy absorption. An energy absorber causes an increase in the deceleration distance.

Engineered anchorage: A fall protection anchorage point designed to withstand the maximum expected impact load while maintaining a specified overload capacity factor (OCF) of two.

Engineered system: A fall protection system designed to absorb the energy of a worker(s) during a fall while accommodating the static loads of tools and hardware.
See Fall Protection System.

Equivalent: The alternative designs, materials or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

Failure: The load refusal (ultimate strength is exceeded), breakage or separation of component parts.

Fall Prevention System: A system intended to prevent a worker from falling from one elevation to another. Such systems include positioning device systems, guardrail, barriers and restraint systems. Fall prevention systems are used in an attempt to prevent workers from falling from an elevation. It should be noted that these devices do not absolutely prevent a worker from falling; their function is to keep the worker at the same elevation.

Free fall: The act of falling before a PFAS begins to apply force to arrest the fall.

Free fall distance: The vertical displacement of the fall arrest attachment point on the employee's full body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Full body harness: A component with a design of straps that is fastened about the worker in a manner so as to contain the torso and distribute the fall arrest forces over at least the upper thighs or buttocks, pelvis, chest and shoulders with means for attaching it to other components or subsystems.

Job site: The assembly point at the structure or equipment where the workers, tools and vehicles are assembled to perform the climbing to a work position.

Job supervisor: A full time BLM employee that is a CTC and leads a communication support task that requires climbing a communication tower. The job supervisor is knowledgeable and compliant with policies governing the performance of the task. The job supervisor should be the CTC that is most familiar with the conditions, situation and risks at the job location.

Lanyard: A flexible line of rope, wire rope or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline or anchorage.

Lifeline: A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch

horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Overload capacity factor (OCF): The number by which a maximum load is multiplied to assure that the system does not fail when loaded to the design load.

Personal Fall Arrest System (PFAS): The assembly of climbing equipment; a full body harness in conjunction with a deceleration device and anchorage to limit the forces a CTC experiences if a fall should occur.

Positioning device system: A body harness system rigged to allow an employee to be supported on an elevated vertical surface such as a wall, and work with both hands free while leaning.

Risk Management Worksheet, BLM Form 1112-5: A study of a specific task or work assignment to: (1) identify each step involved with a particular task; (2) identify the known or potential hazards associated with each step, (3) develop solutions that will eliminate, minimize, or control the hazards, and (4) identify all residual risks.

Roll-out: A movement process by which a snaphook or carabiner accidentally disengages from an anchorage or object to which it is coupled.

Rope grab: A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of a CTC. A rope grab usually employs the principle of inertial locking, cam/level locking or both.

Self-retracting lifeline/lanyard: A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal CTC climbing, and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snaphook: A connector comprised of a hook-shaped member with a normally closed keeper or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snaphooks are generally one of two types: locking or non-locking. In 1998, non-locking snaphooks were prohibited as part of a PFAS.

Total fall distance: The maximum vertical distance between a CTC position before a fall and after the fall is arrested. The total fall distance includes maximum free fall distance plus maximum deceleration distance. Total fall distance excludes dynamic elongation.

Transitioning: The act of moving from one location to another location on equipment or a structure while going around, under or over an obstruction.

Work position: The elevated location on a communication structure where a CTC works.

Appendix I – Appointment Letter

Sample Letter of Authorization



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
(Add office information)



In Reply Refer to:
H-1292-1 (Office Code) (P, I or R)

Memorandum

Expires: 09/30/20XX *(note: this authorization is good for current fiscal year only)*

To: **Title of Primary Addressee(s)**
Attention: **Person(s) Name**

From: **(Name of employee's direct supervisor)**
(Add title of employee's direct supervisor here)

Subject: Communication Tower Climbing Letter of Authorization (Annual)

Congratulations on meeting the requirements to become a communication tower climber (CTC). The Bureau of Land Management (BLM) has established a program to ensure that employees who climb communication towers receive guidance and direction (reference the BLM 1292 Radio Communications Manual). Climbing will be done in compliance with the BLM H-1292-1 *Communication Tower Climbing Program Handbook* and reference materials.

You will inform me, or in my absence the state tower climbing coordinator, of any conditions that prevent the safe and proficient performance of your duties. Additionally, you are required to inform us if you no longer meet the eligibility requirements of a CTC (i.e. outdated physical, training or climbing deficiencies as defined in the *Communication Tower Climbing Program Handbook*).

Contact: **(Your contact and state tower climbing coordinator info).**

Distribution:
State Tower Climbing Coordinator
State Radio Program Lead
State Safety Manager
National Radio Operations Branch (FA-350)

Appendix II - Tower Work Safety Meeting Checklist

- Job Supervisor Introduction (The primary purpose of this meeting is safety...)
- Administration & Logistics
 - o Review risk management worksheet for specific site
 - o Description of tower (age, condition assessment, structural hazards)
 - o Inspect fixed ladder system/climbing pegs from ground using binoculars/looking-glass
 - Confirm cable is not prohibited 3/8 inch 7x19 strand galvanized cable
 - o Emergency medical service location and capabilities
 - o BLM Tower Climbing & Safety policy available on site (electronic copy acceptable)
 - o Material safety data sheet reviewed for all chemicals to be used for tower work
 - o Identify garbage collection location
- Crew Coordination
 - o Work schedule to include meal breaks
 - o Weather report
 - o Sunrise & sunset times
- Verify Credentials of the Team
 - o Confirm individual authorizations to climb (CTC appointment letter)
 - o Individually screen all crew members to ensure that they have no health concerns and have not taken any medication that will adversely affect performance
- Task and Purpose of the Work
 - o Duty assignments for every member of the crew
 - Updated/modified at the discretion of the job supervisor
- Equipment:
 - o Specify the location of the following:
 - RF monitors
 - First aid kit
 - Fire extinguisher
 - Eye wash station (if required)
 - Material handling equipment (hand truck, container, etc)
 - o Designate safety vehicle and primary and alternate driver in case of emergency
 - Confirm safety vehicle is parked in a location that provides for quick loading and departure in case of an emergency
 - o Provide adequate time for personal climbing equipment to be inspected prior to climb or throughout the day as required (to include op-check of RF monitor)
 - Confirm that manufacturer instructions for all climbing equipment has been read and understood

Certification: All information was provided to the entire work crew and all questions were answered to the best of my knowledge. All work to be performed at this location has been explained to all members of the crew. All members of the crew have reviewed the signed risk management worksheet. This completed checklist will be submitted to the state communication tower climbing program coordinator within 7 calendar days.

Signature: Job Supervisor

Printed Name: Job Supervisor

Date

Radio Infrastructure
Site Name

Signature: State Communication Tower
Climbing Program Coordinator (CTCC)

Appendix III – Regulations and Standards

The following publications provide detailed information for tower climbing, fall protection, and medical examination and qualifications. When the following standards are superseded by an approved revision, the revision shall apply.


- A. ANSI Standard A14.1, Portable Wood Ladders, Safety Requirements For.
- B. ANSI Standard A14.2, Portable Metal Ladders, Safety Requirements For.
- C. ANSI Standard A14.3, Fixed Ladders, Safety Requirements For.
- D. ANSI Standard A14.4, Job-Made Wooden Ladders, Safety Requirements For.
- E. ANSI Standard A14.5, Safety Requirements for Portable Reinforced Plastic Ladders.
- F. ANSI Standard A14.7, Mobile Ladders, Stands, and Mobile Work Platforms, Safety Requirements.
- G. ANSI Standard A92.2, Vehicle Mounted Elevating and Rotating Aerial Devices (SIA).
- H. ANSI Standard A92.3, Elevating Work Platforms, Manually Propelled (SIA).
- I. ANSI Standard A92.5, Boom-Supported Elevated Work Platforms.
- J. ANSI Standard A92.6, Work Platforms, Self Propelled Elevating (SIA).
- K. ANSI Standard C2, National Electrical Safety Code.
- L. ANSI Standard P1307, Trial Guide for Fall Protection for the Utility Industry.
- M. ANSI Standard Z133.1, Tree Care Operations - Pruning, Trimming, Repairing, Maintaining, and Removing Trees, and Cutting - Safety Requirements.
- N. ANSI Standard Z359.1, Personal Fall Arrest Systems, Subsystems, and Components.
- O. ANSI Standard Z359.12-2009, Safety Requirements for Connecting Components.
- P. ANSI Standard Z359.13-2009, Safety Requirements for Lanyards & Energy Absorbers.
- Q. ASTM F887, Standard Specifications for Personal Climbing Equipment.
- R. ASTM Standard, Non-Conductive Rope for Utility Purposes.
- S. OSHA 29 CFR 1910.97, Subpart G - Non-ionizing Radiation.
- T. OSHA 29 CFR 1910.27, Fixed Ladders.
- U. OSHA 29 CFR 1910.66, Powered Platforms for Building Maintenance.
- V. OSHA 29 CFR 1910.132 to 1910.138, Personal Protective Equipment.
- X. OSHA 29 CFR 1910.147, Standard for Lock-out/Tag-out Procedures.
- Y. OSHA 29 CFR 1910, Subpart R - Special Industries (1910.261 to 1910.272 App C).
- Z. OSHA 29 CFR 1910.268, Telecommunications.
- AA. OSHA 29 CFR 1926, Safety and Health Regulations for Construction, Subpart M – Fall Protection (1926.500 to 1926.503).
- BB. TIA/EIA-222, Structural Standard for Steel Antenna Towers and Antenna Support Structures.
- CC. IEEE Standard 516, Guide for Maintenance Methods on Energized Power Lines (ANSI).
- DD. Department Occupational Medicine Program Handbook.
- EE. Department Manual Section 485.

Appendix IV – Quick Reference Guide

<p>Assistant Director (AD), Business and Fiscal Resources: provides policy for radio site leasing & rights of way.</p>
<p>AD, Minerals and Realty Management: provides policy for BLM owned radio facilities.</p>
<p>AD, NOC: provides policy - CASHE program.</p>
<p>State Directors: Establishes/maintains state program in compliance with 1292-1 handbook; appoints Communication Tower Coordinator in writing.</p>
<p>AD, Fire and Aviation: Provides policy for land mobile radio (LMR) program management including the communication tower climbing program. Determines method to assess preparedness & safety (in cooperation with National Operations Center).</p>
<p>NROB Chief: Provides leadership & planning for LMR management including communication tower climbing program; aligns services with user requirements; determines method to assess preparedness & safety; in T/O of Fire Operations and Safety (FA-300).</p>
<p>Radio Leadership Committee (RLC): Promote safe/effective/efficient radio ops.</p>
<p>State Radio Program Lead: Usually the CTCC. Defines climbing requirements in jurisdiction; provides/loans RF monitor to BLM personnel upon request.</p>
<p>Contract Officer (or Rep): Prepare/manage contract(s) requiring climbing BLM-owned communication tower; verify contractor meet policy requirements before climbing.</p>
<p>State Safety Manager: Reviews state tower climbing program; notified of RI CASHE high priority findings; assists CTCC; assist/review RMWs; reviews authorizations for state personnel to climb; assists purchase of PPE.</p>

Medical Clearance:

- **Tri-annual Medical Evaluation (annual self-certify in off years)**
- **(pre-employment by State/center when required)**



Comm. Tower Climbing Coordinator - CTCC:

- Tracks climbs
- Reviews eligibility
- Coordinates with direct supervisor (RMW, training & support required)
- Equip climbers in jurisdiction
- Monitors policy compliance
- Verifies CTC (and trainee) medical clearance IAW DOI & BLM policy
- Provides contracting advice

Direct Supervisor:

- May provide letter of authorization to CTC personnel each fiscal year using Appendix 1 (A-1)
- PDs – collateral duty climbers

Job Supervisor:

- Coordinates with all personnel on work crew to confirm readiness prior to departure
- Provides/conducts safety meeting using Appendix 2 (A-2)
- Assigns duties on location
- Identifies unsafe performance – stop climbing activities if necessary
- Provides required documents/info on time to direct supervisor and/or CTCC

Communication Tower Climber (CTC):

- Current first aid & CPR/AED certificate
- Not ill or taking medication that effects performance
- Inspect equipment intended for use; follow manufacturer instructions
- Perform as trained / IAW policy
- Inform job supervisor of changes in health or risks as situations change
- Refuse to climb if risk is too high



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANUAL TRANSMITTAL SHEET

Release
1-1754

Date
06/28/2013

Subject

H-1292-2 – Radio Frequency Exposure Awareness Handbook (I)

1. Explanation of Materials Transmitted: The Radio Frequency Exposure Awareness Handbook is targeted for the Bureau of Land Management (BLM) Radio Program to include State radio program managers. The attached BLM Radio Frequency Exposure Awareness Handbook Section 1292-2 replaces the previous version. The new handbook establishes standards, policies, and responsibilities for informing telecommunications workers, employees, and the general public of the hazards associated with radio frequency (RF) human exposure.
2. Reports Required: None
3. Materials Superseded: This version replaces the BLM H-1292-2 Radio Frequency Exposure Protection Program Handbook, release 1-1739, dated 12/13/2011.
4. Filing Instructions: File as directed below.

REMOVE

All of H-1292-2 (Rel. 1-1739)
(Total: 26 pages)

INSERT

All of MS-1292-2
(Total: 23 pages)

Lisa Jolley

Acting, Assistant Director
Information Resources Management

H-1292-2 RADIO FREQUENCY EXPOSURE AWARENESS PROGRAM
(Internal)



BLM Handbook 1292-2 (I)

Table of Contents

CHAPTER 1 - OVERVIEW	1-1
1.1 PURPOSE.....	1-1
1.2 OBJECTIVE	1-1
1.3 AUTHORITY.....	1-1
1.4 RESPONSIBILITIES.....	1-1
1.5 REFERENCES	1-2
1.6 POLICY.....	1-2
1.7 FILE AND RECORDS MAINTENANCE	1-3
CHAPTER 2 - FIXED RADIO FREQUENCY TRANSMITTER DOCUMENTATION..	2-1
2.1 GENERAL INFORMATION	2-1
2.2 INVENTORIED FIXED RADIO FREQUENCY TRANSMITTER SITES.....	2-1
2.3 RF RELATED RECORDS	2-2
CHAPTER 3 - FIXED RADIO FREQUENCY TRANSMITTER SITE EVALUATIONS	3-1
3.1 GENERAL INFORMATION	3-1
3.2 ENVIRONMENTAL IMPACT PREDICTIONS	3-1
3.3 ENVIRONMENTAL ASSESSMENTS (EA).....	3-2
CHAPTER 4 - MULTIPLE TRANSMITTER SITE CONSIDERATIONS	4-1
4.1 CO-LOCATION	4-1
4.2 SHARED COMPLIANCE RESPONSIBILITY	4-1
CHAPTER 5 - MOBILE/PORTABLE TRANSMITTERS	5-1
5.1 GENERAL INFORMATION	5-1
5.2 MOBILE TRANSMITTERS - CATEGORICAL EXCLUSION.....	5-1
5.3 HANDHELD TRANSMITTERS - CATEGORICAL EXCLUSION	5-1
5.4 TRANSMITTER RADIO FREQUENCY ASSESSMENTS	5-1
CHAPTER 6 - EXPOSURE MANAGEMENT	2
6.1 PUBLIC/UNCONTROLLED EMISSIONS.....	6-1
6.2 OCCUPATIONAL/CONTROLLED	6-1
6.3 PERSONAL PROTECTIVE EQUIPMENT.....	6-2
CHAPTER 7 – TRAINING	7-1
7.1 RADIO FREQUENCY HAZARD TRAINING.....	7-1
7.2 OCCUPATIONAL RADIO FREQUENCY HAZARD TRAINING.....	7-1
7.3 TRAINING RECORDS	7-1
GLOSSARY	G-1
APPENDIX I – RF HAZARD SIGNS	A-1
APPENDIX II - QUICK REFERENCE	A-3
APPENDIX III - RADIO FREQUENCY EXPOSURE REFERENCES	A-4

Chapter 1. Overview

1.1 Purpose

This handbook establishes standards, policies, and responsibilities for informing telecommunications workers, employees, and the general public of the hazards associated with radio frequency (RF) human exposure.

1.2 Objective

This program strives to identify every location on public land managed by the Bureau, or cooperator sites that exceed the Maximum Permissible Exposure (MPE) limits for the general public as identified in the Federal Communications Commission (FCC) Office of Engineering and Technology (OET) Bulletin 65. The program identifies the process for land mobile radio (LMR) maintenance personnel to evaluate risk, assign a risk assessment code, provide information for initial notification and mitigate radio frequency hazards to the general public and occupational workers.

1.3 Authority

- A. The Occupational Safety and Health Act (OSHA) of 1970 (29 U.S.C. § 651).
- B. Non-ionizing Radiation (29 CFR 1910.97)
- C. The Control of Hazardous Energy (Lockout/Tag out) (29 CFR 1910.147)
- D. Personal Protective Equipment (29 CFR 1910.132)
- E. Specifications for accident prevention Signs and Tags (29 CFR 1910.145)
- F. Executive Order 12856, Compliance with the Emergency Planning and Community Right-to-Know Act (58 FR 41981; August 3, 1993).
- G. Departmental Manual (485 DM 27) Safety Management.
- H. Bureau Manual (MS-1112) Safety and Health Management (P)

1.4 Responsibilities

A. *The Assistant Director, Fire and Aviation (AD, FA)* has oversight of the NROB, and the radio program functional areas. In collaboration with the National Operations Center (NOC), the AD, determines the policy and procedure to perform periodic inspections of Radio Infrastructure (RI) sites.

B. *The National Radio Operations Branch Chief* is responsible for operational planning and policy for National Radio program management. The Branch Chief is responsible for recommending policy to the national radio communication policy program lead. The Branch Chief will provide technical support to Bureau LMR programs to develop or interpret LMR requirements.

C. *Assistant Director, Minerals and Realty Management* is responsible for policy relating to lease agreement.

D. *State Safety Managers* are responsible for: developing a procedure for all personnel visiting a RI site in their jurisdiction – to review (or develop) risk management worksheets prior to visiting a site; periodically assessing compliance of occupational worker training (controlled MPE limit); and assisting radio support personnel in safety and occupational health issues.

E. *State Radio Program Leads* confirm personnel exposed to RF levels above general public limits are identified and provided formal training. State Radio Program Leads will spot-check risk management worksheets available on the RI site list on SharePoint include RF exposure risk and provide radio frequency monitors to radio support personnel upon request. State Radio Program Leads will arrange for the investigation of locations not surveyed, that are reported to exceed MPE levels (General Public) to the state safety manager.

F. *Direct Supervisors of Radio Support Personnel* ensure their employees are formally trained on RF exposure and FCC Bulletin OET - 65.

G. *RI Site POC* will periodically assess RF levels at their assigned RI sites, evaluates risk at RI sites using Bureau Form 1112-5 and attach the forms with signature to the National Radio Program SharePoint.

H. *All personnel visiting an RI Site* will contact the RI Site POC prior, to review the risk management worksheet (RMW) for that location; or coordinate with the RI Site POC to prepare a RMW then obtain the signature authority for the level of risk assessed. If RF levels are unknown or expected to exceed MPE (General Public), a personal RF monitor will be used to sample RF levels from the turn-off from public roads to the RI site. Personal RF monitors will be operationally checked prior to departing for the RI site. The RI site POC must be notified of risks not listed on Bureau Form 1112-5.

1.5 References

- A. Federal Communications Commission Office of Engineering & Technology OET Bulletin 65 (August 1997)
- B. Bureau Manual (MS-9100) Facilities Planning, Design, Construction and Maintenance (P)
- C. Bureau Manual (MS-9130) Sign Manual (P)
- D. Motorola R56 Standards and Guidelines for Communications Sites

1.6 Policy

Bureau of Land Management radio support personnel will:

- assess RF exposure en route to RI sites;
- assess RF exposure at RI sites;
- post signs to inform personnel where necessary; and
- investigate reports of RF non-compliance on BLM managed lands.

1.7 File and Records Maintenance

Site specific records will be updated when the site is visited. A detailed description of actions performed will be stored at the site; a summary of actions will be stored in an electronic (digital) record available to all radio support personnel within the State Office jurisdiction.

Chapter 2 - Fixed Radio Frequency Transmitter Documentation

2.1 General Information

Every state office and center Tower Climbing Coordinator will maintain a current inventory of all fixed RF transmitter sites operating between 300 KHz and 100GHz, unless they meet the exclusions as specified below. Radio frequency-related records will be maintained at each inventoried site. See Chapter 3 of this handbook, the BLM H-1292-3 *Radio Site Facilities Standards*, and the BLM M-1292 *Radio Communication Manual* for more information.

2.2 Inventoried Fixed Radio Frequency Transmitter Sites

A. Inventory Exclusions. The state office/center inventory may exclude fixed sites that contain only low power transmitters (manufacturer approved: microwave ovens, garage door openers, cordless phones/headsets, remote controls, and wireless microphones). The National Radio Operations Branch (NROB) must be notified of situations requiring a ruling.

B. If any of the following apply, the site will be added to the fixed RF transmitter site inventory:

1. Any BLM operated land mobile radio transmitter.
2. Any transmitter sites/facilities that may be entered by BLM employees or BLM contractors.

C. The state office/center must maintain a current inventory of all transmitter sites as specified (see Table 2-1, Fixed RF Transmitter Site Inventory). At a minimum, inventories must include the following information fields:

1. Site name.
2. Latitude and longitude in WGS-84 (degrees-minutes-seconds- tenth of second).
3. Evaluation codes:
 - a. X - Categorical exclusion per OET - 65 using the prediction method.
 - b. EAGP (Environmental Assessment General Population) - Environmental assessment completed and the site is in compliance with general population/uncontrolled MPE limits.
 - c. EAOC (EA Occupational Controlled) - Environmental assessment completed. The site is in compliance with the occupational/controlled MPE limits, but is not

in compliance with general population/uncontrolled MPE. Requires special public access control.

- d. EAZZ (Environmental Assessment Hazard) – Environmental assessment completed and the site is not in compliance with general population/uncontrolled MPE or occupational/controlled MPE limits. The site requires special public access control. In addition, PPE and special procedures are required for employee access to comply with the occupational/controlled MPE limits.

4. Evaluation completion date.

5. All Transmitters: List Owner, Frequency, Effective Radiated Power (ERP), and antenna height (in meters).

6. Remarks.

Table 2-1: Fixed RF Transmitter Site Inventory

Site Name	Lat	Long	Evaluation	Date	Transmitters				Remarks
					Owner	Freq	ERP	Hgt	

2.3 RF Related Records

Each RF inventoried site must have copies of the environmental impact prediction reports, EA reports, RF hazard mitigation plans (and compliance assessment) and the applicable radio frequency assignments. The records do not have to be in a separate folder and may be a section of the site maintenance provider or owner’s folder/notebook, but they must be retained as long as the RF transmitter exists at the site.

Chapter 3 - Fixed Radio Frequency Transmitter Site Evaluations

3.1 General Information

A. Environmental impact predictions must be performed for all transmitter sites to determine if they qualify for environmental category exclusion or if they must be further evaluated under an Environmental Assessment (EA). Radio personnel should coordinate with a realty specialist to follow policy. An EA will be performed to determine the appropriate mitigation – if necessary.

B. An RF hazard evaluation is part of the RI CASHE program and site visits performed by the RI site POC. All radio infrastructure sites will be assessed on a 5-year cycle or when transmitters are added in close proximity to the site or effective radiated power changes for any transmitter at the RI site. The RF survey records and reports will be posted on the RI site list on the National Radio Operations Branch SharePoint at <http://teamspace/projects/radiomgmt/default.aspx>.

C. Every RF transmitting location should have a current right-of-way with “Communication Use” designation. When establishing or renewing communication rights-of-way for the BLM or other federal entities, the owner of the equipment or benefiting agency must provide the information and funding to complete a project proposal and supply all other necessary data or documentation as requested by their realty specialist. Proposals may indicate that an EA is needed.

3.2 Environmental Impact Predictions

A. Environmental impact predictions must be performed if an existing site/facility does not have an evaluation on file, if the last evaluation on file is over five years old, or before designing or installing a new transmitter(s) and/or site.

B. A model of the RF exposure levels at a RI site must be created using radio wave propagation standards for all RI sites; include transmission characteristics for all operational radio systems in the immediate proximity. If the situation does not permit performing an accurate estimation, an EA must be performed as follows:

1. Estimate the RF exposure level for the site using the method described in OET - 65, section 2; save the prediction/report.
2. To determine if the site qualifies for a categorical exclusion, cross reference the OET - 65, Appendix 2, Table 2 and the NTIA *Manual of Regulations*, chapter 4.
 - a. If the site does qualify for a categorical exclusion, annotate this in the fixed RF transmitter site inventory (include the date) and on the environmental impact prediction report. The latter report should be filed in the site’s RF hazard evaluation record folder.
 - b. If the site does not qualify for a categorical exclusion, an EA is required. Record this in the report. Indicate this in the fixed RF transmitter site inventory remarks and file the environmental impact prediction report in the RF hazard evaluation record folder for that site.

3.3 Environmental Assessments (EA)

A. Environmental assessments must be performed for fixed transmitter sites if any one of the following conditions apply:

1. The site did not qualify for a categorical exclusion during its environmental impact prediction evaluation.
2. The most recent EA is more than five years old.
3. A change has occurred impacting RF exposure at the location - estimated at 5 percent or more.
4. Natural disaster impacted the site (earthquake, flood, etc.).
5. Report of unsafe RF levels at a location.

B. Environmental assessments are field evaluations conducted in accordance with OET - 65, section 3 to determine the actual RF exposure levels at the site and to document the findings. Assessments will be performed by an industry certified or trained person using equipment calibrated to manufacturer specifications. Field assessments conducted by qualified communication site user groups or associations are acceptable.

C. Final EA reports documenting field results and actions must be signed by the state/center director. A copy of the report must be maintained at the effected site. The fixed RF transmitter site inventory must be updated to reflect any changes or new evaluations of sites. The following is a list of possible outcomes and actions that should be taken:

1. **Compliant:** The field assessment indicates that the site is in compliance with general population/uncontrolled MPE limits. Indicate this in the fixed RF transmitter site inventory and on the EA report.
2. **Non-compliant:** The field assessment indicates that the site is not compliant with the general population/uncontrolled MPE limits but is in compliance with occupational/controlled MPE limits. In cases where excessive RF emission levels cannot be mitigated to general public levels, the transmitter site must be deactivated until such time as it can be operated within the safety limits established by FCC OET - 65.
 - a. Efforts should be made to reduce effective radiated power (ERP) without adversely effecting radio service. Compliance must be validated and documented.
 - b. If the excess RF level cannot be reduced to general public MPE, the risk must be evaluated using Bureau form 1112-5. If the public does not have access (i.e. controlled access, fences, signs, gates, anti-climbing devices, extreme terrain barriers, etc.), the assessment can be concluded by annotating this in the EA report. If the public does have access, notification of risk must be posted.

Chapter 4 - Multiple Transmitter Site Considerations

4.1 Co-location

A. Most radio infrastructure (RI) sites are shared or co-located. Decisions regarding occupancy, use and management of the site do not solely reside with the Bureau. Environmental impact predictions and EAs performed at these sites must include all the transmitters at the site for the report to be accurate and clearly identify RF exposure.

B. Every effort should be made to develop consolidated procedures which require the compliance of all transmitting contributors at a site. These procedures should include control measures, such as power reduction, lock-out/tag-out, and scheduled time for maintenance to ensure RF exposure is managed.

4.2 Shared Compliance Responsibility

When a site has more than one user or licensee, the FCC five percent compliance rule (limit) of shared responsibility applies. When assessing exposure to radiation, all sources at the site must be considered, not just those RF radiation fields associated with one specific transmitting source. At locations exceeding the five percent compliance rule, all transmitter owners are responsible to achieve compliance. This applies regardless of whether such transmitters would, by themselves, normally be excluded from performing a routine environmental evaluation or EA.

Chapter 5 - Mobile/Portable Transmitters

5.1 General Information

A. Most BLM owned radio systems transmit RF within MPE limits. Therefore, most radio systems will qualify for categorical exclusions and will not require environmental assessments.

B. All personnel working in locations exceeding the MPE for general public must be trained in RF exposure.

C. The OET - 65 environmental evaluation classification for transmitters is based on portable radio antennas within 20cm (7.87 inches) of the body; and mobile radio antennas located more than 20cm from the body.

D. Radio frequency exposure assessments will be performed by qualified personnel to determine compliance with both general public and occupational MPE limits.

E. All personnel must keep operational mobile radio antennas at least 20cm from the body.

5.2 Mobile Transmitters - Categorical Exclusion

The categorical exclusion applies to the following mobile transmitters:

A. Mobile radio systems certified by the manufacturer not to exceed the occupational/controlled MPE limits or the general public/uncontrolled MPE limits for RF exposure.

B. Mobile radios systems with an effective radiated power (ERP) less than 100 watts with the antenna mounted on a metal roof.

C. Transportable land mobile radio repeaters and base stations with an ERP less than 100 watts and less than 50% transmitter duty cycle.

5.3 Handheld Transmitters - Categorical Exclusion

The categorical exclusion applies to the following handheld transmitters:

A. Any handheld radio systems certified by the manufacturer not to exceed MPE limit for the general public/uncontrolled.

B. All handheld radio systems with an ERP of less than 1.5 watts.

5.4 Transmitter Radio Frequency Assessments

A. Transmitter assessments must only be performed by an industry certified or trained person using equipment calibrated to manufacturer specification.

B. The assessment will be performed in accordance with FCC OET - 65, Supplement C.

1. The radio system will be configured and installed in the way it will be operated.

2. The measurement area will focus on human exposure. Handheld radio systems will be assessed using typical proximity from the human body. Mobile radio systems will be assessed as configured and installed as related to locations people can sit in the vehicle.

C. Assessment results and actions.

1. Radio systems that exceed MPE for occupational/controlled limits will not be used.
2. Locations on Bureau land that exceed MPE limits for general public must be cordoned using fencing – or signs must be posted in accordance with H-1292-3, Radio Site Facilities Standards.

Chapter 6 - Exposure Management

6.1 Public/Uncontrolled Emissions

Environmental assessments are performed at every radio infrastructure (RI) site during CASHE audits and spot-checked by RI site POCs. Locations that exceed MPE for general public must be controlled to prevent public access in accordance with H-1292-3, Radio Site Facilities Standards. Assessment report must be retained with the permanent records/report for the RI site. (Reference section 2.3, "Environmental Assessments" of this handbook for mitigation plans and assessment procedures.)

6.2 Occupational/Controlled Emissions

A. Only employees and contractors that have been formally trained in MPE for occupational limits and FCC OET – 65 are authorized to access areas exceeding MPE limits for general public/uncontrolled.

B. Procedural mitigation.

1. Site entrance procedures:

- a. Contact all transmitter owners well in advance of the site visit and request that they deactivate their transmitters.
- b. Review the RMW (BLM Form 1112-5) before departing to visit a location to identify site-specific risks and PPE requirements.

2. Servicing work requirements at radio infrastructure (RI) sites:

Workers servicing radio infrastructure (RI) sites will:

- a. Obey all posted signs and follow site-specific procedures identified on Bureau Form 1112-5 (RMW).
 - b. Wear a (calibrated) personal RF monitor in locations of unknown exposure.
 - c. Wear a calibrated personal RF monitor when feasible. RF monitors will be used to confirm models/predictions when ERP changes, transmitters are added at RI sites, or traveling/working at cooperator sites with unknown frequency/ERP. Personal RF monitors will have a current calibration by the manufacturer.
 - d. Work on antenna systems that are NOT energized. De-energize radio systems prior to working on them and Lock-out/Tag-out equipment.
 - e. Stay at least three (3) feet away from active/operational antennas.
3. Site-specific procedures will be established to comply with FCC OET - 65. This procedure will be provided to all personnel who may access the site.

C. Authorized visitors must review (or prepare then authorize) a Bureau Form 1112-5 (RMW) prior to entering any RI site; RMWs will be updated when risks change.

D. Access to locations exceeding MPE limits for general public will be controlled with physical security (locked door, fence, etc.). Signs will be used to notify people of hazards (reference Appendix I - RF Hazard Signs).

E. Contractors must adhere to the guidelines of the BLM RF program.

6.3 Personal Protective Equipment

A. Personal Protective Equipment (PPE) must meet American National Standards Institute (ANSI) requirements. All personnel must be trained, and proficient in the proper use of PPE. All PPE must be serviceable.

B. Employees in locations exceeding MPE for general public must wear a calibrated personal RF monitor; the monitor will be used according to manufacturer recommendations.

C. Control measures must be developed to mitigate risk to employees working in locations exceeding MPE limits for general public. These control measures must be identified on Bureau Form 1112-5.

Chapter 7 – Training

7.1 Radio Frequency Hazard Training

The BLM, cooperators, and contractors use hundreds of radio and electrical systems in the field and at offices throughout the United States. Training, valid assessments, and responsible performance of duties are the foundation to safeguard the public and employees. All BLM employees and contractors exposed to RF exceeding MPE for general public must be notified (formally or signage).

7.2 Occupational Radio Frequency Hazard Training

A. All employees and contractors exposed to RF levels that exceed MPE for the general population must receive formal training approved by the National Radio Operations Branch (NROB). Annual refresher training is required for these individuals.

B. Occupational RF hazard training must include radiation fundamentals, measurement methods, and PPE use in accordance with FCC OET – 65 and manufacturer recommendations.

All Bureau employees exposed to RF levels that exceed MPE limits for the general public should be trained and proficient in evaluating risk using Bureau Form 1112-5.

7.3 Training Records

A. Records of RF hazard training will be periodically reviewed by the National Radio Operations Branch (NROB).

B. Completion certificates will be retained by each Bureau employee; the employee will provide an electronic copy of the certificate/record to their immediate supervisor, State Safety Manager, and the State/Center Communication Tower Climbing Coordinator.

Glossary

Categorical exclusion: The categorical exclusion represents the lowest level of environmental review to which a project can be subjected. A project must be below the State Environmental Policy Act threshold for a major project to qualify for a categorical exclusion.

Duty factor: The ratio of pulse duration to the pulse period of a periodic pulse train. Also may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source, such as a paging antenna by dividing average transmission duration by the average period for transmissions. A duty factor of 1.0 corresponds to continuous operation.

Effective Radiated Power (ERP): The product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction.

Electric field strength (E): A field vector quantity that represents the force on an infinitesimal unit positive test charge at a point divided by that charge. Electric field strength is expressed in units of volts per meter (V/m).

Energy density (electromagnetic field): The electromagnetic energy contained in an infinitesimal volume divided by that volume.

Exposure: Term used to describe the condition whenever and wherever a person is subjected to electric, magnetic, or electromagnetic fields other than those originating from physiological processes in the body and other natural phenomena.

Exposure Criteria

A. Exposures to RF are based on criteria quantified in terms of the specific absorption rate (SAR) of the human body. Guidelines for human exposure to RF fields are based on SAR thresholds where adverse biological effects may occur.

B. When the human body is exposed to an RF field, the SAR experienced is proportional to the squared value of the electric field strength induced in the body. The basis for these limits is a whole-body average SAR threshold level of four watts per kilogram (4 W/kg), as averaged over the entire mass of the body. The MPE limits are also based on data showing that the human body absorbs RF energy at some frequencies more efficiently than at others. The most restrictive limits occur in the frequency range of 30 - 300 MHz, where whole-body absorption of RF energy by human beings is most efficient. This is also the frequency range where most of the Bureau's land mobile radio system transmitters operate.

C. The MPE limits are defined in terms of power density (units of milliwatts per centimeter squared: mW/cm²), electric field strength (units of volts per meter: V/m) and magnetic field strength (units of amperes per meter: A/m). In the far-field of a transmitting antenna, where the electric field vector (E), the magnetic field vector (H), and the direction of propagation can be considered to be all mutually orthogonal ("plane-wave" conditions), these quantities are related by the following equation

Calculation:

$$S = E^2/3770 = 37.7H^2$$

Where: S = power density (mW/cm²)
E = electric field strength (V/m)
H = magnetic field strength (A/m)

Exposure, partial-body: Partial-body exposure results when RF fields are substantially non-uniform over the body. Fields that are non-uniform over volumes comparable to the human body may occur due to highly directional sources, standing-waves, re-radiating sources or in the near field. (See Hot Spot.)

Far-field region: That region of the field of an antenna where the angular field distribution is essentially independent of the distance from the antenna. In this region (also called the free space region), the field has a predominantly plane-wave character, i.e., locally uniform distribution of electric field strength and magnetic field strength in planes transverse to the direction of propagation. See Magnetic Field Strength (H).

General Population/Uncontrolled Exposure Tier: This tier applies to the general public or employees who were not made aware of the hazard and had no control over their exposure. Members of the general public always fall under this category when exposure is not employment-related.

Hertz (Hz): The unit for expressing radio frequency. One hertz is also referred to as one cycle per second (CPS).

Hot Spot: A highly localized area of relatively more intense radio-frequency radiation that manifests itself in two principal ways: (1) the presence of intense electric or magnetic fields immediately adjacent to conductive objects that are immersed in lower intensity ambient fields (often referred to as re-radiation), and (2) localized areas, not necessarily immediately close to conductive objects, in which there exists a concentration of RF fields caused by reflections and/or narrow beams produced by high-gain radiating antennas or other highly directional sources. In both cases, the fields are characterized by very rapid changes in field strength with distance. The RF hot spots are normally associated with very non-uniform exposure of the body (partial body exposure). This is not to be confused with an actual thermal hot spot within the absorbing body.

Magnetic field strength (H): A field vector that is equal to the magnetic flux density divided by the permeability of the medium. Magnetic field strength is expressed in units of amperes per meter (A/m).

Maximum Permissible Exposure (MPE): The square *Root of the Mean of the Square* (RMS) and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with an acceptable safety factor.

A. Exposure limits are the amount of RF energy which an individual may come into contact with for a given period of time without sustaining health consequences. The quantity of exposure depends on the time, duration, and strength of the electric and magnetic fields, or electromagnetic energy environment. In most cases, the characteristics of a radio transmitter site will determine the exposure potential. The limits for MPE for humans are defined in FCC OET - 65, Introduction, Table 1 and pertain to both the Bureau employees and the general population.

Wavelength Band	Evaluation Required if Power* (watts) Exceeds:
MF	
160 m	500
HF	
80 m	500
75 m	500
40 m	500
30 m	425
20 m	225
17 m	125
15 m	100
12 m	75
10 m	50
VHF (all bands)	50
UHF	
70 cm	70
33 cm	150
23 cm	200
13 cm	250
SHF (all bands)	250
EHF (all bands)	250
Repeater stations (all bands)	<u>non-building-mounted antennas:</u> height above ground level to lowest point of antenna < 10 m <u>and</u> power > 500 W ERP <u>building-mounted antennas:</u> power > 500 W ERP

* Transmitter power = PEP input to antenna. For repeater stations *only*, power exclusion based on ERP (effective radiated power).

B. In 1996, the FCC substantially revised its guidelines for evaluating human exposure to RF emissions. The agency incorporated exposure limits specified in terms of MPE given in units of electric and magnetic field strength and power densities for transmitters operating at frequencies between 300 KHz and 100 GHz. For exposure to multiple frequencies, the fraction (or percentage) of the MPE produced by each frequency is determined and the sum total of these fractions (or percentages) must not exceed unity, or 100 percent.

Near-field region (E): A region in proximity to an antenna or other radiating structure in which the electric and magnetic fields do not have a substantially plane-wave character, but vary considerably from point to point. The near-field region is further subdivided into the reactive near-field region, which is closest to the radiating structure and contains most or nearly all of the stored energy and the radiating near-field region where the radiation field predominates over the reactive field, but lacks substantial plane-wave character and is complicated in structure. For most antennas, the outer boundary of the reactive near field region is commonly taken to exist at a distance of one-half wavelength from the antenna surface.

Occupational/Controlled Exposure Tier: This tier applies to individuals who were made aware of the RF emission hazard and had control over their exposure. It includes consequences of employment in RF occupations as well as exposure of a transient nature as a result of incidental passage through a location where RF levels may be above the general population/uncontrolled limits (see definition).

Two Tier Exposure Limits: In 1996, the FCC adopted new guidelines and procedures for evaluating environmental effects of RF emissions. The new guidelines incorporate two tiers of exposure limits based on whether exposure occurs in an occupational or controlled situation or where the general population is exposed and there is an uncontrolled environment.

Appendix I - RF Hazard Signs

Three Elements of All RF Hazard Signs

All RF hazard signs must include three warning elements:

1. Signal words designating the degree of the safety alerting, such as: “notice,” “caution,” and “warning.” Corresponding safety colors are blue for notice, yellow for caution, and orange for warning. Motorola R-56, *Guidelines for Communications Sites*, addresses all signal words except for “danger”.
2. Advisory symbols to identify incident electromagnetic energy. The symbol depicts black wave-fronts radiating from a stylized point source. These symbols are defined in National Electrical Manufacturers Association/ANSI Z535.3-1991.
3. Text messages to convey the actual safety issue, authority and basis of the issue, and the appropriate action.

Generic Guidelines Sign

The major intent of generic guideline signing is to ensure that compliance is maintained at the site. Having the sign posted in a visible area informs all personnel who enter of the rules for that site. Generic guidelines apply in all situations and will be posted at all sites. Site-specific guidelines may also be in place. Color is yellow with black lettering.



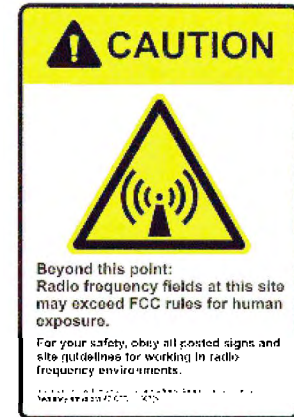
Notice Sign

A notice sign is used to distinguish the boundary between the general population/uncontrolled areas and the occupational/controlled areas. This is the first warning sign giving notice to the general public of potential RF exposure hazard. The notice sign should be mounted on the site fence, the gate entrance, or the roof door to the equipment room, depending upon exposure potential. Color is blue with the lettering and the ANSI radiation hazard communication symbol in black.

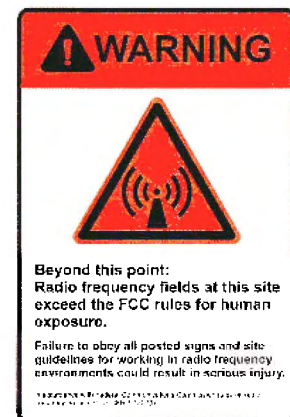


Caution Sign

The caution sign identifies RF controlled areas where exposure can exceed the occupational/controlled MPE. Site specific guidelines may require reduction of RF power before work begins or the use of RF protective clothing. Under no circumstances should workers enter and work in these areas without understanding and following increased safe work practices. Color is yellow with the lettering and the ANSI radiation hazard communication symbol in black.

**Warning Sign**

The warning sign denotes the boundary of areas with RF levels ten (10) times the occupational/controlled MPE. Telecommunications staff and contractors must not enter these areas unless special procedures are followed. If work is required in these areas, the transmitter must be shut down for the duration of the maintenance. The color is orange with the lettering and the ANSI radiation hazard communication symbol in black (R-56). Also acceptable is warning signage meeting the requirements of the OSHA Non-ionizing Radiation Standard (29CFR 1910.97), or ANSI C95.2-1982.



Appendix II – Quick Reference Guide

Purpose: Informing telecommunications workers, employees, and the general public of the hazards associated with radio frequency exposure.

Assistant Director OF&A

Oversight of NROB & radio program functional areas; collaborates with NOC then determines policy & procedure to inspect RI sites.

NROB Branch Chief

Operational planning & policy for National Radio program management; recommends policy to WO radio policy lead; provides technical support to BLM states & interprets LMR requirements.

Assistant Director, Minerals and Realty

Approves policy relating to lease agreement.

State Safety Manager

Develops procedure for personnel visiting RI sites; reviews/develops RMWs; periodically assess compliance RF; assists radio techs in safety & health issues.

State Radio Program Lead

Confirms RF training is provided; spot-checks RMWs; provides RF monitors to radio techs; coordinates /investigates reports of locations exceeding MPE for general public.

Direct Supervisors of Radio Techs

Ensures techs successfully complete formal training in OET - 65.

RI Site POC

Assess RF levels at RI sites; evaluates risk with Form 1112-5; coordinates site visits and provides information on NROB SharePoint.

Personnel visiting an RI Site

- Coordinate with RI Site POC
- Review/Prepare RMW
- Use Personal RF Monitor if RF levels unknown
- Follow local CheckIn/CheckOut procedure

Policy

BLM radio support personnel will:

- assess RF exposure en route to RI sites;
- assess RF exposure at RI sites;
- post signs where necessary; and
- investigate reports of RF non-compliance on BLM managed lands.

Transmitter Inventory

- ✓ RI Site Name
- ✓ Location (DD MM SS.S)
- ✓ Evaluation Code
 - X (Categorical Exclusion)
 - EAGP (EA General Population)
 - EAOC (EA Occupational Controlled)

RF Basics

- Obey Posted Signs
- If in doubt: Wear PPE
- Stay 3 feet away from active antennas
- De-energize & LockOut/TagOut antennas when working on them
- Personnel must be trained if exposed above general public RF levels

Actions to Mitigate Risk

- Safeguard site – cordon
- Notify effected personnel/organization
- Confirm RF exposure
- Prepare/Update RMW – Corrective Action

Principal Information Sources

- FCC OET Bulletin 65
- Motorola R56 Standards & Guidelines for RI Sites
- Bureau Manual 1112 - Safety and Health Management
- Bureau Manual 9100 – BLM Facilities
- Bureau Manual 9130 - Sign Manual

Appendix III - Radio Frequency Exposure References

- A. The National Telecommunications and Information Administration, Regulations and Procedures for Federal RF Management, section 8.2
- B. Federal Communications Commission (FCC), part 90 of the FCC Rules
- C. The FCC Office of Engineering and Technology (OET), Bulletin 65, *Evaluating Compliance with FCC Guidelines For Human Exposure to Radio Frequency Electromagnetic Fields*
- D. FCC OET, Bulletin 65, Appendix A, *Summary of Exposure Guidelines*
- E. 29 CFR, 1910.268, Subpart R, Telecommunications
- F. 29 CFR, 1910.97, Subpart G, Non-ionizing Radiation
- G. 29 CFR, 1910.147, Occupational Safety and Health Administration Standard, Lock-out/Tag-out Procedures
- H. 40 CFR, 1502, Environmental Impact Statements
- I. 47 CFR, 1.1306 through 1.1310, FCC Practice and Procedure
- J. 47 CFR, 2.1091 through 2.1093, FCC Frequency Allocations, General Rules and Regulations
- K. FCC OET, Bulletin 65, *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*
- L. ANSI Standard, C95.7-2005, *Recommended Practice of Radio Frequency Safety Programs*
- M. FCC, Document 96-326, *Guidelines for Evaluating the Environmental Effects of RF Radiation*
- N. FCC, Document 97-303, *Guidelines for Evaluating the Environmental Effects of RF Radiation*
- O. ANSI, C95.1-1992, *Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Energy*
- P. ANSI, C95.3-1991, *Standard Recommended Practice for the Measurement of Potentially Hazardous Fields-RF and Microwave*
- Q. Departmental Manual (377 DM), part 485, Safety and Health Program
- R. BLM Manual 1292, *Radio Communication Management*
- S. BLM Manual Handbook 1112-1, *Safety and Health Management*
- T. BLM Manual Handbook 1601-1, *Land Use Planning Handbook*
- U. BLM Manual Handbook 1530-1, *Real Property General Operating Procedures*



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANUAL TRANSMITTAL SHEET

Release

1-1751

Date

6/20/2013

Subject

H-1292-3 – Radio Site Facilities Handbook (I)

1. Explanation of Materials Transmitted: The Radio Site Facilities Handbook is targeted for the Bureau of Land Management (BLM) Radio Program to include State radio program managers. The attached BLM Radio Site Facilities Handbook Section 1292-3 is new and does not replace a previous version. The new handbook establishes guidelines to design, construct, and maintain facilities that physically support and/or physically protect radio system equipment owned by the Bureau of Land Management (BLM).
2. Reports Required: None
3. Materials Superseded: None
4. Filing Instructions: File as directed below.

REMOVE

None
(Total: 0 pages)

INSERT

All of H-1292-3
(Total: 39 pages)

Lisa Jolley

Acting, Assistant Director
Information Resources Management



BLM Handbook 1292-3 (I)

Table of Contents

TABLE OF CONTENTS	I
CHAPTER 1. OVERVIEW	1-1
CHAPTER 2. EVALUATION PROCESS FOR FACILITY LOCATIONS	2-1
CHAPTER 3. COMMUNICATION SITE CONSTRUCTION AND COORDINATION	3-1
CHAPTER 4. RADIO INFRASTRUCTURE (RI) SITE VISITS.....	4-1
CHAPTER 5. FACILITY DOCUMENTATION AND RECORDKEEPING	5-1
CHAPTER 6. TRAINING.....	6-1
SIGN 4.....	B-1
SIGN 3.....	B-1
SIGN 1.....	B-1
SIGN 2.....	B-1
SIGN 1.....	B-1
LOCKOUT/TAGOUT DEVICE	B-1
INSPECTION TAG.....	B-1
SIGN 6.....	B-1
SIGN 5.....	B-1
FIGURE B-1	B-1
SIGN 8.....	B-2
SIGN 7.....	B-2
SIGNS 1 - 6.....	B-2
FIGURE B-2.....	B-2

Chapter 1. Overview

1.1 Purpose

This handbook establishes guidelines to design, construct, and maintain facilities that physically support and/or physically protect radio system equipment owned by the Bureau of Land Management (BLM).

1.2 Objectives

The objectives of this handbook are:

- Define requirements for providing safe, reliable, and structurally sound facilities to safeguard BLM owned radio system equipment;
- Prioritize partners for collocating/consolidating radio facilities; and
- Define requirements for providing adequate power and connectivity to support reliable radio service to field going personnel.

1.3 Authority

- A. The Communications Act of 1934, as amended (47 U.S.C. 151).
- B. The Occupational Safety and Health Act (OSHA) of 1970 (29 U.S.C. § 651).
- C. The Federal Aviation Administration Advisory Circular, as amended (AC 70/7460-1).
- D. Executive Order 12046, Transfer of Telecommunications Functions (42 FR 56101; March 27, 1978).
- E. Executive Order 12472, as amended, Assignment of National Security and Emergency Preparedness Telecommunications Functions (49 FR 13471, 3 CFR; April 3, 1984).
- F. Executive Order 12856, Compliance with the Emergency Planning and Community Right-to-Know Act (58 FR 41981; August 3, 1993).
- G. Departmental Manual (485 DM 27) Safety Management.
- H. Bureau Manual (MS-1112) Safety and Health Management (P)
- I. Bureau Manual (MS-1292) Radio Communications Management (I)

1.4 Responsibility

A. *State Engineer* – Responsible for the programming of funds for the design, construction, and maintenance of radio infrastructure facilities. Radio infrastructure facilities consist of the following elements: radio shelter, including all mechanical and electrical systems within the shelter; tower; internal and external grounding systems; radio equipment racks as provided by

shelter supplier; primary and backup power (e.g., traditional AC, battery, solar, wind, diesel/propane generator) for the radio facility; fencing; facility access; and drainage.

B. *District Manager* – Responsible for the condition (health and safety) of the RI sites in their jurisdiction, authorizing the construction of radio facilities on public land, monitoring the authorized uses to ensure compliance with the terms and conditions of the authorization, require compliance with Department and Bureau RI Site policy, and newly authorized uses do not affect the operation of existing telecommunication facilities including BLM facilities.

C. *BLM CASHE Program Lead* – Will include the capability to assess radio infrastructure sites when performing audits of BLM offices. And will coordinate with BLM national radio office to incorporate the “lessons learned” from assessments performed the previous year. Notify the state radio program lead and the BLM national radio office of RI CASHE high priority findings.

D. *State Radio Program Lead* – The State Radio Program Lead is responsible to identify work and projects needed to improve or maintain radio facilities and/or radio coverage, coordinate with the States’ Engineering Programs to determine the scope of work for each radio infrastructure project, funding to purchase and install equipment at radio facilities, and coordinate the annual RI site update on the National Radio Program SharePoint <http://teamspace/projects/radiomgmt/default.aspx> for all sites in their State Office Jurisdiction. Responsible to verify the RI sites that provide radio service to field-going employees provide reliable service and meet national and state policy requirements. Responsible to advocate for RI site POC to other programs and organizations responsible to support RI sites.

E. *All personnel visiting an RI Site* will contact the RI Site POC prior, to review the risk management worksheet (RMW) for that location; or coordinate with the RI Site POC to prepare and obtain the signature authority for the level of risk assessed.

1.5 References

- A. Federal Communications Commission Office of Engineering & Technology OET Bulletin 65 (August 1997)
- B. Departmental Form NRSPMO-SS-002
- C. Bureau Manual (MS-6100) National Landscape Conservation System management (P)
- D. Bureau Manual (MS-8400) Visual Resource Management (P)
- E. Bureau Manual (MS-9100) Facilities Planning, Design, Construction and Maintenance (P)
- F. Bureau Manual (MS-9115) Primitive Roads (P)

G. Bureau Manual (MS-9130) Sign Manual (P)

H. Bureau Form 2800-14

I. National Fire Protection Association, NFPA 70, National Electrical Code

J. Structural Standards for Steel Antenna Towers and Antenna Supporting Structures (ANSI/TIA-222)

K. Motorola R56 Standards and Guidelines for Communications Sites

1.6 Policy

The Bureau of Land Management will provide adequate facilities to store and safeguard radio system equipment. The facilities will:

- comply with building codes and standards;
- be accessible to maintenance personnel;
- have adequate power for equipment performance; and
- be periodically inspected for condition assessment.

1.7 File and Records Maintenance.

Site specific records will be updated when the site is visited. A detailed description of actions performed will be stored at the site; a summary of actions will be stored in an electronic (digital) record available to all radio support personnel within the State Office jurisdiction.

Chapter 2. Evaluation Process for Facility Locations

2.1 New Facilities

- A. New construction (capital improvement) of a radio infrastructure (RI) site is a last resort.
- B. The standard site design will be used to propose the facility.
- C. A detailed assessment will be performed by local radio support personnel to model radio system performance using radio propagation standards; support requirements will be included. User requirements must be approved by the district manager with jurisdiction of the proposed location. The state radio program lead must confirm and approve the radio system design and validate capabilities with local radio system users.
- D. Cooperator equipment collocated at the RI site will be designed to minimize interference and optimize radio system performance.

2.2 Cooperator Facilities

- A. In most situations, an existing facility is available to provide radio service to radio users. Radio facility requirements are the same for all sites, regardless of the site owner. A candidate facility must be assessed and findings of deficiencies must be corrected prior to installing BLM radio system equipment to enable safe and reliable radio service. The BLM will not fund the repair of cooperator-owned facilities.
- B. A detailed assessment will be performed by local radio support personnel to ensure radio system support requirements are met. These requirements must be approved by the district manager for jurisdiction of the proposed RI site and the state radio program lead, and then validated by the local radio system users.
- C. Collocating in a cooperator-owned site is recommended to expand/improve radio system coverage utilizing existing infrastructure.
Priority of site sharing
 - BLM
 - DOI
 - Other federal organizations
 - Public safety organizations
 - Non-federal government organizations
 - Private (business and landowners)
- D. A Memorandum of Understanding (MOU) is required whenever bureaus/offices desire to operate on facilities in cooperation with other agencies or entities. An example of a MOU is located at the end of this document in Illustration 2. States typically have a MOU Coordinator who works in procurement or records management.

- E. A radio frequency authorization (RFA) is required to legally transmit using radio spectrum. Reference MS-1291 *Radio Frequency Authorization* for more information.

- F. A lease is required when installing BLM owned radio system equipment in a commercial or privately owned facility. The local BLM contracting office will help to prepare and approve the lease. If the site is on BLM land, the radio program must also notify the District or Field Realty Specialist of their intent to occupy. If the facility is a single use site (BLM Form 2800-14), then BLM users/employees must apply for Rights of Way (ROW) through the District or Field Office Realty Specialists. Additional users must obtain their own ROW using the same process in compliance with 43 CFR 2800.

Chapter 3. COMMUNICATION SITE CONSTRUCTION AND COORDINATION

3.1 General

The state radio program lead and the radio support personnel (techs) provide location and height (above ground level) requirements for reliable radio service. Radio propagation standards are used to model coverage.

- A. Standards to design, construct, and maintain radio infrastructure sites are defined by the Department of Interior's Office of the Chief Information Officer.
- B. The state radio program lead is the principal stakeholder for the locations of radio infrastructure; the purpose of the RI site is to provide radio service to BLM personnel in the field.
- C. The point of contact assigned to each RI site will remain up to date on:
 - 1. The condition, performance and capabilities of the site;
 - 2. Work space and equipment space the radio system occupies; and
 - 3. Status of authorization to remain and operate at the site (RFA, MOU, MOA, contract, and other authorizations).

Coordination with responsible programs will be performed quickly and efficiently to prevent adverse impact to radio service.

The point of contact (POC) will inform the district office manager for the RI site jurisdiction of all high priority findings and provides updates regarding the corrective action.

- D. The Engineering Program is responsible for engineering cost estimates, design, construction, and maintenance of radio infrastructure facilities. This includes every facility asset except the radio system equipment (including antenna systems).

3.2 Radio Site Locations

- A. All RI sites will be validated annually by the state radio program lead. Sites that are not operational, safe and reliable will be repaired, safeguarded, or demolished.
- B. The process of proposing a new RI site location is initiated by assigning a RI site POC. This BLM employee will initiate the process and determine solutions to provide the radio service for a pre-determined area. A formal assessment is performed by the local radio support person (tech) to define effective radiated power (ERP), location of antenna, power requirements, and connectivity (i.e. microwave, telephone circuit, radio link, etc.).
- C. Additional RI sites must be approved by the state radio program lead when considered to ensure coordination throughout the state.

3.3 Site Construction and Performance Standards

- A. The Department of Interior's (DOI) Office of Chief Information Officer (OCIO) defines laws, standards, codes, and other policies RI sites must comply with.
- B. Each year, the OCIO reviews the policy and publishes changes as necessary.
- C. Current governing policies will be updated/revise as required. All RI site components (communication tower, shelter, cabinet, and compound) must be brought into compliance based on risk assessment code (RAC). High priority findings resulting from updates/revisions will be brought to the attention of the district manager that has jurisdiction for the associated RI site(s).
- D. The RI site facilities (communication tower, shelter/cabinet, power, and compound) should be designed and constructed based on a 30 year life cycle. All phases of the project should be considered when planning for access and maintenance of the site, recognizing that personnel supporting RI sites usually work alone. The radio service provided at the site is dependent on the structural integrity of the facility.

3.4 Compound

- A. Shelters and cabinets will be sized and located in the RI site compound (with consideration for all potential weather conditions) to provide for optimal access throughout the year.
- B. The compound will be clear of vegetation that poses a risk to personnel such as tall weeds, grass, and trees that could fall on site components. If the compound is not fenced, an area will be cleared to provide safe access, provide for observation of hazardous wildlife/insects, and provide for safe ingress/egress.
- C. "On the ground" visual inspections of all improvements within the compound will be performed during every visit. Programs responsible for deficiencies will be informed of any findings.
- D. Physical security will include fencing when warranted by proximity to public recreation areas. Fencing will be grounded/bonded.
- E. Damaged or inoperable radio system equipment will not be stored at the site.

3.5 Shelters and Buildings

- A. Shelters and cabinets will be sized to protect the radio system equipment permanently installed at radio sites and provide adequate space for maintenance.

- B. Communication designs and configurations will be made to provide 25% of the usable space for resource sharing (both communication tower and shelter).
- C. Shelters and buildings will be constructed on foundations designed for the radio site components and will comply with local building codes and standards.
- D. Structures should comply with BLM manual MS-8400 Visual Resource Management Program (VRM) when feasible.
- E. Climate control systems (heating, ventilation and cooling - HVAC) may be necessary to protect the radio systems installed at the radio site. Ventilation is more reliable and consumes a fraction of power as compared to commercial air conditioning units. Consider the power and maintenance requirements when selecting the HVAC system to protect radio equipment.
- F. The use of wet cell batteries requires ventilation, which should be consistent with battery manufacturer recommendations. If sealed batteries are used, confirm the manufacturer's recommendations for ventilation are met. Ventilation requirements will not be based on current draw or battery configuration but rather on the number and type of batteries at the site.
- G. Entry ports must be adequately sealed to allow radio frequency cables and protect the cabinet or shelter from the environment, wildlife, and insects. On large shelters, an entrance panel similar to the "port earthed entrance panel" manufactured by PolyPhaser is recommended to accommodate expansion and protect radio system equipment.
- H. Fire extinguishers, first aid kits (and eyewash stations when wet cell batteries are in use at the site) must be serviceable and readily available when personnel are at the radio site. These items may be kept in a vehicle; every person present at the RI site must have access to these items.

3.6 Connectivity for Radio System Equipment

- A. Connectivity is based on availability of contracted services (telephone company), reliability (quality of service), and local conditions (weather).

Discrete channels will be used to:

- Enable digital modulation,
- Improve dispatch capabilities, and
- Prepare for emerging technology.

All options for connectivity available at the specific location should be assessed to determine:

- Cost,
- Maintenance support (response time), and
- Reliability.

- B. Risk to employees is exacerbated by increased drive-time, especially with poor weather and travel conditions. Radio system equipment that is complex or sensitive to anomalies (lightening or power fluctuations) will be located as close as possible to radio support personnel offices to minimize the distance to advanced test, measuring, and diagnostic equipment (TMDE) and travel time to the RI site.

3.7 Communication Towers and Antenna Support Structures

- A. Towers and structures that support radio system equipment should be designed to minimize or eliminate climbing requirements.
- B. The local BLM safety office will manage activities relating to:
- Rooftops,
 - Wooden poles and other non-traditional communication tower and antenna structures, and
 - The operation of lift (bucket) trucks.
- C. Towers and structures must be erected, inspected and maintained by qualified personnel.
1. Erect towers in accordance with manufacturers' specifications, current revision of TIA-222-G; use manufacturer provided hardware and recommended products/tools.
 2. Feasibility assessments of steel communication towers will be performed every 3 years for guyed towers; every 5 years for self-supporting towers; and prior to climbing on the tower.
 3. Towers should have fixed ladders and safety-climbing devices (i.e. cables) permanently installed.
 4. Towers (antenna structures) that are not safe to sustain a personal fall arrest system will not be used to support climbers.
- D. Antenna systems must be installed in accordance with manufacturer installation instructions and the current revision of Motorola's document named "R56 - Standards and Guidelines for Communication Sites," commonly referred as "R56."
1. Antenna systems may be replaced with like systems at the State Radio Program Lead's discretion.
 2. A feasibility analysis must be performed prior to adding or removing antenna systems.

3. Perform field mapping of all BLM-owned towers in accordance with current revision of TIA-222.
4. Antenna placement will be managed/approved by the state radio program lead for all BLM-owned towers to optimize performance of BLM radio systems.

3.8 Power Sources

- A. Radio system power requirements will be provided by the radio support personnel including maximum power consumption by each individual (active) communication system component, total power required, and the amount of time required during a power outage (to design backup power systems). The power requirement calculations for the radio system equipment must be provided to the engineer program to provide adequate power to the site.
 1. Power requirement calculations will be validated by radio support personnel every 5 years.
- B. Traditional Commercial Power “The Grid.”
 1. Electrical service will be provided to the site with a minimum 220 volt, single phase and a 100 amp power distribution panel.
 2. The electrical service will be protected with a surge suppressor.
 3. The National Electrical Code (NEC) will be used to design and maintain the power distribution system. Radio facilities should have a backup power source (standby generator, uninterruptible power supply (UPS), or battery backup) with load capabilities to sustain operations based on customer requirements.
 4. Telemetry is recommended to detect power outages.
- C. Renewable Energy (RE).
 1. Preferred for primary power when feasible.
 2. Automatic resetting circuits should be used for all radio system equipment power.
 3. Shelter/building/cabinet ventilation systems will be designed using battery manufacturer recommendations.
- D. Backup Power Systems
 1. Required for critical communications system equipment.
 2. Determine capabilities required to sustain operations based on customer requirements.
 3. Backup power systems at remote RI sites will be exercised each time the site is visited by radio support personnel.
 4. Renewable Energy System when feasible.

Chapter 4. Radio Infrastructure (RI) Site Visits

4.1 General

- A. Risk Management Worksheets (RMW) are required to visit a RI site. When an approving official signs a RMW, the RI site point of contact will attach the file to the site list on the SharePoint.
Link: <http://teamspace/projects/radiomgmt/Lists/Towers/AllItems.aspx>
- B. Prior to visiting RI sites, all personnel will review the RMW to ensure seasonal risks are evaluated (weather, wildlife, insects, road conditions, fire danger rating, etc.).
- C. Safety inspections will be performed by qualified radio support personnel that are aware of occupational risks at RI sites (see Illustration 3). Annual safety inspections will be performed at all RI sites that are accessible with vehicles (automobiles). Annual inspections are not required for radio sites only accessible using other means of transportation (i.e.: helicopter, ATV, snowmobile); inspections at these radio sites will be performed when feasible. Radio Frequency monitors will be used to determine compliance with Federal Communications Commission Office of Engineering & Technology OET Bulletin 65 (August 1997).
- D. The District Manager is responsible for the condition of RI sites in their jurisdiction.
- E. A Point of Contact (POC) is assigned to every RI site and will inform the district manager when sites are inspected. A summary of findings (and details) will be provided upon request.
- F. Known risks must be identified, mitigated or corrected within the times defined by the Department of Interior in accordance with the risk assessment system (RAS). Risks not mitigated within the allowable time require a hazard abatement plan (DOI Form 1112-8). The site POC is responsible for completing the form and informing personnel exposed to the risks.
- G. An operational check (with dispatch) will be performed prior to departing the RI site on tactical radio service channels.

4.2 Radio Infrastructure (RI)

Condition Assessments Safety Health and the Environment (CASHE)

- A. An independent contractor will perform RI CASHE (and traditional CASHE) inspections. Form NRSPMO-SS-002 will be used to perform the assessment (See Illustration 4).

- B. The inspections are performed using a checklist provided and updated by the Department of Interior's (DOI) Office of Chief Information Officer (OCIO). The CASHE audit team will assign risk assessment codes (RAC) based on the severity and occurrence chart used by the DOI Safety Office; the time allocated to correct the finding is based on the RAC (see Table 6-1). Completed checklists are provided to NROB approximately 30 days following the inspection.

The CASHE contractor will:

- A. Inspect facilities where BLM radio system equipment is installed; or where BLM employees use radio system equipment as part of official duties.
- B. Provide Final Reports for all RI sites assessed in the district office jurisdiction. Photos and recommendations are provided to streamline corrective action.
- C. Perform audits on a relative sampling of RI sites (office locations) to validate corrective action and identify other findings.
- D. Notify the state radio program lead of high priority findings. Information is updated on the high priority finding list on SharePoint to provide national visibility. Link: <http://teamspace/projects/radiomgmt/NRCDFacilities/Lists/Finding%20Number/AllItems.aspx>
- E. Notify the state radio program lead of RAC 3 and 4 findings. The status (and supporting narrative) is updated at that time. Instructions are provided to update all active findings each summer. Appendix VI is provided as a sample.
- F. Provide final reports to State Directors, District Managers, State Radio Program Leads and other personnel (by request) within six months following the inspections.

The site POC provides the Facility Owner/Manager a copy (PDF format) of the final report within seven days of receipt, for non-BLM owned radio sites.

4.3 Equipment Preparedness Reviews

The BLM National Fire Operations Office conducts national preparedness reviews of each BLM state program every four years to assess the effectiveness of specific elements. Deficiencies are identified with recommend specific corrective actions.

Radio Infrastructure sites will be identified by the national preparedness team; sites will be inspected by team members using the DOI radio site checklist (Form NRSPMO-SS-002 Radio Electronic Site Survey Instrument). Inspections may also be performed at unannounced sites.

4.4 Risk Assessment Code

The Risk Assessment System (RAS) is used to determine risks at RI Sites. The initial abatement timeframes will be set according to Table 6-1:

Table 6-1: Initial Abatement Timeframes

RAC Code	Initial Abatement Timeframe
1	As soon as possible within that work shift.
2	As soon as possible, but no later than 15 calendar days.
3	Within 12 months.
4	Within one budget cycle (no longer than 2 years).

Chapter 5. Facility Documentation and Recordkeeping

5.1 Documentation at Facilities

Current records will be kept at the RI site. The following is a list of site specific information required for every RI site.

- A. Radio Frequency Authorizations (RFA) for all transmitters at the site; binder is OK.
- B. Point of contact for every RFA.
- C. Maintenance summary will be written for each visit by maintenance personnel including:
 - 1. Date
 - 2. Name of person and organization (agency) that visited site
 - 3. Purpose of visit and maintenance management reference (i.e.: corrective maintenance, preventative maintenance)
 - 4. Accomplishments during visit
 - 5. High priority findings at the RI site
- D. Facility blueprints (tower, shelter, etc.) and date constructed/erected
- E. Information and warning signs; see Appendix V. "Signage."
- F. User Group By-Laws (if applicable)
- G. Mapping of communication towers and antenna support structures to include:
 - 1. Date
 - 2. Antenna location on structure, frequency, and ERP
 - 3. Height of antenna on structure (maximum)
 - 4. RFA number
 - 5. Propagation direction (i.e. omnidirectional, 270 degrees, etc.)

5.2 Documentation at Offices

Expired documents will be retained at offices for 10 years. The following list of site specific information is required for every RI site:

- A. Completed checklist (See Illustration 4)
- B. Final Report: RI CASHE
- C. Status of findings
- D. Completed Office Grounding and Bonding Requirements (See Illustration 5)
- E. Completed Office Grounding and Bonding Requirements (See Illustration 6)
- F. Maintenance management records (i.e. Remedy tickets)
- G. Risk Management Worksheet with approval signature
- H. Radio Frequency Authorizations (RFA) for all transmitters at the site and point of contact; binder is OK
- I. Antenna mapping of communication towers and antenna support structures including:
 - 1. Date
 - 2. Antenna location on structure, frequency, and ERP
 - 3. Height of antenna on structure (maximum)
 - 4. RFA number
 - 5. Propagation direction (i.e. omnidirectional, 270 degrees, etc.)
- J. User Group By-Laws (if applicable)
- K. Facility blueprints (tower, shelter, etc.) and date constructed/erected
- L. Right of way (ROW) for DOI owned property only
- M. Contracts and leases for DOI owned property only

Chapter 6. Training

6.1 General

Personnel that manage and/or maintain RI sites must be familiar with the risks and conditions at the site (i.e. Radio Technicians, Realty Specialists, COTR, and safety personnel). Personal knowledge and skills must enable hazard recognition and ability to assign risk assessment codes based on findings. Many occupational risks are present at remote RI sites (i.e. radio frequency exposure; electrocution; and in certain cases working without means to communicate with dispatch while performing repairs).

6.2 Radio Frequency Awareness

All BLM personnel that operate a radio while performing official duties and are exposed to RF levels that exceed MPE limits for the general public will attend occupation RF exposure training annually. See BLM handbook H-1292-2(I) for details.

6.3 Test, Measuring and Diagnostic Equipment (TMDE)

Radio system testing and troubleshooting requires proficient use of calibrated TMDE. Performance and safety of radio system equipment must be verified to ensure performance is within specifications. Most radio support personnel are skilled in the use of TMDE with reference to only the owner's manual; however formal training provided by the TMDE manufacturer is preferred. The TMDE used by radio support personnel most frequently at RI sites are: service monitors; multimeters; antenna system testers; and ground system analyzers.

6.4 Communications Tower Climbing

All BLM personnel who climb communications towers will successfully complete training approved by the National Radio Operations Branch (FA-350). See BLM handbook H-1292-1(I) for details.

6.5 Steel Antenna Tower and Antenna Support Structure Assessments

Structural Assessments are required every 3 years for guyed towers and every 5 years for self-supporting towers. Analysis of individual structural members; the entire structure; and modifications will be performed in accordance with ANSI/TIA-222 standard.

Maintenance and condition assessment (normative) will be performed by personnel aware of occupational risks at RI sites (see Illustration 3) and they will assign risk assessment codes for findings of deficiencies. The ANSI/TIA-222 annex will be used as a template for condition assessments. For further details regarding BLM requirements see MS-9100 Facilities Planning, Design, Construction and Maintenance (P).

Glossary of Terms

Accessible, Readily (as applied to fire extinguisher, first aid kit, or eye-wash station):

Capable of being reached quickly for operation or inspections without requiring those to whom ready access is requisite to climb over or remove obstacles.

Air Terminal (as applied to communication towers/antenna support structures): A metal rod (lightning-rod conductors) and its brace or footing on the upper part of a structure; engineered to shunt a lightning strike and other atmospheric voltages to earth ground.

Ampacity: Electrical current value, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

Ampere Hours - AH: A measurement of battery current capacity relative to time, normalized to 8 hours. For example, a 320 Ah battery will deliver 40 Amperes for 8 hours.

ANSI: American National Standards Institute.

Antenna supporting structure: A structure, including guy assemblies, guy anchorages, and substructures that support antennas.

Approved: Acceptable to the authority having jurisdiction.

Appurtenance (as applied to communication towers/antenna support structures): A structure connected to the principal structure (i.e. antenna stand-off).

Bending Radius (as applied to RI sites): Measurement commonly used for wires and cables; minimum bending radius of 8 inches and no less than 90 degree bend angle for all grounding conductors is required

See Figure G-1.

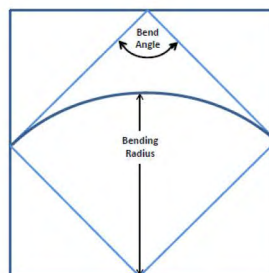


Figure G-1

Best management practices - BMPs: A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory.

BLM Authorized Officer: BLM employee (usually a Field Manager) with a delegation of authority to administer and sign right-of-way grants and communication use leases.

Bonded (Bonding): Connection of metallic parts to establish electrical continuity and conductivity.

Building (as applied to RI sites): A structure built on a foundation capable of regular human occupancy.

Cabinet/Enclosure (as applied to RI sites): An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung; also available with removable doors.

Categorical exclusion – CX (as applied to land use planning): A category of actions (identified in agency guidance) that do not individually or cumulatively have a significant effect on the human environment and for which neither Environmental Assessment (EA) nor Environmental Impact Statement (EIS) is required (40 CFR 1508.4).

Chassis Ground (as applied to radio system equipment): A chassis connection provided by the manufacturer usually identified with a chassis-common symbol or painted the color green.

Closed (as applied to land use planning): Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 sets forth the specific meaning of “closed” as it relates to off-highway vehicle use, and 43 CFR 8364 defines “closed” as it relates to closure and restriction orders.

Collaboration (as applied to land use planning): A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands.

Collaborative partnerships (as applied to land use planning): Refers to people working together, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks.

Conductor Sizes: Conductor sizes are expressed in American Wire Gage (AWG) or in circular mils.

Configuration: An arrangement of items.

Conformance (as applied to land use planning): Means that a proposed action will be specifically provided for in the land use plan or, if not specifically mentioned, will be clearly consistent with the goals, objectives, or standards of the approved land use plan.

Construction: The initial installation, expansion, or replacement of any facility.

Cooperating agency (as applied to land use planning): Assists the lead Federal agency in developing an EA or EIS. The CEQ regulations implementing NEPA define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any Federal, state, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

Demarcation Point (as related to a facility): The telephone or utility point of presence that divides utility assets from customer assets and accordingly assigns maintenance responsibilities.

Designated roads and trails (as applied to land use planning): Specific roads and trails identified by the BLM (or other agency) where specific motorized vehicle use is appropriate and allowed either seasonally or year-long.

Drip-loop: A bend commonly used on wires and cables intended to use gravity to divert water.

Easement (as related to radio sites): An interest in real property which is owned by another that entitles the holder to a specific limited use of the owner's property.

Energized: Electrically connected to, or is itself, a source of voltage.

Equipment Rack (as applied to RI sites): A modular interior structure intended for mounting standard sized radio system equipment.

Exothermic welding (as applied to RI sites): A process by which metal is welded together using heat generated by a chemical reaction.

Facility: A complete site environment (e.g., structures, power system, parking area, and fencing).

Flange (as applied to antenna towers): A rigid metallic piece engineered to connect sections together.

General population/uncontrolled exposure (as applied to RI sites): An average limit of magnetic and electrical field strength determined by the Federal Communication Commission (FCC) that does not harm humans. General public always fall under this category.

Ground: The earth.

Grounding electrode (as applied to earth ground at RI sites): A conducting object through which a direct connection to earth is established.

HVAC: An industry acronym used for heating, ventilation and air conditioning system.

Hantavirus: A potentially deadly airborne virus spread by rodents. (Link: <http://www.cdc.gov/ncidod/diseases/hanta/hps>)

Ice Bridge (as applied to RI sites): A protective shield between structures to prevent ice forming and provide protection from falling objects.

Insulator (as applied to RI sites): A non-conductive material or device (e.g., bus bar insulator, green insulated copper wire, etc.).

Live Parts: Energized conductive components.

Maintenance Levels (as applied to Roads and Trails): Maintenance levels provide operational guidance to field personnel on the appropriate intensity, frequency and type of maintenance activities that should be undertaken to keep the route in acceptable condition and provide guidance for the minimum standards of care for the annual maintenance of a route.

Material Safety and Data Sheet (MSDS): Minimum information categories defined in 29 CFR 1910.1200, and provided by manufacturers for material/product safety.

Motorola R56: The Motorola committee responsible for enacting standards related to communication site construction and installation practices. R56 also refers to the document approved by the committee named, “Standards and Guidelines for Communications Sites.”

National Electrical Code (NEC): A consultative organization responsible for electrical practices standards. It is part of the National Fire Protection Association (NFPA).

Occupational/controlled exposure (as applied to RI sites): An average limit of magnetic and electrical field strength determined by the Federal Communication Commission (FCC) that requires training for exposure because it is harmful to humans.

Panelboard (as applied to power distribution): A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall, partition, or other support; accessible only from the front.

Point of Contact (RI Site POC): A full time employee (FTE) working for the BLM that is responsible for: remaining up to date on the condition, performance, and capabilities of a specific RI site; updating site information; and coordinating with BLM programs and cooperators to plan, develop, and maintain the site.

Plumb (as applied to antenna towers): Within a horizontal measurement limit defined by the manufacturer between the vertical centerlines at any two elevations throughout the height of a communications tower.

Plumb and Tensioned (as applied to guyed antenna towers): Term used to describe the condition of a tower that is plumb with guy line tensions within tolerances defined by the manufacturer.

Primitive Roads: A linear route managed for use by four-wheel-drive or high-clearance vehicles. These routes do not normally meet any BLM road design standards. For more details refer to MS-9115 Primitive Roads (P).

Propagation (as applied to radio antennas): Radiation of electromagnetic waves.

Public Road: Part of a public agency road system. A public road is not within the BLM's jurisdiction, does not receive support from BLM construction or maintenance funds, and is not subject to BLM regulations. This differs from a road built to serve a BLM facility, which the public is allowed to use, such as a road to a recreation site. A BLM road remains under BLM control, even though it serves the general public. The BLM presently administers no "legal" public roads. A public road must meet the criteria for public roads as established by the Secretary of Transportation (23 U.S.C. 101 and 104).

Radio System (communication) Equipment: The electronic equipment that performs the telecommunications operations for the transmission of audio, video, and data, and includes power equipment (e.g., dc converters, inverters, and batteries).

Radio Infrastructure (RI) Site: A location where BLM radio system equipment is installed for permanent or seasonal use and configured to receive and/or transmit on very high frequency (VHF), ultra high frequency (UHF), and other radio frequencies that extend VHF and UHF capabilities. Radio infrastructure sites use externally mounted antennas (on antenna towers, antenna support structures, shelters, or buildings), or remotely located antennas for communicating on VHF and UHF radio systems; or internally mounted in radomes. This includes the use of audio (local telephone service) lines to extend VHF and UHF radio coverage.

Radio Site: A location with radio equipment (e.g., base station, repeater, and microwave radio).

Radome (as applied to RI Site): A manufactured fiberglass structure primarily used in Alaska with renewable energy power. Shaped like box with 4-sided pyramid on top; antenna is mounted in the interior peak. Large enough – though not intended - to temporarily shelter personnel.

Rigorous Structural Analysis (as applied to steel antenna support structure): Evaluation of structure and all items fastened; usually performed by a licensed professional engineer specializing in structures. Required when conditions are changed (e.g., adding an antenna system, or adding a section to a tower). This type of analysis determines the overall stability and adequacy of structural members, foundations, and connections.

Seismic rating: Any of several standardized systems of rating an area's probability and intensity of seismic activity based on geological and empirical data referencing the Moment Magnitude (MM) rating standard recognized by the Uniform Building Code.

Shelter (as applied to RI sites): A structure built on a foundation suitable for temporary human occupancy. Refer to MS-6100 National Landscape Conservation System management (P) for requirements.

Single point ground system: A ground conductor and electrode system connected together to optimize connectivity to the earth.

Structure Classification Class (as applied to antenna support structures): A classification expressed as I, II, or III defined in ANSI/TIA-222 regarding structure and radio service outage related risks.

Surge-Protective Device – SPD (as applied to RI sites): Equipment (or devices) intended for the protection of personnel and radio system equipment.

Sway (as applied to directional antenna): The vertical angular rotation of beam path from the no-wind load position.

Twist (as applied to directional antenna): The horizontal angular rotation of beam path from the no-wind load position.

Ventilated: Provided with a means to permit circulation of air sufficient to remove excess heat, fumes, or vapors.

**Illustration 1 - Condition Assessment Safety, Health and the Environment (CASHE)
RAC 3 & 4 Status Update Form**

SITE BUILDING - BLDG

Finding Number: BLDG-07-010

Finding: There are unprotected openings in fire resistant walls and ceilings at the Black Mountain radio site.

Repeat Finding: No

Recurring Issue: No

Safety RAC: 4

Discussion: Holes have been drilled in the Black Mountain radio site equipment shelter for installation of cables. The openings are not sealed and therefore reduce the ceiling fire resistance performance.

The Motorola Standard requires that openings around penetrations through fire resistance-rated walls, partitions, floors, or ceilings be firestopped using approved methods to maintain the fire resistance rating. Firestopping such penetrations may be accomplished by using specially manufactured fire seals or fire-barrier caulking.

Large openings will require re-drywalling. A variety of products are available to seal openings in fire resistant walls. Small openings can be sealed with fire resistant spray foams. Hilti (CP 620 Fire Foam is one of their products) and 3M (3M FireDam Spray 100 is one of their products) are two manufacturers of approved foams.

Recommendation: Seal all opening in fire-resistant walls and ceilings using an approved method to maintain the fire resistance rating.

Driving Reference(s): Motorola R56 Section 6.4.6 - floor and ceiling runs
NFPA (2003) 101-8.3.5 – penetrations and openings in fire barriers

Point(s) of Contact: _____
(First and Last names, no groups or committees)

Status of Corrective Action: _____
(e.g., Scheduled for completion by MM/DD/YY; Completed on MM/DD/YY; Funding requested, scheduled for completion by...; Preliminary planning, scheduled for completion by...)

Current Status – This field has been left blank for facilities to provide updated status information. Current status is to be provided in a format similar to the examples below. **A finding may be reported as complete if a Hazard Abatement Plan for that finding has been prepared addressing all of the information identified on page 2 of this memo, approved by management, provided with the status update response, and approved by the BLM CASHE Program Lead.**

- Unscheduled
- Completed on [date if available]
- Scheduled for completion by [date]
- Funding requested: anticipate completion by [scheduled date of completion]
- Preliminary planning: anticipate completion by [scheduled date of completion]
- Under design: anticipate completion by [scheduled date of completion]
- Under construction: anticipate completion by [scheduled date of completion]
- N/A (e.g., if no longer relevant because a facility no longer exists)

[**Note:** If a finding is no longer relevant, please explain why. Additionally, findings are not considered complete unless completion is explicitly stated in the response. Therefore, findings that are “scheduled for completion” will be considered incomplete.]

Please provide the relevant documents and these instructions to relevant facility personnel (Field Office Managers, HAZMAT Coordinators, and Safety Officers). Please request that respondents coordinate their update with others to ensure no findings are skipped, as many findings overlap program areas; and that **all responses will be consolidated and submitted directly to Archer (unless your State directs otherwise) with a copy to their Safety Manager and State HAZMAT Program Lead.**

Illustration 1 is a CASHE finding layout.
Each finding identified at radio infrastructure sites will be in this general format.
Status updates are prepared by the RI site POC and provided by State Radio Program Leads for findings in their jurisdiction.

Illustration 2 -Example of a Memorandum of Understanding

**Memorandum of Understanding
between the
USDI Bureau of Land Management, Utah
and the
State Of Utah, Department of Technology Services (DTS)**

BLM Agreement No. _____

I. PURPOSE

The BLM, and the State of Utah, DTS are entering into this MOU to set the framework for sharing of telecommunications facilities, networks, equipment, technical personnel, and other resources within the State of Utah to minimize duplication of efforts, expenditures and to enhance intergovernmental cooperation.

II. BACKGROUND

- A. Representatives of Local, State and Federal Public Safety Agencies have recognized that radio system coverage and use within the State of Utah is inadequate. Furthermore, to provide radio service to all of these agencies on an individual agency basis is cost prohibitive and limited by resources such as radio frequencies and staffing. A cost effective and efficient radio system and other telecommunications networks can only be achieved by sharing resources at all levels and implementing new technologies on a shared basis.
- B. Federal agencies are currently involved in the consolidation of communication resources in the State of Utah and have been directed by the FCC to move to narrowband frequencies. This requires a total hardware replacement and illustrates the need to share resources among Federal, State and Local entities. The Information Resources Management (IRM) as defined in OMB Circular A-130, Management of Federal Information Resources (July 1994), and the National Performance Review, Re-engineering through Information Technology (1993), encourages the sharing of IRM resources to "identify additional opportunities and oversee follow-up on those opportunities for sharing information resources across agencies to improve program performance".
- C. Federal, State and Local Public Safety Agencies within Utah have recognized that it is in their best interests to eliminate areas of duplication. By working together to better utilize personnel, technology, and administrative re-invention, opportunities to reduce expenditures, eliminate redundant functions and pool resources are possible.

III. OBJECTIVE

The objective of this MOU is to facilitate an agreement between Federal, State and Local agencies to meet agency and public safety requirements through cost effective consolidation of radio technology. Specifically, this will result in the ability of all public safety agencies to communicate during emergencies. The intent is the creation of a public safety communications system to serve Federal, State, Local government and private public safety agencies.

IV. AUTHORITIES

- Federal Land Policy and Management Act of 1976 (FLPMA), 43 USC 1737, Sections 307(a) and (b).
- Economy Act, 31 U.S.C. 1335.

V. SERVICES TO BE PERFORMED

The State of Utah DTS will:

- Provide network design, implementation, and management as appropriate.
- Provide advice and technical assistance to resolve problems which may develop during operations.
- Identify equipment and resources needed to implement this project.
- Develop and implement standards and procedures as required to maximize trouble-free operation of this connectivity arrangement.
- Provide on-going telecommunications support, to include assistance in the identification and resolution of all problems pertaining to this connectivity as well as networking concerns and difficulties.
- Notify the BLM 48 hours in advance of scheduled maintenance and testing activities.
- Notify participating agencies immediately in the event of an unexpected network failure or BLM related service restrictions.
- Respond within two (2) hours to the BLM "trouble call" during normal operating hours.
- Provide names and phone numbers of technical points of contact.
- Provide space and utilities as required for circuit and equipment terminations.
- The current project, year 2009 / 2010 is to install microwave from the Price Field Office to Bruin Peak and from Vernal Dispatch / Field Office to Bruin Peak via Asphalt Ridge. The DTS will install and maintain this equipment for BLM in return for bandwidth on the microwave as needed.

BLM will:

- Provide ongoing telecommunications support to include assistance and resources in the identification and resolution of all problems pertaining to their agencies connectivity.
- Provide names and phone numbers of technical points of contact responsible for network support.
- Specific accommodations to be provided by BLM are as follows:
 - A. Equipment
 - Participating agencies will provide all agency specific communications equipment to include, connecting cables and circuit terminating equipment between the agency and the provider
 - Current project, year 2009 / 2010 is to install microwave from the Price Field Office to Bruin Peak and from Vernal Dispatch / Field Office to Bruin Peak via Asphalt Ridge. BLM will purchase this equipment and retain ownership, to include life cycle replacement.
 - B. Support
 - Participating agencies will have primary support responsibility for agency provided transport links (circuits and equipment). Assistance will be provided to the BLM technicians on as needed basis to troubleshoot network problems, isolate faults, and resolve user-related problems.

VI. DEFINITIONS

- A. Telecommunications facilities refers to computer rooms, communications closets, overhead/underground cable raceways, and mountaintop buildings and towers.
- B. Network refers to voice, data, radio, or microwave networks.
- C. Equipment refers to PBXs, channel banks, routers, hubs, bridges, radio base stations, repeaters, remote consoles, microwave equipment, and computer hardware and software.

VII. THE COOPERATORS SHALL

- A. Establish a Telecommunications Management Team (Team) within 30 days of execution of this MOU. The Team will consist of a minimum of two representatives from each agency; (The State of Utah, DTS and the BLM.) The Director of DTS and the BLM State Director shall assign the representatives.
 - 1. Through the Team, provide the following, as needed:
 - 2. Information on present and future needs, projected costs, and cost/benefit analysis.
 - 3. A joint effort to identify, solicit, and negotiate in the development, implementation, maintenance, and sharing of the telecommunication networks and facilities. The joint participation will include, but not be limited to, such items as pro-rata expense determination, physical facilities management, and network allocation. The Team will make recommendations to their Agency heads for establishing additional interagency or other agreements to achieve said joint participation based on statutory authority.
 - 4. An information plan that will address the following:
 - a. Responsibilities for the telecommunications network facilities and management.
 - b. Determine the contributions provided by other agencies who utilize the networks, equipment and technical personnel established through subsequent agreements to this MOU established between the BLM District Offices, and the State of Utah DTS.
 - c. Establish schedules and coordinate the installation, modifications, and updates of facilities, networks, and equipment.
 - d. Establish each agency's pro-rata contribution and technical responsibility for management and operation.
 - e. Information regarding any new and current development, construction, installation, maintenance, replacement, and operating costs.
 - f. Establish the framework for the design, installation, and maintenance of the networks, equipment and sharing of technical expertise and through subsequent agreements to this MOU, provide technical personnel to work on networks and equipment as mutually agreed to.
 - g. Establish security guidelines for the BLM, and the State of Utah DTS to follow when accessing facilities and interfacing with each other's networks.

VIII. MANAGEMENT PLAN

The following conditions will guide the access, exchange and development for exchanging and sharing of telecommunications facilities, networks, equipment, and technical personnel. This will be accomplished through coordination of scheduled construction, upgrading and maintenance of the telecommunications facilities, networks, and equipment.

1. Where joint occupancy of buildings exists, cooperating agencies will be provided keys for access to the buildings for maintenance purposes.
2. Each agency will be responsible for the maintenance of their equipment unless specifically authorized; no agency representative shall adjust, maintain, or otherwise touch electronic equipment owned by another. This is due to the sensitive nature of the information transmitted on the State and Federal systems.
3. Each agency will be responsible for conducting good housekeeping practices and ensuring good operating procedures at all installations. Particular diligence and care will be required on joint occupancy sites.
4. When an agency representative is going to perform maintenance at a joint occupancy mountain site, the other agency(s) sharing the site should be notified of the trip. The party scheduling the trip will pay transportation costs but, if feasible, offer other agency representatives the opportunity to travel to the site as well.
5. During maintenance or repair of equipment by one party that would require the disruption of service, the scheduling of the disruption of service must be planned to occur outside critical use periods. All affected parties must be notified of planned disruptions of service.
6. All agencies will manage frequencies assigned to them. In accordance with FCC, NTLA, and agency regulations, an interagency radio frequency agreement will be required for frequencies being used.

IX. SPECIAL TERMS AND CONDITIONS:

- A. Irreconcilable disputes will be resolved through joint decisions by the State of Utah, Director of DTS, and the BLM State Director.
- B. This instrument in no way restricts the Cooperators from participating in similar activities with other public or private agencies, organizations, and individuals.
- C. **NON-FUND OBLIGATING DOCUMENT.** This instrument is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between the parties to this instrument will be handled in accordance with applicable laws, regulations, and procedures including those for Government procurement and printing.

X. TERMS OF AGREEMENT

This agreement will become effective upon receipt of the last signature and will remain in force for five (5) years, or until terminated by mutual agreement by all participants upon six months written notice to the others of the intent to terminate. The terms of this agreement may be renegotiated, canceled, extended, or renewed. Any participant may propose changes to this agreement during its term. Such changes will be in the form of an amendment and will become effective upon signature by all participants.

XI. TECHNICAL CONTACTS:

BLM Personnel

Contact name, number and address information should be added here.

State of Utah Personnel

Contact name, number and address information should be added here.

XIII. DEFINITIONS

The Level of Service Agreement - is a site-specific agreement among users of a particular site which identifies who is responsible for maintenance and operation. This includes identifying roles and responsibilities, expectations, response times, and any other matters related to the operation of that site within the scope of the entire state radio system. It is the intent of this level of service agreement to pool resources while eliminating redundancy.

XIV. PAYMENT

No funding will be provided under this agreement.

XV. ADMINISTRATION

- A. This MOU shall be effective from the date of execution and remain in effect until mutually terminated.
- B. This MOU may be modified through mutual agreement among the participating agencies. Any modification made to this MOU shall be confirmed in writing prior to performance of the change. No agency is obligated to fund any changes not properly approved in advance.

Signatures:

Steven Fletcher
CIO, State of Utah
Department of Technology Services

Selma Sierra
BLM State Director

Date _____

Date _____

Illustration 3 –Radio Site Risks and Safety

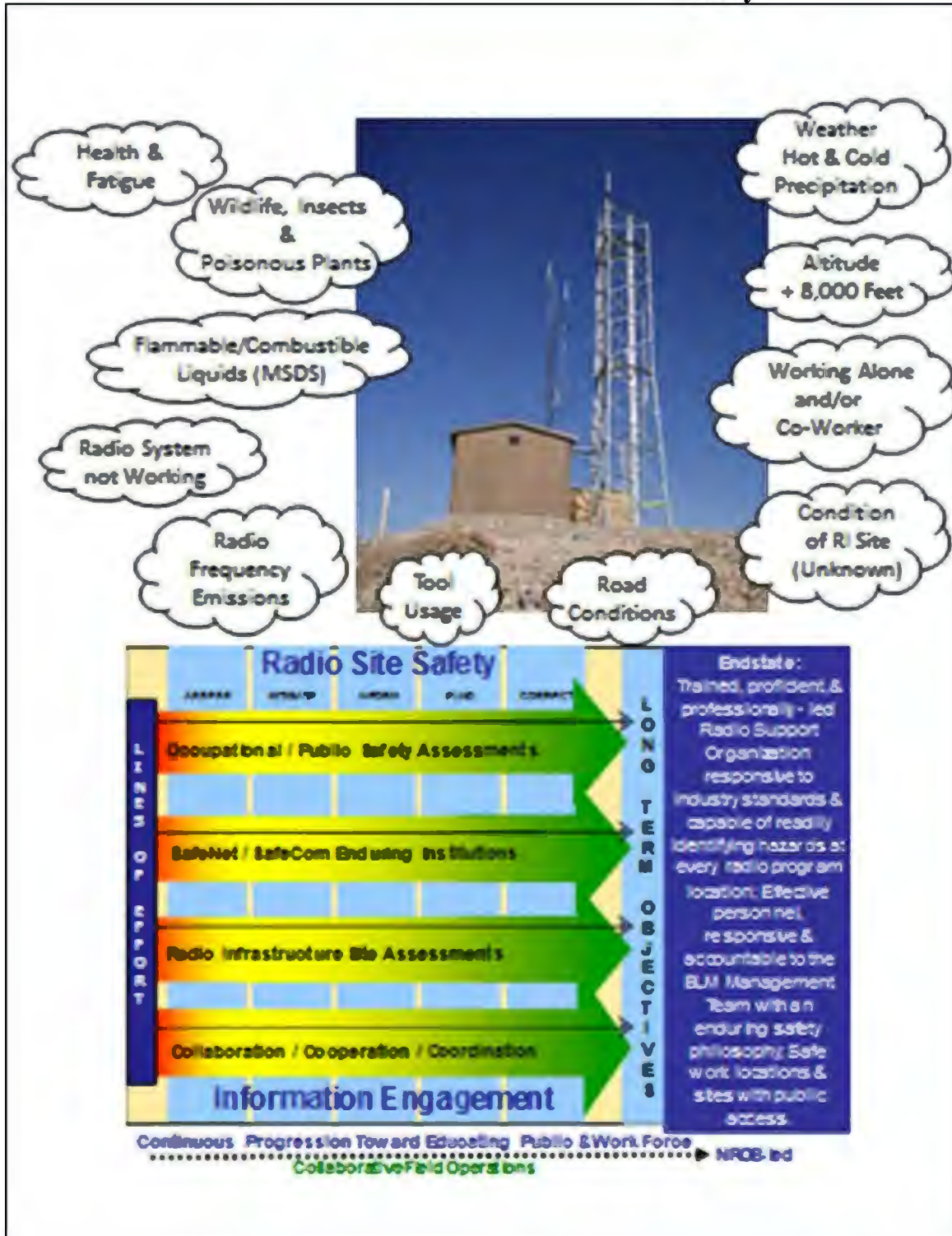


Illustration 4 - Department of Interior Survey Instrument

U.S. Department of the Interior - National Radio and Spectrum Program Management Office
Form NRSPMO-SS-002 Radio Electronic Site Survey Instrument (Release Date 03/22/2012)

Validate Form

Submit results by E-mail

Print Form

Save Form Data

This form has been developed by the U.S. Department of the Interior's Chief Information Officer to serve as a template for conducting inspections and inventory of the Department's radio communication facilities. The form is organized into the following sections corresponding with areas of inspection:

Sections:

1. General Site Information
2. Site Design and Development
3. Site Building
4. External Grounding
5. Internal Grounding
6. Power
7. Interference
8. Equipment Installation
9. Asset Inventory

Each section contains multiple questions, some rated for pass/fail/N/A, some asking for specific information. All questions must be answered. Each section also contains a risk assessment to rate the perceived safety of the section's focus.

The end of each question references the Motorola R56 (2005) section that is applicable to the question to assist the inspector if additional information is necessary.

Inspectors should familiarize themselves with facility design plans, radio frequency authorizations (RFA), lease documents, and other pertinent documents prior to the inspection.

When inspecting facilities and equipment, inspectors must also describe the deficiency so that a cost estimate can be prepared. At a minimum, the following should be recorded for each deficiency:

1. The deficiency should be defined (e.g. corroded antenna, cracked handset, excessive static, blown speaker, missing fasteners or supports, etc.)
2. Location data should be provided (e.g. 150 feet northeast of visitor's center); where available, GPS coordinates should be used

Inspectors are required to save each inspection checklist as a separate file and must include digital photographs and a digital layout sketch of each facility.

A photo log has been created at the end of this form. General photos of the exterior and interior of the facility are to be inserted to provide a visual overview of the radio facility.

Illustration 5 - Standard Site Design

Illustration 5 depicts Office Grounding and Bonding Requirements.

RADIO COMMUNICATIONS GROUNDING AND BONDING REQUIREMENTS	
<u>PART 4: RADIO CONFIGURATION OPTIONS</u>	
4.1 GENERAL:	
<i>SPECIFIER: Six basic radio equipment configuration types are detailed in this specification. Other configurations may exist or be designed by combining options for radio equipment location, dispatch operator equipment configurations, and antenna locations.</i>	
<ul style="list-style-type: none"> A. The primary objective of this standard is to provide guidance and requirements for installation of electrical systems, grounding systems and bonding of telecommunications pathways and facilities as it relates to the field office building, telecommunications infrastructure, radio equipment rooms, antenna systems, dispatch areas, and remote communications shelters and towers. B. Lessor requirements contained in this attachment are in addition to those specified in Attachment 3 – Building Shell Grounding and Bonding Requirements. C. Radio Type Configuration drawings identify grounding and bonding requirements that are Building Shell specific, as provided for in Attachment 3. Each Attachment 3 requirement is described in a box and highlighted in gray. 	
4.2 CONFIGURATION TYPE SUMMARY:	
<i>SPECIFIER: Choose a configuration type from the paragraphs below or customize a specific configuration</i>	
<ul style="list-style-type: none"> A. TYPE-A CONFIGURATION: (Section 4.3) <ul style="list-style-type: none"> Tone Remote Console(s) – with remote, "off premise", radios and antennas. <ul style="list-style-type: none"> 1. This is the preferred option for desktop-mounted tone remote devices. This option provides the safest solution for radio equipment operators with no local antennas and radio equipment. This option eliminates the need for construction of a radio equipment room in the leased office space and eliminates additional lightning protection systems for the building. 2. Type-A facilities consist of the following equipment and grounding requirements: <ul style="list-style-type: none"> a. Desktop-mounted tone remotes are installed in work areas and connected via "In-House" telecommunications wiring to the telecommunications equipment room. b. Combined or separate telecommunications service-entrance and electrical service-entrance. c. Combined or separate telecommunications equipment room(s) and electrical equipment room(s). d. Tone remote consoles connect to remote radio site(s) via leased data circuits with no radio equipment room in the office building. e. No radio equipment room f. No tower or roof mounted antenna. g. Lessor shall provide minimum grounding and bonding as specified in Attachment 3 – Building Shell Grounding and Bonding Requirements. 3. (Optional) Radio equipment installed in a "remote", "on premise", communications equipment shelter with a remote 40-foot (minimum height) tower. This option may be chosen to coincide with Type-A, Type-B, Type-F. <ul style="list-style-type: none"> a. Remote Tower foundation. (Section 4.11) 	

Illustration 6 - Standard Site Design

Illustration 6 depicts Office Grounding and Bonding Requirements.

GROUNDING AND BONDING REQUIREMENTS	
<u>SECTION 1 - GENERAL</u>	
1.1 SUMMARY	
<p>A. The primary objective of this standard is to provide guidance and requirements for installation of electrical systems, grounding systems and bonding of telecommunications pathways and facilities as it relates to the field office building, telecommunications infrastructure, radio equipment rooms, antenna systems, dispatch areas, and remote communications shelters and towers.</p> <ol style="list-style-type: none"> 1. Electrical pathways, grounding, and bonding specifications for the building are applicable to all building designs. 2. Telecommunication infrastructure pathways, grounding, and bonding specifications are applicable to all building designs. 	
1.2 SCOPE OF WORK	
<p>A. In this specification, the terms "Contractor", "Building Owner", and Lessor are used interchangeably.</p> <p>B. The Government Contracting Officer shall mean the GSA Contracting Office (CO).</p> <p>C. Tenant Agency means the BLM's Contracting Officer.</p> <p>D. The BLM Subcontractor shall mean a contractor performing work directly for the BLM.</p> <p>E. The Lessor shall coordinate with the local electrical utility company to install commercial electrical power service wiring and electrical service-entrance equipment to the building in compliance with NFPA 70.</p> <p>F. The Lessor shall furnish, install, and place into satisfactory and successful operation all materials, devices, and necessary appurtenances to provide a complete, permanent, common, grounding and bonding infrastructure for the building and the telecommunications backbone pathways for the information technology (IT) network equipment room, computer room, telephone company cable entrance, IT network cabling, and the Telecommunications Bonding Backbone.</p> <ol style="list-style-type: none"> 1. The Grounding and Bonding system shall support an ANSI/TIA/EIA and ISO/IEC compliant communications Structured Cabling System (SCS). 2. The work shall include materials, equipment, and apparatus not specifically mentioned herein or noted on the plans but which are necessary to make a compliant grounding and bonding system. 3. Figure 1.1 demonstrates the minimum grounding, bonding, and telecommunications pathways required for the building and the telecommunications backbone. <p>G. The basic, minimum requirements for all offices are shown in Figure 1.1.</p> <ol style="list-style-type: none"> 1. These devices and pathways are labeled A through L as summarized below: <ol style="list-style-type: none"> (A) Concrete encased electrode (Ufer) near each Telecommunications Equipment Room as discussed in Section 3.5 C of this specification 	

Appendix A - Physical Access Control

A. Measures to prevent unauthorized access are required on every Bureau of Land Management owned communication tower, except in locations only accessible by helicopter. Restricting access to a tower must be accomplished by one of the following methods:

1. Fencing that meets the requirements of Motorola R56.
2. Anti-climb shields on all sides of lattice towers - at least 10 feet above the base of the tower.
3. Anti-climb shields or cage that covers both sides of the fixed ladder at least 10 feet above the base of the tower (if a ladder isn't accessible on both sides of the base, shield or cage only required on the accessible side).
4. Removal of climbing pegs on a monopole and 20 feet above ground level.

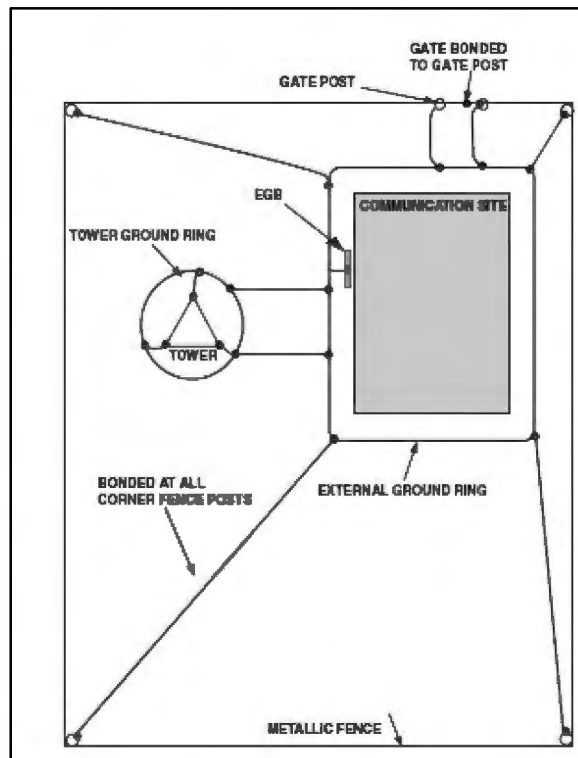


Figure A-1

B. If an anti-climb shield or cage is installed, provisions must be made to lock it open (in a position that does not pose a hazard to tower climbers); or the shield or cage door must be totally removed and placed in a safe location for all personnel at the RI site. Prior to leaving a radio site, anti-climb shields or cages must be replaced to prevent unauthorized climbing.

C. Fencing of entire radio sites including towers, guy anchors/piers (these may be fenced separately if necessary), generators, fuel tanks, photovoltaic arrays, and other radio related equipment is required if one or more of the following are applicable:

1. Radio Frequency (RF) exposure exceeds limits for the General Population (uncontrolled)
2. The radio site is located adjacent to a recreation site, trail, or other facility available for public use
3. Public access is not restricted by a fence or locked gate across all access roads
4. There is a history of vandalism of the radio site within the past 20 years

D. Fencing will meet the following requirements:

1. Fencing must be installed per R56 standards
2. A minimum, towers, generators, fuel storage tanks and guyed tower piers will be enclosed within the perimeter of the fence.
3. Fencing must be installed at least six feet from the tower foundation to ensure an authorized person climbing does not come in contact with the fence before the fall arrest system arrests their fall.
4. Fence will be a minimum of 6 feet high above ground level (not including the barbed wire).
5. Vinyl clad chain link fence will be used with barbed wire only (no concertina or razor type) at the top.
6. Appropriate signage must be installed on each side of the fence.
7. Fences will provide adequate access and protection from site components. The following minimum distances are required:
 - a. Distance between fence and generator: adequate room to safely service the generator.
 - b. Distance between fence and fuel storage tank(s): 4 feet.

E. Fences and related components (e.g., fence posts, fence fabric, barbed wire, and gates) must be grounded. All exothermic welded grounding connections will be coated with zinc-enriched paint to prevent rusting.

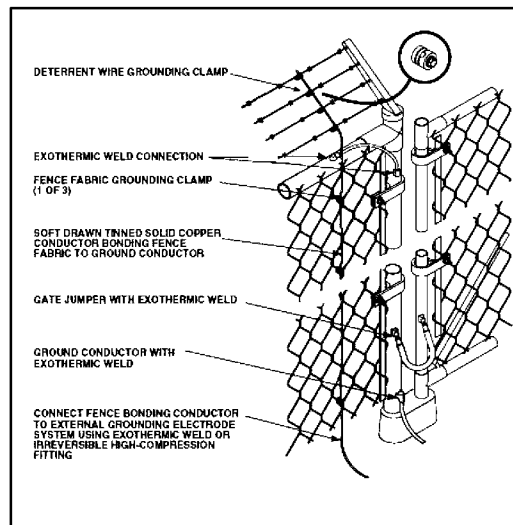


Figure A-2

(From the Motorola publication “Standards and Guidelines for Communications Sites
“copyright 2005, Motorola document reference number 68P81089E50-B, Figure 4-49.)

Appendix B – Signage and Information Sharing

General

Signs are required to be posted at radio infrastructure sites to inform the public and occupational workers of conditions at the site. Signs must comply with BLM Sign Manual MS-9130. The signs are intended to provide site specific information to all personnel who visit the site. Signs will be posted at conspicuous locations (approximately five feet above ground level) in order to provide for the best observation. Standard signs will be used to identify danger, advise caution, or provide instruction. RF exposure signs are the only signage required for sites that can only be accessed by helicopter.

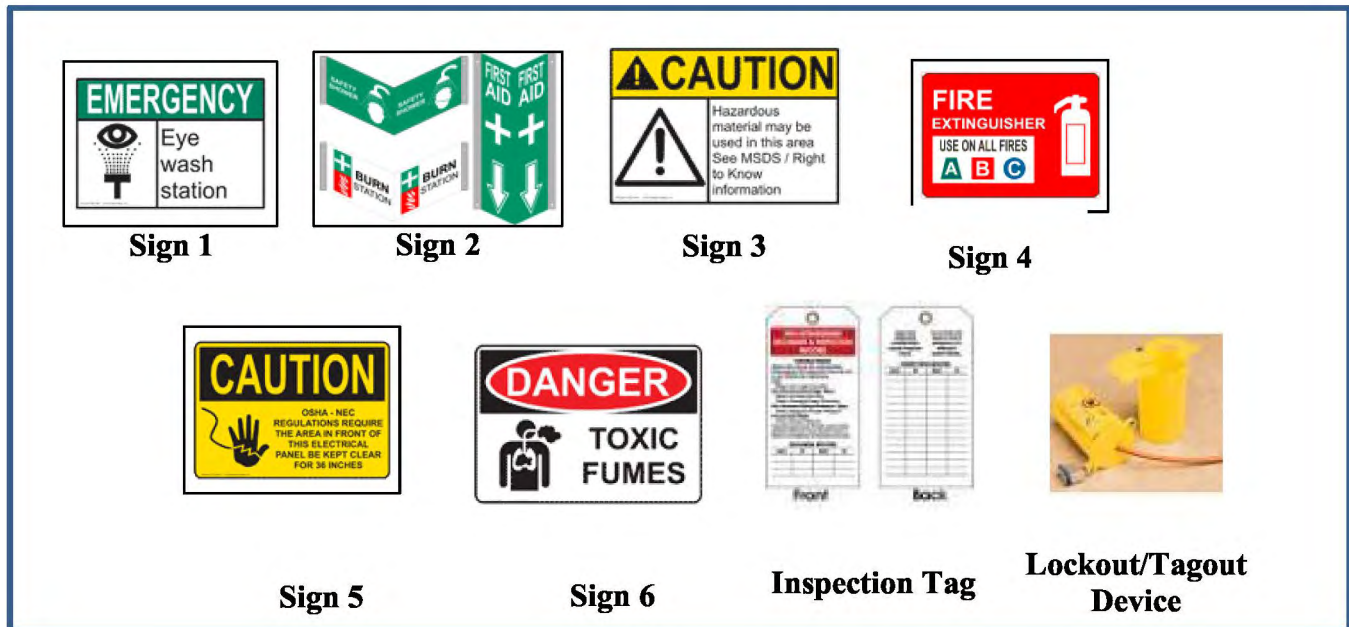


Figure B-1

A. The following apply to the Radio Infrastructure site (indoors):

1. Signs are required for the following:
 - a. Eye wash stations (if present) See Figure B-1, Sign 1.
 - b. First aid stations (kits). See Figure B-1, Sign 2.
 - c. Material Safety Data Sheets (MSDS) location. See Figure B-1, Sign 3.
 - d. Fire extinguisher location. See Figure B-1, Signs 4.
 - e. All electrical panel boards and switchboards. See Figure B-1, Sign 5
 - f. All sites with sealed or wet cell batteries used for primary or alternate (backup) power will display an MSDS information sign. Sites with any quantity of wet cell batteries will display a sign DANGER TOXIC FUMES. See Figure B-1, Sign 6.
2. Additional requirements include:
 - a. Material Safety Data Sheets (MSDS) for all items installed at the location.

- b. Fire extinguisher inspection tags. See Figure B-1, Inspection Tag.
- c. RFAs for all transmitters - a binder at the site with all RFAs is acceptable.
- d. All radio transmitters must have the center frequency displayed on the equipment.
- e. Lockout tag used to indicate electrical shock or exposure to dangerous RF levels in the workplace will have the date and name of the person that installed the device. See Figure B-1, Lockout/Tagout Device.

Note: The person that installed the device will inform the site owner/manager (if it is a cooperator site), update all risk management worksheets that are impacted, inform the state safety manager and the state radio program lead of changed conditions at the site.

- f. All fire extinguishers must have an inspection tag. See Figure B-1, Inspection Tag.

B. The following signs will be posted at the Radio Infrastructure site (outdoors):

1. Appropriate RF exposure sign in English and Spanish. See Figure B-2, Signs 1-6.
2. DANGER - DO NOT CLIMB sign on each side of tower. See Figure B-2, Sign 7.
3. SECURITY NOTICE sign on all four sides of the compound at the most visible locations. See Figure B-2, Sign 8.



Figure B-2

Appendix C - Grounding Systems

A. This appendix provides information derived from the Motorola R56 publication and the TIA 222 standard. Detailed grounding requirements and instructions are in the Motorola R56 manual for all radio infrastructure components except the communication tower. All RI sites will be configured with a single-point ground system; connecting metallic parts and equipment (within the RI site compound) together to reduce risk of electrocution - dissipate transient voltages. The Engineering Subcommittee for Structural Standards for Steel Antenna Towers and Antenna Supporting Structures defines tower erection and maintenance requirements in the Telecommunications Industry Association ANSI/TIA-222 standard.

B. The BLM sites where personnel perform daily work to perform official duties are Type B sites (Figure D-1). These RI sites, that also safeguard personnel, are designed to achieve a grounding (earthing) electrode system resistance (Figure D-2) as low as practical; maximum 10 ohms. Concrete encased (UFER, Figure D-3) grounding electrodes should be considered for arctic regions and rock mountain tops.

C. Other RI sites that are not intended to be occupied for extended periods are Type A sites. These sites are designed to achieve a grounding (earthing) electrode system resistance as low as practical; maximum 25 ohms.

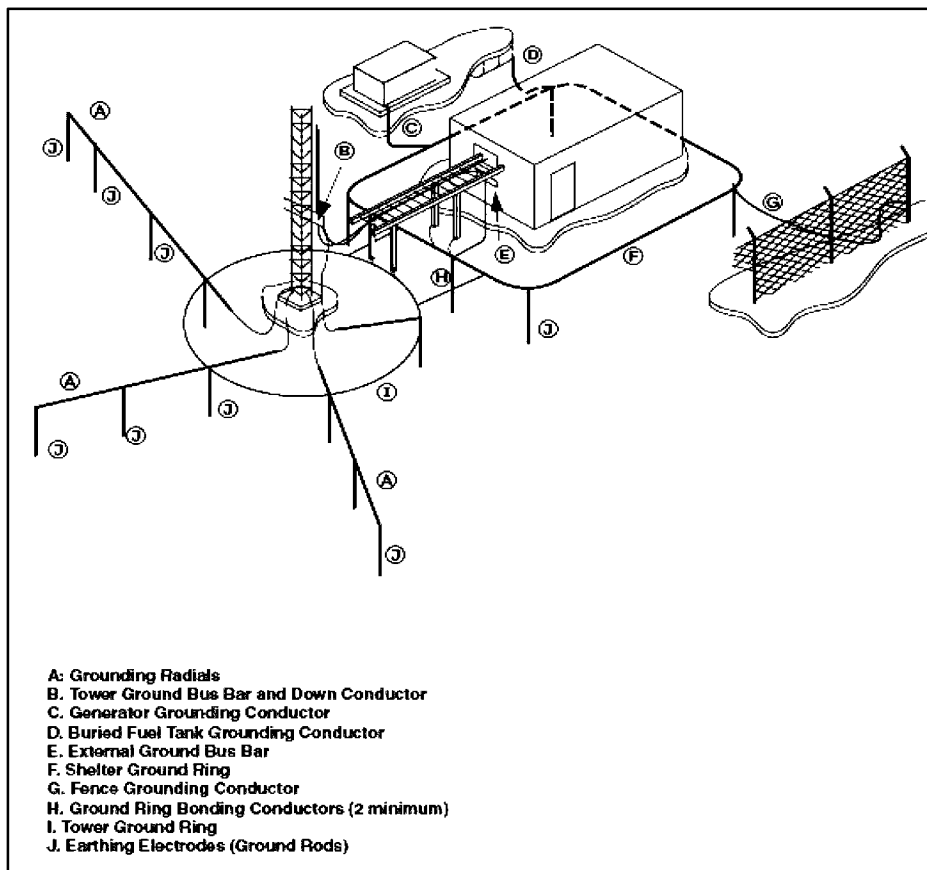


Figure C-1

Typical External Grounding Electrode System

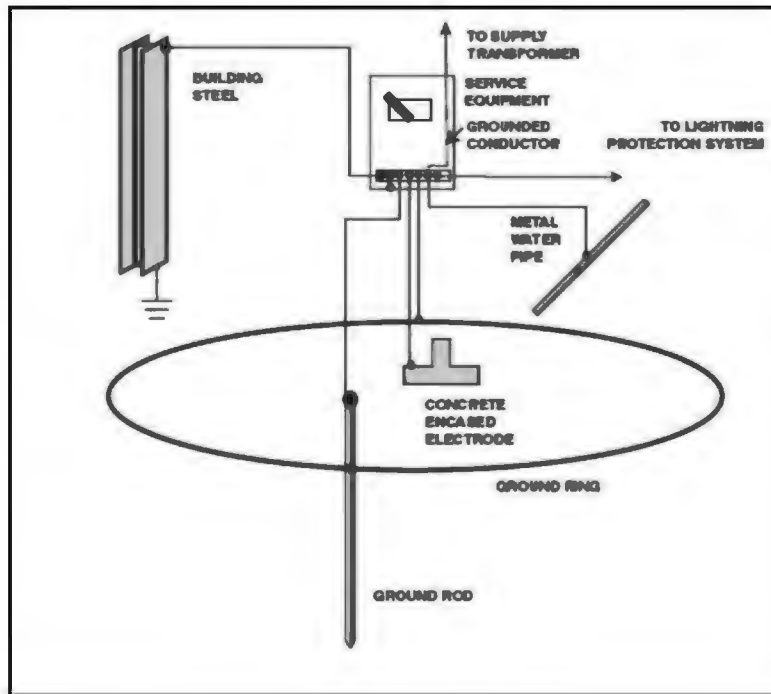


Figure C-2
Common Grounding Example

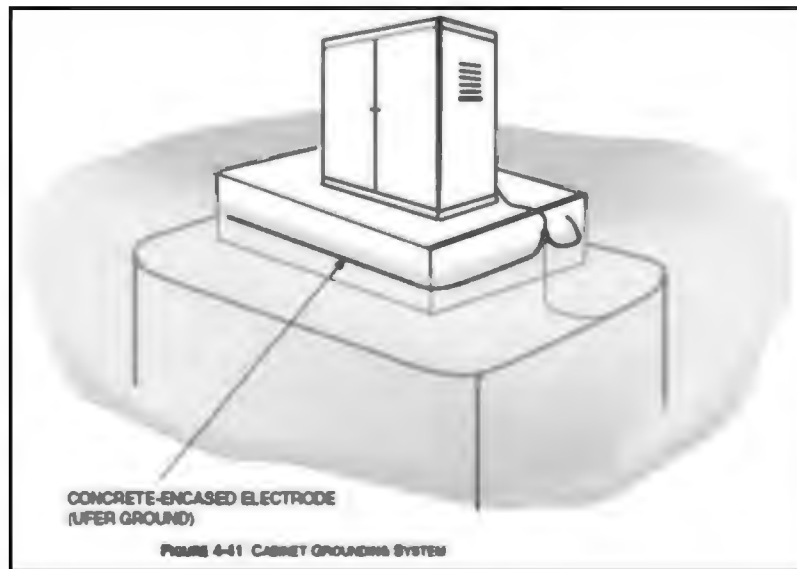


Figure C-3
Cabinet Grounding System

The source for Figures C-1, C-2, and C-3 (above) was the Motorola publication “Standards and Guidelines for Communication Sites”, copyright 2005, Motorola document reference number 68P81089E50-B, and labeled Figures 4-3, 4-4 and 4-41 accordingly.

H-1382-1 – CHANGE OF STATION HANDBOOK

Table of Contents

<u>CHAPTER</u>	<u>PAGE</u>
Introduction	i
I. Forms to be used for Your Transfer	I-1
II. Advance of Funds	II-1
A. Items for Which Advances are Allowed	II-1
1. Expenses of Seeking a Permanent Residence	II-1
2. Mileage Allowance to New Duty Station	II-1
3. Per Diem En Route	II-1
4. Temporary Quarters	II-1
5. Commuted Rate Moving of Household Goods	II-1
6. Transportation of Mobile Home	II-1
B. Items for Which Advances are not Allowed	II-1
C. Application for an Advance of Funds	II-2
D. Repayment of Advance of Funds	II-2
III. Travel for the Purpose of Seeking Permanent Residence at New Official Station (Advance House Hunting Trip)	III-1
A. Request for Advance House Hunting Trip	III-1
B. Cases Where an Advance House Hunting Trip is Not Authorized	III-2
C. Travel and Transportation Allowances	III-2
D. Exclusions	III-3
IV. Transportation and Per Diem for Yourself and Your Immediate Family	IV-1
A. Travel by Privately Owned Vehicles	IV-1
B. Per Diem Allowances	IV-3
C. Advance of Funds for Per Diem and Transportation	IV-4
D. Excess Travel Time Chargeable to Annual Leave	IV-4
V. Temporary Quarters Allowances	V-1
A. Eligibility for 60 days	V-1
B. Interest of the Government	V-1
C. Time Limits	V-2
D. Distance Limits	V-2
E. Extensions of Temporary Quarters beyond 60 days	V-2
F. Approving Authority	V-3
G. Termination of Temporary Quarters	V-3
H. Allowance Subsistence Expenses	V-4
I. Computation of Maximum Amount Allowable for Reimbursement	V-4
1. First 30-Day Period	V-4
2. Second 30-Day Period	V-4
3. Additional 60-Day Period	V-4
J. Travel Advance	V-5
K. Exclusions	V-5

H-1382-1 – CHANGE OF STATION HANDBOOK

VI. Payments for Transportation of Household Goods and Personal Effects by Either the Actual Expense (GBL) Method or the Commuted Rate Method	VI-1
A. Arrangements for Moving	VI-1
B. Household Goods and Personal Effects	VI-1
C. Weight Allowances	VI-1
D. Preparation of Forms	VI-2
E. Valuation of Shipment	VI-2
F. Information Needed for GBL Rate Method	VI-2
G. Actions by the Administrative Office	VI-3
H. Carrier Packing, Inventory and Loading of Household Goods	VI-4
I. Carrier Delivery and Unpacking of Household Goods	VI-4
J. Loss or Damage of Household Goods	VI-4
K. Reimbursement for Shipping	VI-5
L. Shipment of Household Goods to and from Alaska	VI-6
M. Travel Advance	VI-6
VII. Temporary Storage of Household Goods and Personal Effects	VII-1
A. Basic Allowances	VII-1
B. Extension of Storage Time Allowed	VII-1
VIII. Transportation of a Mobile Home	VIII-1
A. Certification	VIII-1
B. Reimbursement	VIII-1
C. Method of Transportation	VIII-1
D. Temporary quarters Allowance	VIII-2
IX. Allowances for Miscellaneous Expenses	IX-1
A. Types of Costs Covered	IX-1
B. Types of Costs Not Covered	IX-1
C. Allowable Reimbursement Amounts	IX-1
D. Advance of Funds	IX-2
E. Exclusions	IX-2
X. Allowances for Expenses Incurred in Connection with Real Estate Transactions and Unexpired Leases	X-1
A. Time Limitations	X-1
B. Coverage	X-1
C. Eligibility For Reimbursement	X-1
D. Reimbursable Expenses	X-2
E. Non reimbursable Expenses	X-3
F. Exclusions	X-4
G. Advance of Funds	X-4
XI. Allowances for New Appointees Reporting to First Duty Stations	XI-1
XII. Allowances for Relocation Income Tax (RIT)	XII-1

H-1382-1 – CHANGE OF STATION HANDBOOK

Illustrations:

1. Employment Agreement (Form 1380-9)
2. Travel Authorization (Form DI-1020)
3. Personnel Transfer Data (Form 1380-1)
4. Employee and Immediate Family Subsistence Expenses While Occupying Temporary Quarters (Form 1380-7)
5. Travel Voucher – Transfer of Duty Station (SF-1012)
6. Application and Account for Advance of Funds (SF-1038)
7. Employee Application for Reimbursement of Expenses Incurred Upon Sale Or Purchase (or Both) of Residence (Form 1380-6)
8. Relocation Income Tax (RIT) Form
9. Cost Comparison for Shipping Household Goods (GSA Form 2485)

H-1382-1 – CHANGE OF STATION HANDBOOK

A Guide for Use of Transferees

**INFORMATION REGARDING PAYMENT OF TRAVEL
AND TRANSPORTATION FOR EMPLOYEES TRANSFERRING
FROM ONE OFFICIAL DUTY STATION TO ANOTHER**

INTRODUCTION

GSA Bulletin FPMR A-40, General Supplement 24, dated July 6, 1987, revised the regulations governing the payment of travel and transportation expenses of civilian officers and employees of the United States when engaged in an official duty station move. The revised regulations apply to all change of station travel effective on or after July 1, 1986.

The regulations provide that no expenses incident to a change of official duty station may be incurred unless and until you have agreed in writing to remain in government service for 12 months following the effective date of your transfer (unless you are separated for reasons beyond your control and such reasons are acceptable to the employing agency). If the agreement is violated, any funds expended by the United States for such purposes are recoverable from you as a debt due to the United States.

Question relating to your change of station should be addressed to the Deputy State Director for Administration of the gaining State Office, the Division of Finance (WO-820) for moves to the Washington Office, and the Voucher Audit Section (d-516) for moves to the Denver Service Center. You may also address any questions directly to the Denver Service Center.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter I**Forms to be Used for Your Transfer****Form Number****Form Title and Instructions**

1380-9

EMPLOYEMENT AGREEMENT

Complete, sign and return to our personnel officer immediately upon official notification that your transfer has been approved. No personnel action or travel may be started until this form is received in your appointing office's personnel office. (See Illustration 1.)

DI-1020

TRAVEL AUTHORIZATION

This form I prepared and signed by the proper official at the Service Center or Headquarters Office. Form DI-1020 shows all allowances authorized. No travel can be undertaken until a properly approved Travel Authorization is issued by your servicing personnel office. (See Illustration 2.)

1380-1

PERSONNEL TRANSFER TRAVEL DATA

Complete, sign, and send to your servicing personnel office as soon as possible after official notification of your transfer. This form is used as the basis for the preparation of the DI-1020 and the advance of funds for your move. (See Illustration 3.)

1380-7

EMPLOYEE AND IMMEDIATE FAMILY SUSISTENCE EXPENSES WHILE OCCUPYING TEMPORARY QUARTERS

This form is to be used by you as a daily record of expenses while occupying temporary quarters. Complete and submit this form, along with the required receipts, to support your claim (see pages V-1 through V-3 of this Handbook) for reimbursement on SF-1012, Travel Voucher. (See Illustration 4.)

SF-1012

TRAVEL VOUCHER

This form, supported by the required documentation, must be submitted for each reimbursement claimed. You should submit one reimbursement claim for each portion of the transfer as soon as it is complete (i.e., advance house hunting trip, enroute travel, temporary quarter, etc.). Additional copies of this form are available in any BLM office. (See Illustration 5.)

H-1382-1 – CHANGE OF STATION HANDBOOK

Forms to be Used for Your Transfer**Form Number****Form Title and Instructions**

SF-1038

APPLICATION AND ACCOUNT FOR ADVANCE OF FUNDS

Complete and submit this form to you servicing Personnel Officer. The travel authorization number and date will be entered by the staff of the office issuing the Travel Authorization. Current BLM policy is that you will be issued your advance in increments prior to each portion of your move. (See Illustration 6)

1380-6

EMPLOYEE APPLICATION FOR REIMBURSEMENT OF EXPENSES INCURRED UPON SALE OR PURCHASE (OR BOTH) OF RESIDENCE UPON CHANGE OF OFFICIAL STATION

This form must be completed, signed, dated, and submitted to the Service Center Director (D-516), along with supporting documentation and SF-1012, Travel Voucher, showing the amounts claimed. (See Illustration 7)

SF-1131

U.S. GOVERNMENT BILL OF LADING (GBL)

This form is completed by the administrative services office of your new official duty station for all Household Goods (HHG) moved under the actual expense (GBL) method. A copy should be attached to the SF-1012, Travel Voucher, when submitting claims associated with the Household Goods (HHG) move. (See Illustration 8)

GSA Form 2485

COST COMPARISON FOR SHIPPING HOUSEHOLD GOODS

This form is prepared by the employee handling the HHG move in the administrative services office at the new duty station. That office completes it and arranges for the completion of the HHG move if the actual expense method of moving the household goods is approved. (See Illustration 9)

The Employment Agreement, Form 1380-9, and Personnel Transfer Travel Data, Form 1380-1, must be completed and sent to your Personnel Office as soon as you have been officially notified that your transfer is approved. For these purposes, this official notification may be verbal. All actions will be delayed until these forms have been received by the gaining Personnel Office.

The SF-1038, Application and Account for Advance of Funds, should also be sent to the gaining Personnel Office as soon as possible to allow adequate time for processing your advance of funds.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter II**Advance of Funds**

A. ITEMS FOR WHICH ADVNCES ARE ALLOWED. An advance of funds is allowed for change of station moves. If you have a GSA contractor charge card, your request for an advance of funds should be limited to those expenses that cannot be charged to your card (i.e., household goods moved under the commuted rate method, transportation of a mobile home, some meals, etc.). The advance of funds you request should cover the following items:

1. Expenses of Seeking a Permanent Residence.
70 percent of per diem and other travel expenses for the purpose of seeking permanent residence at the new duty station – maximum of 10 calendar days. (See Chapter III)
2. Mileage allowance to New Duty Station.
70 percent of the mileage allowance to your new duty station for you and your immediate family. (See Chapter IV)
3. Per Diem En Route.
70 percent of the per diem allowable while en route to your new duty station. Maximum days = total mileage/350 miles per day. (See Chapter V)
4. Temporary Quarter.
70 percent of temporary quarter allowances. Advances are made in 30-day increments. Temporary quarters in excess of 30 days must be approved by an authorized official. (See Chapter V)
5. Commuted Rate Moving of Household Goods.
If the commuted rate method of moving household goods is approved, the cost of transportation of your household goods and personal effects plus storage, when required. (See chapters VI and VII)
6. Transportation of Mobile Home.
Transportation of mobile home in lieu of costs of transportation of household goods and personal effects. (See Chapter VIII)

B. ITEMS FOR WHICH AN ADVANCE IS NOT ALLOWED. An advance of funds is not allowed for the following items:

1. Miscellaneous expense. (See Chapter IX)
2. Expenses in connection with real estate transactions and unexpired leases. (See Chapter X)

H-1382-1 – CHANGE OF STATION HANDBOOK

C. APPLICATION FOR AN ADVANCE OF FUNDS. Form SF-1038, Application and Account for Advance of Funds, must be used to apply for an advance of funds. Under normal circumstances, the advance is issued about 2 weeks prior to the date of need. If you do not plan to move your household goods within 30 days after reporting to your new duty station, your initial request should include only a sufficient advance of funds to cover per diem, mileage, and subsistence expenses. (Note: If you have a GSA contractor charge card, your advance should be limited to expenses that cannot be charged. See page II-1.) You may submit a second request for an advance of funds to cover moving your household goods. The application must be supported by Form 1380-1 and the following must be shown if the move of your household goods is by commuted rate schedule:

1. Point of origin and destination.
2. Estimated signed by the carrier you elect to handle your shipment or may be made by you by multiplying the number of rooms in your old residence by 1,000 pounds. Be sure to include an accurate estimate for articles stored in a garage or basement. The estimated weight multiplied by the commuted rate for the distance between the points of origin and destination must be used to compute the amount of funds advanced. Current commuted rate information is available in the administrative office of your new official station.

D. REPAYMENT OF ADVANCE OF FUNDS. The amount received for advance of funds must be prepaid within 30 days of the completion of the entitlement for which the advance was issued. In other words, if you received two advances, one for per diem, mileage, and subsistence expenses and one for the shipment of your household goods by commuted rate, the first advance must be repaid within 30 days of the date you and your family arrived at your new duty station. The second advance must be repaid within 30 days of the date your household goods were delivered to your new residence. The repayment can be made by offset against your travel voucher, by cash payment, or both. In submitting a travel voucher to claim change of station expenses, show the amount to be applied to the advance in the space provided on the voucher.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter III**Travel for the Purpose of Seeking Permanent Residence at New Official Station (Advance House Hunting Trip)**

After you have been selected and have accepted a transfer of official duty station, you may be authorized payment of per diem and travel expenses for both you and your spouse traveling together, or either one of you traveling alone, between the localities of the old and new duty stations for the purpose of seeking a permanent residence. You may each travel on separate round trips provided the combined cost of both trips does not exceed the cost of one round trip where you and your spouse travel together to seek a new residence. Bureau policy is to authorize advance house hunting trips when circumstances indicate (1) a pre-determined actual need exists, or (2) the employee's reporting date can be delayed until the new permanent residence is available for occupancy. Expenses for family members other than your spouse are not reimbursable.

A. REQUEST FOR ADVANCE HOUSE HUNTING TRIP. When requesting an advance house hunting trip, you must indicate the mode of transportation to be used and the dates you plan to make the trip. The trip must be justified to the authorizing official prior to preparing the Travel Authorization. In determining whether an advance house hunting trip is necessary, the following factors should be considered:

1. If an employee must promptly vacate the residence at the old duty station, it may be more convenient for the employee and less costly to the Government for the employee to complete arrangements for the purchase of a new permanent residence at the new duty station before the actual move takes place. In cases such as this an advance trip is probably warranted.
2. It may be less costly to the Government and more satisfactory to the employee for the employee's family to remain at the old residence after the employee reports to the new duty station. In this situation, the employee may be able to select a permanent residence after becoming more familiar with the neighborhoods, transportation facilities, schools, and housing market prior to moving their family to the new location. An advance trip under these circumstances may not be necessary.
3. In other circumstances, it may be less costly to allow the employee and the family to remain in temporary quarters at the new official duty station for a longer period than might be required, with an advance house hunting trip. Temporary quarters may be approved, subject to a 60-day limitation, until permanent quarters are found. Temporary quarters in excess of 60 days must be approved by the Assistant Director, Management Services, and cannot exceed a statutory maximum of 120 days.

H-1382-1 – CHANGE OF STATION HANDBOOK

B. CASES WHERE AN ADVANCE HOUSE HUNTING TRIP IS NOT AUTHORIZED.

Travel to seek permanent quarters at the new official station may not be approved if one or more of the following conditions exist:

1. The employee has not signed the Employment Agreement, Form 1380-9.
2. The date of the transfer has not been established.
3. The employee is assigned to Government or other prearranged residence quarters at the new official duty station.
4. The purpose of the trip is to permit the employee to decide whether or not to accept the transfer.
5. Either (or both) the old and new duty station is located outside the conterminous United States.
6. The map distance between the old and new duty stations is less than 75 miles via a usually traveled surface route.

C. TRAVEL AND TRANSPORTATION ALLOWANCES. An approved Travel Authorization must be secured prior to making the trip. Post approval is not allowed. You are allowed maximum lodging of \$35.00 plus a Meal & Incidental Expenses (M&IE) allowance of \$25.00, not to exceed \$60.00 per day. Your spouse may receive 75 percent of this, or maximum lodging of \$26.25 plus an M&IE allowance of \$18.75 not to exceed \$45.00 per day. If your spouse travels alone to seek a new residence, they are allowed the employee allowance. In the event the change of station move is declined by you, any monies received on an advance house hunting trip must be recovered from you and/or your spouse. Lodging receipts are required and must be attached to your reimbursement voucher (SF-1012). A COMMERCIAL RENTAL CAR MAY BE ALLOWED IF CONDITIONS WARRANT ITS APPROVAL. If no lodging is required, you are allowed \$25.00 per day and your spouse 75 percent of that amount, or \$18.75 per day. If your spouse travels alone and no lodging is required, they are allowed \$25.00 per day.

The advance house hunting trip is allowed for a reasonable period of time, but may not exceed 10 calendar days, including travel time. The equivalent of only one round trip is reimbursable even when you and your spouse travel separately. Splitting the house hunting trip into 10 trips of 1 day each is not allowed.

The purpose in authorizing the mode of transportation (i.e., privately own vehicle, common carrier, etc.), is to provide the least amount of time in travel status and the maximum amount of time at the new duty station area. Mileage allowances are 15 cents per mile for you or your spouse traveling alone, or 17 cents per mile if traveling together.

H-1382-1 – CHANGE OF STATION HANDBOOK

D. EXCLUSIONS. New appointees, employees assigned under the Government Employees Training Act, and employees (and their spouses) transferring to or from outside the conterminous United States (including Alaska), may not be authorized an advance house hunting trip.

NOTE: While an advance house hunting trip is permitted by regulation, the gaining office and the employee must exercise care to avoid prejudicing the employee's entitlements. If, on a trip to the new duty station prior to the official transfer date, the employee performs substantial duties related to the duties of the new position, the Comptroller General has ruled that a transfer of official station can occur. Under such circumstances per diem could not be authorized since the employee is at the permanent duty station. Accordingly, employees on advance house hunting trips should not perform any substantial duties of their new position.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter IV**Transportation and Per Diem for Yourself and Immediate Family**

You and members of your immediate family may travel either by privately owned vehicle or common carrier. If you hold a GSA contract charge card, and are traveling by common carrier, you should charge the transportation costs to your charge card. Otherwise, a Government Transportation Request (GTR) **MUST BE USED**. A GTR can be obtained from the Bureau office arranging your move. In some instances, the common carrier tickets can be obtained for you and your family by the Bureau office and sent to you in time for the move. Less than first class accommodations must be secured except when circumstances may include a physical handicap requiring extra space, extreme urgency of travel with no regular space available, or special security requirements while in transit. To assure reimbursement for the costs of first class accommodations, advance approval of the Secretary of the Interior is required. Procedures for requesting advance approval and the documentation, including medical records, required are set forth in BLM 1382.31D1. In unusual circumstances the approval may be obtained after the fact, but in the event the request is denied, the additional expenses for use of first class travel must be borne by you.

A. TRAVEL BY PRIVATELY OWNED VEHICLES. If travel is by privately owned vehicle, reimbursement is determined according to the rates shown below. Reimbursement is based on the mileage over the usually traveled routes between the old and the new duty station. A minimum average of 350 miles must be traveled each day for the purposes of computing per diem allowances.

The allowances for use of a privately owned vehicle are as follows:

<u>Number of Occupants in Vehicle</u>	<u>Mileage Rates (cents)</u>
Employee only, or one member of immediate family traveling alone.	15
Employee and one member of immediate family, or two members of immediate family traveling separately.	17
Employee and two members of immediate family, or three members of immediate family traveling separately.	19
Employee and three or more members of family, or four or more members of immediate family traveling separately.	20

The term immediate family means any of the following persons who are members of your household at the time you report for duty at the new official station: (1) your spouse, (2) children (including stepchildren and adopted children), unmarried and under 21 years of age, or of any age if so physically or mentally handicapped they cannot support themselves, and (3) dependent parents of you and/or your spouse.

H-1382-1 – CHANGE OF STATION HANDBOOK

Also included are children born after the effective date of transfer when travel of the employee or spouse to the new duty station is prevented at the time of the transfer because of advanced stages of pregnancy or other reasons acceptable to the Bureau such as awaiting completion of the school year.

The names of the spouse, the names, ages and relationship of all dependent children and the names of dependent parents must be shown on Form 1380-1, Personnel Transfer Data Sheet, and on the back of the GTR, if used to secure common carrier transportation.

Use of more than one privately owned vehicle for the move must be fully justified and authorized on the DI-1020, Travel Authorization. Use of more than one vehicle may be authorized as advantageous to the Government only when:

1. There are more members of the immediate family than can be reasonably transported, with luggage, in one vehicle. (For example, four in a compact vehicle; five in a full size vehicle.)
2. Special accommodations are needed, due to age or physical condition, to transport a member of the immediate family in one vehicle, and a second vehicle is required for travel of other members of the immediate family.
3. An employee must report to a new duty station before members of the immediate family who have delayed travel for acceptable reasons. Absent unusual circumstances, settling personal business affairs is not considered an acceptable reason. Examples of acceptable reasons include completion of school terms, disposing or shipping of household goods and personal effects, and temporary unavailability of suitable housing at the new official duty station.

All moves to or from Alaska are limited to the use of only one vehicle. If more than one vehicle is required to move the family, only one vehicle can be claimed and the applicable mileage rate is determined as if all members of the family and the employee travel in one vehicle.

When more than one vehicle is authorized, the mileage rates apply to each vehicle based on the actual number of occupants in each vehicle. If use of more than one vehicle is not authorized, the mileage rate is applied as if all members of the family and the employee traveled in one vehicle.

H-1382-1 – CHANGE OF STATION HANDBOOK

B. PER DIEM ALLOWANCES. Per diem allowances are computed on the basis of actual travel time based on a reasonable driving distance per day, but not less than an average of 350 miles per calendar day. In computing the per diem amount based on 350 miles per day, one-fourth of the prescribed per diem rate is allowed for each 87.5 miles or fraction thereof, traveled between the old and new duty official duty stations. The 350 miles per day minimum applies to both the conterminous United States and Alaska. For this portion of the move, the following amounts are allowed:

<u>Employees and/or Approved Family Members</u>	<u>Per Diem Rate With Lodging Costs Included</u>	<u>Per Diem Rate With Lodging Cost Excluded</u>		
CONTERMINOUS UNITED STATES				
	Maximum Lodging +	<u>M&IE</u>	<u>NTE</u>	
Employee (or spouse if Unaccompanied by employee)	\$35.00	\$25.00	\$60.00	\$25.00
Spouse (if traveling with employee) And children 12 years of age and Older (75% of the employee's rate)	\$26.25	\$18.75	\$45.00	\$18.75
Children under 12 years of age (50% of Employee's rate)	\$17.50	\$12.50	\$30.00	\$12.50 ea

OUTSIDE CONTERMINOUS UNITED STATES

Employees (or spouse if Unaccompanied by employee)	Rate Established for "other" in Alaska or Canada, whichever is applicable.	50% of rate established for "other" in Alaska or Canada whichever is applicable.
Spouse (if traveling with employee) and children 12 years of age and older	75% of employee rate.	75% of employee rate.
Children under 12 years of age.	50% of employee rate.	50% of employee rate.

If the total travel time is less than 24 hours and no lodging costs are incurred, the per diem is \$25.00 per day for you (\$6.25 for each 6-hour period). The per diem rate for your spouse and each member of your family is computed on a quarterly (6-hour) basis at the percentage rates shown in the above chart. No per diem is allowed for less than 10 hours.

H-1382-1 – CHANGE OF STATION HANDBOOK

C. ADVANCE OF FUNDS FOR PER DIEM AND TRANSPORTATION. Funds may be advanced for 70 percent of per diem and transportation for you and your immediate family members. The advance should not be requested more than 3 weeks in advance of actual travel and must be repaid within 30 days after your arrival at our new duty station. If you hold a GSA contract charge card, you should limit your advance to those expenses that cannot be charged to your card.

D. EXCESS TRAVEL TIME CHARGEABLE TO ANNUAL LEAVE. When transportation by privately owned vehicle is authorized, you must charge your annual leave for excess driving time if you do not average at least 350 miles per day. The time and day of departure from the old duty station and the time and day of arrival at the new duty station must be shown on the SF-1012, Travel Voucher.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter V**Temporary Quarters Allowances**

Temporary quarters is any lodging obtained from private or commercial sources and occupied temporarily by you and/or your family after vacating your residence at your old duty station at the time your transfer was authorized.

A. ELIGIBILITY FOR 60 DAYS. An employee for who a permanent change of station is authorized shall be allowed subsistence expenses for themselves and for each member of the immediate family for a period of not more than 60 consecutive days, approved in 30-day increments, when occupying temporary quarters. For you to be eligible for temporary quarters the following conditions must be met:

1. The temporary quarters are in the interest of the government,
2. The new official station is within the United States (the 50 States and the District of Columbia),
3. A written agreement is in effect to reimburse the government for the costs of the permanent change of station if the employee leaves voluntarily within one year (see illustration 1),
4. Temporary quarters must begin no later than 30 days from the date you report to the new duty station, or no later than 30 days from the date your family vacates your personal residence at the old duty station, and
5. The distance between the new duty station and your old residence is 40 miles greater than the distance between your old residence and the old duty station.

Additional information on the criteria for temporary quarters is set forth below.

B. INTEREST OF THE GOVERNMENT. The interest of the government is in providing, within existing regulations, a means of maintaining employee productivity by avoiding unnecessary financial or other hardships associated with a permanent change of station, and in recruiting or retaining qualified employees. However, officials authorizing temporary quarters are to balance the interest of the government by the costs of temporary quarters.

H-1382-1 – CHANGE OF STATION HANDBOOK

C. TIME LIMITS. For moves within the United States (the 50 States and the District of Columbia), up to 60 consecutive days may be authorized for subsistence while occupying temporary quarters. The period of consecutive days must begin no later than 30 days from the date you report to your new duty station or no later than 30 days from the date your family vacates your personal residence at the old station. The period of consecutive days may be interrupted for the time allowed for travel between the old and new duty stations and intervening temporary duty assignments.

The 60-day consecutive period begins concurrently on the date either you or your family occupies temporary quarters. You may occupy temporary quarters at one location while members of your immediate family occupy temporary quarters at another location. For example, you may occupy temporary quarters at the new duty station while your family is occupying temporary quarters at the old duty station awaiting the end of the school term.

D. DISTANCE LIMITS. Temporary quarters will not be authorized unless the distance between your new duty station and the old residence is more than 40 miles greater than the distance between the old residence and old duty station. The 40 miles is measured according to official map distances along a usually traveled route. An exception is that temporary quarters may be authorized irrespective of distance limitations while awaiting the arrival of household goods shipped from the old station to the new official station.

E. EXTENSIONS OF TEMPORARY QUARTERS BEYOND 60 DAYS. Temporary quarters subsistence expenses may be authorized in excess of 60 days to accommodate unusual circumstances. In no instance may the total temporary quarters allowances exceed the statutory maximum of 120 consecutive days. To meet the conditions for an extension of temporary quarters beyond the 60 consecutive days allowance you must demonstrate a need for additional time due to circumstances which: (1) have occurred during the initial 60-day allowance, (2) are beyond your control, and (3) you have taken prudent actions to avoid. Examples of reasons which can be considered beyond your control include:

1. Shipment and/or delivery of household goods to new residence are delayed due to strikes, bad weather, fires, or other similar circumstances.
2. New permanent residence cannot be occupied due to unanticipated problems such as settlement delays and short time delays in completing construction.
3. Inability to locate adequate housing suitable for family needs because of housing conditions at the new duty station.
4. Sudden illness, injury, or death of an immediate family member.

H-1382-1 – CHANGE OF STATION HANDBOOK

F. APPROVING AUTHORITY. Prior to occupying temporary quarters, written authorization must be obtained from an official with the delegated authority to approve temporary quarters. Temporary quarters are normally approved in 30-day increments. The initial 30 days of temporary quarters may be included on the permanent change of station travel authorization and is to be approved by the cognizant State Director, the Director of the Denver Service Center, the Director of the Boise Interagency Fire Center, or the Assistant Director, Management Services. An additional 30 days temporary quarter up to a total of 60 consecutive days may also be approved by the official authorizing the initial 30 days. Temporary quarters extensions beyond 60 days must be reviewed by the Division of Finance (820) and approved by Assistant Director, Management Services. Requests for extension in excess of 60 days are to be made by memorandum through the official approving the initial 60 days temporary quarters and should describe fully the circumstances requiring a temporary quarters extension. Extensions in excess of 120 consecutive days cannot be approved since the 120 days is established as a statutory maximum.

G. TERMINATION OF TEMPORARY QUARTERS. The period of eligibility terminates when either you or any member of your immediate family occupies permanent residence quarters, or the allowable time limit expires, whichever occurs first.

H-1382-1 – CHANGE OF STATION HANDBOOK

H. ALLOWABLE SUBSISTENCE EXPENSES. The daily actual subsistence expenses incurred while occupying temporary quarters are itemized on Form 1380-7 and totaled for each 30-day period. The amounts claimed for each 30-day period may not exceed the maximum allowable shown in the table below. Reimbursement is allowed only for actual subsistence expenses incident to occupying temporary quarters, and expenses must be reasonable. Allowable expenses and documents required for reimbursement are as follows:

1. Lodging costs (receipts required).
2. Meals plus tips (receipts required for all meals over \$25.00, regardless of the number of people).
3. Groceries purchased in lieu of meals when consumed during the occupancy of temporary quarters. When the cost of groceries is over \$25.00, store tapes showing the name and location of the store, date, and amount of the purchase must be attached to Form 1380-7. The amount claimed for grocery purchases must be itemized on Form 1380-7 on the actual date purchased; it may not be prorated over the days the groceries were consumed.
4. Laundry and dry cleaning (receipts required for commercial service). If coin-operated equipment is used, enter the words "coin-op" on the Form 1380-7 in the proper column along with the amount claimed.

NOTE: Local transportation expenses incurred while occupying temporary quarters are not allowable.

I. COMPUTATION OF MAXIMUM AMOUNT ALLOWABLE FOR REIMBURSEMENT. The amount which may be reimbursed for temporary quarters subsistence expenses is the lesser of the actual amount of allowable expenses incurred for each 30-day period, or the amount computed as follows:

1. First 30-Day Period:

Employee (or spouse if unaccompanied by employee)	NTE \$60.00 per day
Spouse if accompanying employee	NTE \$40.00 per day
Family members 12 years of age or older	NTE \$30.00 per day
Family members under 12 years of age	NTE \$25.00 per day

2. Second 30-Day Period: (if authorized)

Employee (or spouse if unaccompanied by employee)	NTE \$45.00 per day
Spouse if accompanying employee	NTE \$30.00 per day
Family members 12 years of age or older	NTE \$30.00 per day
Family members under 12 years of age	NTE \$22.50 per day

3. Additional 60-Day Period: (if authorized)

Same rates as listed above for the second 30-day period.

H-1382-1 – CHANGE OF STATION HANDBOOK

NOTE: If you are required to perform Tour of Duty (TDY) travel while occupying temporary quarters with your spouse, your spouse is entitled to the rate for an unaccompanied spouse for that period you are in TDY status. If, for example, you are in TDY travel status for 2 ½ days during the first 30-day temporary quarters period, the maximum amount allowable for your spouse would be 27 ½ days @ \$40.00 per day and 2 ½ days @ \$60.00 per day. You, of course, would not receive any temporary quarters allowance for the period in which you were on TDY.

J. TRAVEL ADVANCE. An advance of funds may be made in connection with these subsistence expenses. The advance is limited to estimated expenses for no more than 70 percent of the first 30-day period. If you hold a GSA contractor charge card, your request for an advance of funds should be limited to those expenses that cannot be charged to the card (i.e., light meals, laundry, groceries, etc.).

At the end of the first 30-day period you should submit a reimbursement voucher (SF-1012) **FOR ACTUAL EXPENSES INCURRED TO DATE.** If you need additional funds to stay in temporary quarters for an additional 30 days, you may submit another SF-1038, Application and Account for Advance of Funds to cover 70 percent of the estimated expenses for the second 30-day period.

K. EXCLUSIONS. New appointees and employees assigned under the Government Employees Training Act may not be authorized temporary quarters allowances.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter VI**Payment for Transportation of Household Goods and Personal Effects
By Either the Actual Expense (GBL) Method or Commuted Rate Method**

A. ARRANGEMENTS FOR MOVING. The General Services Administration (GSA) has limit the choice available to employees engaged in transporting household goods and other personal effects from one duty station to another at Government expense. The two options are moving by the actual expense method (Government Bill of Lading (GBL)) or by commuted rate schedule. The GBL method is to be used, unless the savings to the Government would be \$300 or less or an exception is granted due to unusual circumstances. If a GBL is issued, the Government will pay the carrier and the employee will be billed for any non-allowable items such as weight over 18,000 pounds or extra valuation insurance. If the commuted rate is used, the employee makes their own arrangements, pays the carrier and is reimbursed at the allowable commuted rate. Commuted rate schedules are maintained at the Denver Service Center (D-516) and the Washington Finance Office (AA820).

B. HOUSEHOLD GOODS AND PERSONAL EFFECTS. Household goods and personal effects which may be transported at Government expense in connection with an official change of station includes household furnishings, equipment and appliances, furniture, clothing, books, snowmobiles and vehicles with two or three wheels, e.g., motorcycles, mopeds, golf carts, and similar property. It does not include property which is for resale or disposal rather than for use by the employee or family; nor does it include such station wagons, airplanes, house trailers, boats, livestock, property which is for resale or disposal items as automobiles (except for employees transferring to or from Alaska), station wagons, airplanes, house trailers, boats, livestock, property belongs to any persons other than the employee or immediate family, or any property intended for use in conducting a business or other commercial enterprise.

C. WEIGHT ALLOWANCES. The net weight of household goods and personal effects which may be transported at Government expense may not exceed 18,000 pounds for all employees regardless of family size or status. The weight of your household goods should be reported on Form 1380-1 as accurately as possible and must be the entire weight even though it may exceed the 18,000 pound limitation. You will be reimbursed (if moving by commuted rate schedule) for the actual weight of your household goods up to the maximum allowable of 18,000 pounds. You may either request a carrier to estimate the weight of your household goods, or you may estimate it yourself by multiplying the number of rooms in your residence by 1,000 pounds. Remember to include an accurate estimate for articles stored in a garage or basement. Under the GBL method, the carrier will be paid in full by the Bureau. If your shipment exceeds 18,000 pounds, you will be billed by the Bureau for the charges on the excess.

H-1382-1 – CHANGE OF STATION HANDBOOK

D. PREPARATION OF FORMS. Complete Form 1380-1, Personnel Transfer Travel Data (Illustration 3) and GSA Form 2485, Cost Comparison for Moving Household Goods (Illustration 9), items 7 through 12. Forward both forms to the Personnel Office of the duty station to which you are transferring, along with an SF-1038, Application and Account for Advance of Funds. Complete all information requested under both columns in the “Advance of Funds” section of Form 1380-1. If it is determined that the move will be made by GBL rather than commuted rate, the advance of funds requested in Section g, shipment of Household Goods, and Section h, Storage charges, must be deleted since the government will reimburse the carrier directly.

E. VALUATION OF SHIPMENT. Your valuation of the shipment determines the moving company’s liability for loss or damage. It is not insurance. Select one of the following:

1. Protection up to, but to exceeding, \$1.25 per pound per article, or carton, at no cost to you. This will not provide full protection. Recovery for any loss or damage is subject to a maximum of \$1.25 times the weight of the article involved. All domestic shipments handled under GSA’s Tender of Service are covered by the \$1.25 per pound per article valuation.
2. Declaration of a lump sum value you consider adequate to cover the shipment. It cannot be less than \$1.25 times the weight of your shipment. You will be charged 50 cents per \$100 of valuation for this additional liability. A damaged piece of furniture is compensated at a depreciated value. Declaring a lump sum value is advised when antiques are involved. However, all declared values of antiques must be accompanied by an appraisal provided by a bona fide appraiser. If the move is by GBL, the Bureau will pay the cost of the excess valuation charge, and then will recover the charge from you.

F. INFORMATION NEEDED FOR GBL RATE METHOD. You will need to provide the following information to the administrative office at your new duty station for preparation of the GBL:

1. Full name of both you and your spouse, origin home address (including city, county, and state), and telephone number.
2. Work telephone numbers of both you and your spouse (origin).
3. Destination work telephone number(s).
4. Destination address (if known), including city, county, and state.
5. Date(s) for household goods packing and pick-up.

H-1382-1 – CHANGE OF STATION HANDBOOK

6. Estimated weight.
7. Storage in transit requirements (See Chapter VII):
 - a. At origin (inclusive dates)
 - b. At destination (inclusive dates)
8. Travel Authorization number and cost coding.
9. Elevator/stair carry needed (other than single family dwellings).
 - a. At origin:

Elevator (yes or no)
Stairs (number of stairs)
 - b. At destination:
 - c.
Elevator (yes or no)
Stairs (number of stairs)
10. Special handling requirements (antiques, pianos, etc.).

G. ACTIONS BY THE ADMINISTRATIVE OFFICE. The administrative office at the new duty station makes the following preparations for the household goods move:

1. Completes GSA Form 2485, Cost Comparison for Shipping Household Goods.
2. Recommends the method of shipment, commuted rate or actual expense, based upon the cost comparison.
3. If the actual expense method (GBL) is not approved, notifies you to proceed with the commuted rate procedures in BLM Manual Section 1382.9.
4. If the actual expense (GBL) method is approved, contacts various carriers, selects the carrier, notifies you of the carrier selected, and coordinates shipping arrangements with you and the carrier.
5. Issues and distributes the GBL as follows:
 - a. The original and first three copies to the carrier and the consignee (blue) copy to you.
 - b. One yellow copy, with a document face sheet, to the Director (854) or Service Center director (D-510), as appropriate, for the obligation of funds.

H-1382-1 – CHANGE OF STATION HANDBOOK

- c. One memorandum (yellow) copy for the files.
- 6. Assists you, as requested, in processing or settling claims.
- 7. Coordinates with the Finance Office (D-510) in payment of the GBL billings, pending claims, receipt of satisfactory services, etc.

H. CARRIER PACKING, INVENTORY AND LOADING OF HOUSEHOLD GOODS.

Watch carefully as the carrier packs, inventories, and loads the household goods. Make certain you receive a complete copy of the carrier's inventory form. Note on the inventory any disagreement you may have with the carrier's evaluation of the condition of your household goods before you sign the inventory form. If you are claiming the lump sum valuation and have any items of exceptional value, make certain that a copy of a bona fide, current appraisal is attached to the inventory copy you retain.

I. CARRIER DELIVERY AND UNPACKING OF HOUSEHOLD GOODS. Watch carefully as the carrier unloads and unpacks your household goods. Note any damage or loss on the delivery receipt before you sign it. As the carrier's driver to co-sign the notation.

J. LOSS OR DAMAGE OF HOUSEHOLD GOODS. If you detect loss or damage upon delivery, specifically identify the lost or damaged article on the inventory. Have the carrier's driver sign these notations before leaving. If the driver refuses, or if the loss or damage is discovered later, immediately call the carrier's destination agent and request a representative to come verify the loss or damage.

Promptly prepare a list of the lost or damaged items showing the following information for each item:

1. Carrier's inventory number.
2. Description of item.
3. Description of damage or statement of loss.
4. Estimated purchase date and cost of the lost or damaged articles.
5. Repair and replacement costs.
6. Estimated weight.

A claim to a carrier must be made in writing and must contain the information shown above. Submit a copy of the carrier's inventory form with the claim. Tell the carrier in your letter if an inspection was made or if an inspection was refused. The carrier has 120 days to pay, decline, or offer a compromise settlement.

H-1382-1 – CHANGE OF STATION HANDBOOK

If the carrier denies your claim or offers you an unacceptable compromise settlement, you may request assistance from the Director (820) under the Personnel and Civilian Employees Claims Act of 1965 (31 U.S.C. 240-242). Limitations on the government's liability for loss or damage to household goods are contained in this Act. Claims against the Government are eliminated to the uncompensated damage not covered by the carrier.

K. REIMBURSEMENT FOR SHIPPING. If shipment is made from or to points other than your old or new official duty stations, the Bureau will pay charges at the rate applicable to the actual mileage between such points provided it does not exceed the rate for shipping your household goods, in one lot, between your old and new duty stations.

If your household goods are moved by GBL (actual expense method), all charges on the GBL are paid directly to the carrier by the Bureau. Charges for weight over and above the 18,000-pound limitation are your responsibility and will be collected from you by the Bureau. If you elect to move yourself under the actual expense method, you may be reimbursed your actual expenses (truck rental, gasoline, etc.) to exceed the GBL rate.

If you move your household goods by the commuted rate method, you will be reimbursed for authorized charges itemized on Form 1012, Travel Voucher. Your claim must be supported by the following:

1. If a commercial carrier is used, obtain a receipted copy of the bill of lading, including any attached weight certificates.
2. If a commercial carrier is not used, obtain proper weight certificates showing date weighed, gross weight (vehicle and household goods), and tare weight (vehicle alone). When hauling your own goods in several trips, weight certificates are required for each trip and reimbursement is based on the cumulative total of all weight certificates. The certificates must be signed by the person operating the scales. If the scales are not available at the point of origin, you should obtain a weight certificate at some point en route. When household goods are weighed en route, a statement must appear on your voucher that no additional household goods were obtained between the origin and destination points of the shipment.
3. The net weight of your household goods must not include property for resale or disposal, boats, airplanes, mobile homes, motor vehicles (other than two or three wheeled vehicles such as golf carts, mopeds, motorcycles, snowmobiles, and the like), wines or liquors, livestock, property belonging to persons other than yourself and immediate family, property intended for use in a business or commercial enterprise, or property which may not legally be transported in interstate commerce.

H-1382-1 – CHANGE OF STATION HANDBOOK

L. SHIPMENT OF HOUSEHOLD GOODS TO AND FROM ALASKA. If you are transferring to or from Alaska, the Alaska State Office is responsible for handling all transportation arrangements for the shipment of your household goods between Alaska and the conterminous United States. If you are transferring to Alaska, your old duty station may be asked to furnish information pertinent to making shipping arrangements, including contacting local carriers, and, in some cases, issuing a GBL and authorizing the local carrier to make the pick-up.

The Bureau official delegated authority to issue Travel Authorizations from Alaska to the conterminous United States must advise the State Director of Alaska of the need for a household goods shipment as early as possible to allow sufficient time for the shipment. The State Director of Alaska must be furnished destination addresses and copies of Travel Authorizations.

Employees transferring to or from Alaska are authorized to ship on automobile to or from Alaska. In these cases, the State Director, Alaska makes all shipping arrangements.

M. TRAVEL ADVANCE. If you are moving your household goods by the commuted rate method, an advance of funds may be made for the estimated costs of transporting your household goods. To arrive at the estimate, multiply the weight of your household goods by the commuted rate.

Chapter VII

Temporary Storage of Household Goods and Personal Effects

A. BASIC ALLOWANCES. In addition to the allowance for transportation of household goods and personal effects, you are entitled to reimbursement for temporary storage of your household goods and personal effects for a period of 90 days or less. The amount of reimbursement may not exceed the amount you actually paid for the storage. Charges incidental to and arising from temporary storage of household goods and personal effects are considered part of the actual storage costs. This includes drayage from residence to place of storage and drayage from place of storage to new residence. An advance of funds may be made for storage of your household goods if the commuted rate method is used.

B. EXTENTION OF STORAGE TIME ALLOWED. The initial 90 days of temporary storage may be extended for an additional 90 days, or portion thereof, if warranted. Justification for an additional 90 days' storage must be made to the Director (820) in writing for approval by the Assistant Director, Management Services. Examples of circumstances that could justify the additional 90-day period are:

1. An intervening temporary duty or long-term training agreement.
2. Non availability of suitable housing in the new official duty location.
3. Completion of a residence that is under construction.
4. Serious illness of employee or illness/death of a dependent.

NOTE: If there is no commercial storage facility in the locality of the old duty station or the new duty station, storage may be necessary in other than a commercial warehouse. Information for handling this type of temporary storage should be obtained prior to placing the household goods in this type of storage. This information can be obtained from the Division of Finance (WO-820), or the Division of Financial Operation, DSC (D-516).

Chapter VIII

Transportation of a Mobile Home

A mobile home may be transported from your old official duty station to your new duty station, provided the mobile home will be used as your residence at the new official duty station and the new official duty station is within the conterminous United States or Alaska.

A. **CERTIFICATION.** A written certification is required on your reimbursement voucher (SF-1012) that the mobile home transported is for use as a residence for you and/or your immediate family at your new duty station is within the conterminous United States or Alaska.

B. **REIMBURSEMENT.** The reimbursement for transporting a mobile home for use as a residence may not exceed the maximum amount which would be allowable for the transportation of household goods and up to 90 days temporary storage for those goods (18,000 pounds maximum). The basis for the comparative cost is the commuted rate system prescribed by the General Services Administration.

C. **METHOD OF TRANSPORTATION.** There are several methods of transporting a mobile home for which reimbursement may be claimed.

If the mobile home is transported by commercial carrier, the amount of reimbursement allowable is the actual amount charged by the commercial transporter, not exceeding the applicable tariff approved by Federal or State regulations for a mobile home unit of the size and type involved for the distance involved. The allowances include: ferry fares; bridge, road, and tunnel tolls; taxes; charges of fees fixed by a State or other Governmental authority for permits to transport mobile homes in or through its jurisdiction; and carrier's service charge for obtaining necessary permits.

The allowance does not include costs of preparing mobile homes for movement, maintenance, repairs, storage, insurance for valuation of homes above carriers' maximum liability, nor charges designated as "special services."

When a mobile home is transported by means other than a commercial carrier, such as when it is towed by privately owned vehicle, an allowance of 11 cents per mile is made as reimbursement for all transportation costs including ferry fares, bridge, road, and tunnel tolls, and similar charges. No other allowance is made for transportation of a mobile home under this section. However, payment of the mileage allowance for use of a privately owned vehicle may be made as provided in Chapter IV in this Handbook, in addition to the 11 cents allowance.

When a mobile home is transported partly by commercial carrier and partly by private means, the allowances apply for each respective portion as described above.

H-1382-1 – CHANGE OF STATION HANDBOOK

An advance of funds may be allowed for the transportation of a mobile home under the requirements outlined in Chapter II.

Reimbursement is made upon receipt in the paying office of your claim on SF-1012,, supported by receipts showing an itemized list of charges made by commercial carrier, or your claim for the mileage shown in the Household Movers Guide, at 11 cents per mile for transportation costs plus the applicable rates for use of a privately owned vehicle.

Your mobile home may also be transported by GBL. If you wish to have you mobile home transported via GBL fill out GSA Form 2485, Cost Comparison for Moving Household Goods, items 7 through 12 and also provide the dimension of your mobile home (height, length, and width), and the make and model of your mobile home.

D. TEMPORARY QUARTERS ALLOWANCE. Allowance for temporary quarters for you and your immediate family may be authorized only while awaiting arrival of a mobile home that has been shipped by commercial carrier.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter IX**Allowance for Miscellaneous Expenses**

An allowance for miscellaneous expenses is authorized to defray incidental costs associated with an authorized change of official duty station move.

A. TYPES OF COSTS COVERED. Reimbursement is allowed for, but not limited to, the following types of costs:

1. Connecting and disconnecting appliances, equipment, and utilities.
2. Converting appliance for operation on available utilities.
3. Unblocking, blocking, and related expenses in connection with relocating a mobile home, but not the transportation costs (see Chapter VIII).
4. Cutting and fitting rugs, draperies, and curtains moved from one permanent residence to another.
5. Utility fees, deposits, and relocation expenses which are not offset by eventual refund.
6. Forfeiture losses on medical, dental and food locker contracts that is not transferable.
7. Automobile registration, driver's license, and use tax imposed for bringing automobiles and mobile homes into some jurisdictions.

B. TYPES OF COSTS NOT COVERED. Federal Travel Regulations, FPMR 101-7, and BLM Manual Section 1382.97B list items which are not allowable. Any unusual costs which you may incur should be checked with this list before you accept any obligation for which you expect to be reimbursed.

C. ALLOWABLE REIMBURSEMENT AMOUNTS. The amounts below may be paid without support or other documentation:

1. The equivalent of 1 week's basic pay or \$350.00, whichever is less, for an employee without an immediate family.
2. The equivalent of 2 weeks' basic pay or \$700.00, whichever is less, for an employee with an immediate family.

H-1382-1 – CHANGE OF STATION HANDBOOK

An amount in excess of that listed above may be authorized or approved if the claim is supported by receipted bills or other acceptable evidence justifying the amounts claimed provided the aggregate amount does not exceed:

1. One week's basic pay at the time the employee without an immediate family reports for duty.
2. Two weeks' basic pay at the time an employee with an immediate family reports for duty.

In no instance may this allowance exceed the maximum 2-week basic pay rate for Grade 12 as provided in 5 U.S.C. 5332. Amounts payable under this provision are not in addition to the amounts shown above, but are in place of them.

D. ADVANCE OF FUNDS. No advance of funds may be made for miscellaneous expenses allowance.

E. EXCLUSIONS. New appointees and employees assigned under the Government Employees Training Act may not be authorized a miscellaneous expense allowance.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter X**Allowances for Expenses Incurred in Connection with
Real Estate Transactions and Unexpired Leases**

A. TIME LIMITATIONS. The settlement dates for the sale and/or purchase or lease termination transactions for which reimbursement is required may not be later than 2 years after the date on which you report for duty at your new official duty station. An extension of time, not to exceed 1 additional year, may be authorized by the Assistant Director, Management Services.

B. COVERAGE. Types of real estate transactions for which reimbursement may be made include the following:

1. Sale of one residence at your old official station which was your actual residence at the time you were officially informed of your transfer. Acquisition must have been made prior to your notification of transfer. Sale of a lot owned by you on which you maintained your mobile home as your permanent residence is also allowable.
2. Purchase of one residence at your new official station including construction of new residence, or purchase of a lot on which you will maintain a mobile home as your actual permanent residence.
3. Settlement of unexpired lease at your old official station that cannot be avoided because of the terms of the lease.

C. ELGIGIBILITY FOR REIMBURSEMENT. To be eligible for reimbursement for any of the three types of transactions listed above, the residence must be the one from which you commute to work on a daily basis and the title to the property must be any one of the following:

1. In your name.
2. In your name with one or more members of your immediate family.
3. Solely in the name(s) of one or more members of your immediate family.

H-1382-1 – CHANGE OF STATION HANDBOOK

D. REIMBURSABLE EXPENSES. Expenses claimed for reimbursement must have been paid by you. If costs were shared by persons other than you, only the payments actually made by you are allowable. If the residence is a duplex or another type of multiple occupancy dwelling which is occupied only partially by you, or whenever you share responsibility for a leased property (such as a shared apartment arrangement), expenses are reimbursed on a pro rata basis. You are also limited to pro rata reimbursement when you sell or purchase land in excess of that which reasonably relates to the residence site. Some examples of reimbursable expenses are:

1. Broker's fees and real estate commissions paid by you on the sale of your old residence are reimbursable but must not exceed rates generally charged in the locality of your former official station. Broker's fees and real estate commissions may not be reimbursed on the purchase of a new residence at your new official station.
2. Other advertising and selling expenses are reimbursable, providing you have not paid for these items in the broker's fee or real estate commission.
3. Legal and related costs may be reimbursed (if not included in the broker's fee) on the sale and purchase of a residence. Such fees must be customarily paid by the seller of a residence at the new official station. Amounts claimed cannot exceed amounts customarily charged in the locality of the residences. Example of such fees are:
 - a. Costs of searching title, preparing abstracts, and legal fees for a title opinion, or (where customarily furnished by the seller) costs of a title insurance policy.
 - b. Costs of preparing conveyance, or other instruments, and contracts.
 - c. Related notary fees and recording fees.
 - d. Costs of making surveys, preparing drawings, or plats when required for legal or financial purposes.
4. Reimbursable miscellaneous expenses incurred in connection with the sale and/or purchase of a residence are listed below. These are reimbursable if they are customarily paid by the seller of a residence in the locality of the old duty station or by the purchaser in the locality of the new duty station, to the extent they do not exceed amounts customarily paid in the locality of the residences.
 - a. FHA or VA fee for the loan application.
 - b. Loan origination fee not to exceed 1 percent of loan.

H-1382-1 – CHANGE OF STATION HANDBOOK

- c. Cost of preparing credit reports
- d. Mortgage and transfer taxes.
- e. State revenue stamps.
- f. Other fees and charges similar in nature to those listed above unless specifically prohibited. See non-reimbursable items listed below.
- g. Charges for prepayment of a mortgage or other security instrument in connection with the sale of a residence at the old official station to the extent the terms in the mortgage or other instruments provide for this charge. This prepayment penalty is also reimbursable when the mortgage or other security instrument does not specifically provide for prepayment, provided the penalty is customarily charged by the lender. In these cases the reimbursement may not exceed 3 months interest on the loan balance.
- h. Mortgage title insurance policy paid for by employee on a residence purchased by the employee for the protection of, and required by, the lender.
- i. Owner's title insurance policy provided it is a prerequisite to the financing or the transfer of property, or when the cost of the owner's title insurance policy is inseparable from the cost of other insurance that is a prerequisite to financing or to transfer of property.
- j. Expenses in connection with the construction of a residence, which are comparable to expenses that are reimbursable in connection with the purchase of an existing residence

E. NONREIMBURSABLE EXPENSE. Non-reimbursable items in connection with the sale or purchase of a residence are as follows, except as provided for in item 4 above:

- a. Owner's title insurance policy, "record title" insurance policy, mortgage insurance, or insurance against loss or insurance paid for the employee in connection with the purchase of a residence for the protection of the employee.
- b. Interest on loans, points, and mortgage discount.
- c. Property taxes.
- d. Operating or maintenance costs.
- e. VA Funding Fee.

H-1382-1 – CHANGE OF STATION HANDBOOK

- f. Fees, costs, charges, or expenses determined to be part of the finance charge under the Truth in Lending Act, Title 1, Pub. L. 90-321, and Regulation Z issued in accordance with Pub. L. 90-321 by the Board of Governors of the Federal Reserve System, unless specifically authorized in item 4 above.
- g. Expenses that result from construction of a residence.

F. EXCLUSIONS. New appointees and employees assigned under the Government Employees Training Act may not be authorized real estate transaction expenses.

G. ADVANCE OF FUNDS. No advance of funds may be made in connection with real estate transaction allowances.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter XI**Allowances for New Appointees Reporting to First Duty Stations**

This chapter provides a guide for new employees reporting to their first duty stations in the Federal Government. The following types of new employees are eligible for certain limited relocation allowances:

1. Employees classified in shortage category positions,
2. Student trainees reporting to shortage category positions who have completed their college work,
3. Appointees to the Senior Executive Service, and
4. Certain Presidential appointees which, upon the advice and consent of the Senate, are appointed to positions where pay is equal to or higher than a GS-16 minimum level.

The determination of eligible positions is made by the Chief, Division of Personnel (WO-830) under the guidance of the Office of Personnel Management. Regulations provide that no expenses incident to a change of official duty station move may be allowed unless and until the employee has agreed in writing to remain in the service of the Federal Government for 12 months unless separation is for reasons beyond their control and acceptable to the Government. If the agreement is violated, any monies expended by the United States for such expenses are recoverable from the employee as a debt due the United States. See Illustration 1 for a sample of this agreement.

The following allowances are permitted for this group of employees:

1. Per Diem en route allowed the employee but not members of their family. The allowance is based on the standard conus rate of \$60.00 per day (Maximum Lodging of \$35.00 plus M&IE allowance of \$25.00). Receipts are required for lodging and items costing more than \$25.00.
2. Mileage reimbursement en route is allowed both the employee and members of the family. See Chapter IV of this Handbook for the rates and allowances.
3. Transportation of household goods and personal effects is allowed at Government expense. All allowances and restrictions are as indicated in Chapter VI of this Handbook.

H-1382-1 – CHANGE OF STATION HANDBOOK

4. Temporary storage of household goods is allowed for a period not to exceed 90 days. For acceptable reasons, upon written justification and request by the employee, an additional 90 days may be allowed. The request is sent to the Director (820) for the approval of the Assistant Director, Management Services. The acceptable reasons may be as follows:
 - a. If the new permanent residence cannot be occupied due to unanticipated problems such as settlement delays and short time delays in completing construction.
 - b. Inability to locate adequate housing suitable for family needs because of housing conditions at the new duty station.
 - c. Sudden illness, injury or death of an immediate family member.

The following allowances are not permitted:

1. Advance house hunting trip.
2. Temporary quarters for either the employee or members of the family.
3. Real estate transactions for either selling or purchasing a residence.
4. Miscellaneous expense allowance.

H-1382-1 – CHANGE OF STATION HANDBOOK

Chapter XII**Allowances for Relocation Income Tax (RIT)**

Public Law 98:151 enacted November 14, 1983, authorized Federal Agencies to reimburse employees transferred at the Government expense, all or part of the additional Federal, State and City income taxes incurred as a result of certain relocation expenses that were paid to employees and reported as income on the employee's tax return. This reimbursement is referred to as a Relocation Income Tax (RIT) Allowance.

As a partial RIT payment, agencies will pay a Withholding Tax Allowance (WTA) on those permanent changes of station reimbursement vouchers, which contain table items such as temporary quarters totaling over \$1,500.00, real estate expenses or the allowance for miscellaneous expense. In order to claim the balance of your RIT allowance, you must submit an SF-1012, travel voucher along with information on your earnings for the calendar year in which you paid the additional taxes. (See Illustration 8.)

The claim for the balance of your RIT allowance should be filed no later than June 1st of the following calendar year in which the additional taxes were paid to avoid a bill of collection being issued for the WTA that was paid to you in that calendar year. For example, if taxable expenses were incurred in calendar year 1986, but a reimbursement voucher was not filed and paid until calendar year 1987, you must file your RIT claim by June 1, 1988. These forms may be obtained from the Washington Office, Division of Finance (WO-820) and the Denver Service Center (D-516).

H-1382-1 – CHANGE OF STATION HANDBOOK
Employment Agreement

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EMPLOYMENT AGREEMENT

In connection with my transfer for duty withing the Bureau of Land Management from

Prineville, Oregon, to Denver, Colorado

I agree to remain in the Federal Government service for twelve (12) months following the effective date of transfer, with the understanding that the cost of travel, transportation, and other allowable expenses including transportaiton and storage of household goods and personal effects will be paid by the Government.

Reimbursement will be in accordance with the Administrative Expenses Act of 1946, as amended, and under Public Law 89-516, approved July 21, 1966, and regulations issued by the General Services Administration.

In the event I fail to complete the above agreement, any moneys expended by the Federal Government because of such travel, transportation, and other allowable expenses shall be recovered from me as a debt due the United States, unless I may become separated from the Government for reasons beyond my control and acceptable to the Bureau of Office concerned.

(Signature of Employee)

(Date)

INSTRUCTIONS

This form is prepared in duplicate. Both copies must be signed, dated, and returned to your personnel officer immediately upon notification of your transfer. No personnel actions or travel may begin until this form is received in your appointment office.

Once the servicing personnel office receives this form and Form 1380-1, Personnel Transfer Travel Data, they will prepoare Form DI-1020, Travel Authoriztion. No travel should be started until you have received a signed copy of Form DI-1020.

H-1382-1 - CHANGE OF STATION HANDBOOK

Travel Authorization

<p>UNITED STATES DEPARTMENT OF THE INTERIOR FORM NO. DI-1020 FORM APPROVED BY GSA GEN. REG. U. S. NOVEMBER 8, 1987</p>	<p>TRAVEL AUTHORIZATION</p>	<p>1. No. <u>YAS10-TV7-0107</u> 2. <u>October 12, 1987</u> DATE</p>																												
<p>3. <u>BUREAU OF LAND MANAGEMENT</u> BUREAU OF SERVICE</p>																														
<p>4. NAME <u>L. John Jones</u> 5. OFFICIAL STATION <u>Denver, CO</u></p>																														
<p>6. TITLE <u>Natural Resources Specialist (GS-12)</u> 7. ACCOUNTING OFFICE <u>Denver, CO</u></p>																														
<p>You are authorized to travel as indicated below and to incur necessary expenses in accordance with applicable laws and regulations.</p>																														
<p>PLACES OF TRAVEL</p>																														
<p>8. FROM: <u>Prineville, OR</u> 9. TO: <u>Denver, CO</u></p>																														
<p>10. PURPOSE AND REMARKS:</p> <p>1. Transfer of Official Duty Station 2. Temporary Quarters NTE 90 Days</p>																														
<p>11. PER DIEM ALLOWANCE:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">En Route (Per Day)</th> <th rowspan="2">1st 30 Days Actual Exp. NTE</th> </tr> <tr> <th>Mile. Log.</th> <th>M&IE</th> <th>NTE</th> </tr> </thead> <tbody> <tr> <td>Employee</td> <td>\$31.00</td> <td>\$25.00</td> <td>\$60.00</td> <td>\$60.00/day</td> </tr> <tr> <td>Spouse (Traveling separately)</td> <td>\$35.00</td> <td>\$25.00</td> <td>\$60.00</td> <td>\$40.00/day</td> </tr> <tr> <td>1 Child over 12 years of age</td> <td>\$26.25</td> <td>\$18.75</td> <td>\$45.00</td> <td>\$40.00/day</td> </tr> <tr> <td>1 Child under 12 years</td> <td>\$17.50</td> <td>\$12.50</td> <td>\$30.00</td> <td>\$20.00/day</td> </tr> </tbody> </table>				En Route (Per Day)			1st 30 Days Actual Exp. NTE	Mile. Log.	M&IE	NTE	Employee	\$31.00	\$25.00	\$60.00	\$60.00/day	Spouse (Traveling separately)	\$35.00	\$25.00	\$60.00	\$40.00/day	1 Child over 12 years of age	\$26.25	\$18.75	\$45.00	\$40.00/day	1 Child under 12 years	\$17.50	\$12.50	\$30.00	\$20.00/day
	En Route (Per Day)			1st 30 Days Actual Exp. NTE																										
	Mile. Log.	M&IE	NTE																											
Employee	\$31.00	\$25.00	\$60.00	\$60.00/day																										
Spouse (Traveling separately)	\$35.00	\$25.00	\$60.00	\$40.00/day																										
1 Child over 12 years of age	\$26.25	\$18.75	\$45.00	\$40.00/day																										
1 Child under 12 years	\$17.50	\$12.50	\$30.00	\$20.00/day																										
<p>12. PERIOD OF TRAVEL: Beginning on or about <u>Dec. 5, 1987</u> Ending on or about <u>Dec. 23, 1987</u></p>																														
<p>MODE OF TRAVEL</p>																														
<p>13. <input type="checkbox"/> Common carrier 14. <input type="checkbox"/> Extra fare 15. <input type="checkbox"/> Government-owned conveyance</p> <p>16. <input checked="" type="checkbox"/> Privately owned at a mileage rate of <u>34</u> cents, subject to:</p> <p>(a) <input checked="" type="checkbox"/> Administratively determined to be to the advantage of the Government 13 .15</p> <p>(b) <input type="checkbox"/> A showing of advantage to the Government 13 .19</p> <p>(c) <input type="checkbox"/> Not to exceed cost by common carrier, including consideration of Per Diem allowance</p>																														
<p>MISCELLANEOUS</p>																														
<p>17. <input type="checkbox"/> Transportation immediate family 19. <input type="checkbox"/> Shipment household goods and personal effects</p> <p>18. <input type="checkbox"/> Other (specify)</p>																														
<p>ESTIMATED COST</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>20. Transportation</td> <td style="text-align: right;">\$ 374.00</td> <td rowspan="4" style="vertical-align: top;"> <p>26. <u>Alisa Meyers</u> PERSONNEL OFFICE'S SIGNATURE</p> <p>27. <u>Personnel Management Specialist</u> TITLE</p> <p>28. <u>Warren M. Johnson</u> AUTHORIZING OFFICER'S SIGNATURE</p> <p>29. <u>Director Denver Service Center</u> TITLE</p> </td> </tr> <tr> <td>21. Per Diem</td> <td style="text-align: right;">488.00</td> </tr> <tr> <td>22. Other</td> <td style="text-align: right;">19,925.00</td> </tr> <tr> <td>23. TOTAL</td> <td style="text-align: right;">\$20,787.00</td> </tr> </table>			20. Transportation	\$ 374.00	<p>26. <u>Alisa Meyers</u> PERSONNEL OFFICE'S SIGNATURE</p> <p>27. <u>Personnel Management Specialist</u> TITLE</p> <p>28. <u>Warren M. Johnson</u> AUTHORIZING OFFICER'S SIGNATURE</p> <p>29. <u>Director Denver Service Center</u> TITLE</p>	21. Per Diem	488.00	22. Other	19,925.00	23. TOTAL	\$20,787.00																			
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23. TOTAL	\$20,787.00																													
<p>24. CHARGED TO:</p> <p>25. <u>Fred Drake</u> PRINCIPAL OFFICER'S SIGNATURE Chief, Division of Financial Operations</p>																														
<p>TRAVELER'S COPY</p>																														

INSTRUCTIONS

This travel Authorization Form is prepared by the personnel office in the gaining office.

This form is prepared upon receipt of the signed Employment Agreement (Form 1380-9) and the Personnel Transfer Travel Data (Form 1380-1).

No travel expenses should be incurred until you have received a signed copy of this form.

H-1382-1 – CHANGE OF STATION HANDBOOK
Personnel Transfer Travel Data

Form 1380-1
(January 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PERSONNEL TRANSFER TRAVEL DATA

Name of Employee **L. John Jones** Duty station
Present **Prineville, OR**
New **Denver, CO**

Present Title **Natural Resource Spec.** Grade **12**

Spouse Yes No Give ages of children included in transfer **6, 14**

Other members of immediate family (explain relationship and dependency if more space is needed use reverse)

MODE OF TRAVEL AND ESTIMATED CHARGES

EMPLOYEE		FAMILY	
<input type="checkbox"/> Air	<input type="checkbox"/> Other Common Carrier	<input type="checkbox"/> Air	<input type="checkbox"/> Other Common Carrier
<input type="checkbox"/> Rail	<input checked="" type="checkbox"/> Privately-owned Car @ .15/mile	<input type="checkbox"/> Rail	<input checked="" type="checkbox"/> Privately-owned Car @ .19/mile

Will family travel separately? Yes No (if yes, explain) **Family to remain at old duty station until Christmas vacation**

INFORMATION PERTAINING TO PER DIEM

EMPLOYEE		FAMILY		REG. RES. (10/24/87)	TRAVEL TAKEN IN ROUTE
DEPARTURE	ARRIVAL	DEPARTURE	ARRIVAL		
12/5/87	12/8/87	12/8/87	12/23/87	7 1/2	None

SHIPMENT OF HOUSEHOLD GOODS AND PERSONAL EFFECTS

Approximate weight of household goods and personal effects **18,000** lbs
If weight is not known, indicate number of furnished rooms in present dwelling _____ rooms
Will shipment be by GBI or Commuted Rate
Will storage be necessary? Yes No (if yes, indicate where) **Denver, CO**

ADVANCE OF FUNDS

Do you need an advance of funds? Yes No (if yes, attach completed SF-1038 Application and Account for Advance of Funds *) The amount of the advance is based on the following estimated reimbursable expenses

ITEM	ESTIMATED COST	ADVANCE REQUESTED
a. Per diem en route - employee - 2 1/2 days @ \$ 60.00 per day	\$ 150.00	\$ 105.00
b. Per diem en route - family - 2 1/2 days @ \$ 135.00 per day	337.50	236.00
c. Mileage allowance - 1100 miles @ \$ 0.36	396.00	262.00
d. Temporary quarters (1st 30 days) @ \$ 170.00	5,100.00	3,570.00 (1)
e. Temporary quarters (2nd 30 days) @ \$ 127.50	3,825.00	
f. Shipment of household goods - GBI lbs		
g. Storage charges - GBI		
h. Miscellaneous expenses	200.00	
i. Reimbursable cost of use of house	8,300.00	
j. Reimbursable cost of terminating unexpired lease		
k. Reimbursable cost of purchasing new home	2,000.00	
TOTALS	\$ 20,786.50	\$ 4,173.00 (3)

Date **October 12, 1987** Signature of Employee **L. John Jones**

(1) Limit 30 day increments
(2) Shipment cost of household goods may be computed by multiplying the weight by the rate. If the weight is not known, it may be computed by allowing 1,000 pounds per room in your present dwelling. If storage is anticipated do not request an advance until 10 days prior to termination of storage. Do not request an advance if shipped by GBI.
(3) Total must be repaid or accounted for by voucher within 60 days of date of check.

INSTRUCTIONS

This form is prescribed for use by all employees transferring between office of the Bureau or from other agencies in the Bureau.

Advance of funds requested on this form cannot be made until after the employee submits the required signed employment agreement. This form must be completed, signed and sent to the receiving personnel officer as soon as possible after notification of transfer.

If more than one car is to be used, a justification must be attached. Use of more than one car must be specifically authorized and stated on Form DI-1020 Travel Authorization, item 17.

To assure receipt of advance requested this form should be submitted, along with a completed SF-1038, Application and Account for Advance of Funds, 2 weeks prior to the date of departure from the old duty station. An initial advance is given for enroute travel and no more than 30 days temporary quarters. An advance for transportation/storage of household goods, if to be commuted rate method is used, will allow be issued.

An additional advance for the second days of temporary quarters, if required, may be requested near the end of the first 30-day period.

A copy of this form should be retained for your records.

H-1382-1 – CHANGE OF STATION HANDBOOK
Employee and Immediate Family
Subsistence Expenses

Form 1380-7
(April 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EMPLOYEE AND IMMEDIATE FAMILY
SUBSISTENCE EXPENSES
WHILE OCCUPYING TEMPORARY QUARTERS

Name of Employee
L. John Jones

Section 25 of FPMR 101-7
INSTRUCTIONS ON REVERSE

DAYS	DATE 19 87	PLACE REMARKS	SUBSISTENCE EXPENSES				LAUNDRY CLEANING & PRESSING	DAILY TOTALS
			LODGING*	BREAK FAST	MEALS LUNCH	DINNER		
1	12/8	Lakewood Inn	33.00			11.25		44.25
2	12/9		33.00	4.35	4.50	8.35		50.20
3	12/10		33.00	2.95	3.75	6.30	coin op. 4.75	50.75
4	12/11		33.00	3.15	4.15	5.80		46.10
5	12/12		33.00	2.85	3.65	7.20		46.70
6	12/13		33.00	3.95	4.25	9.15		50.35
7	12/14		33.00	4.15	5.75	10.20	coin op. 4.75	57.85
8	12/15		33.00	2.85	2.85	7.15		45.85
9	12/16		33.00	2.85	3.75	6.35		45.95
10	12/17		33.00	2.85	4.10	8.20		48.15
11	12/18		33.00	3.25	5.10	11.00		52.35
12	12/19		33.00	4.15	3.20	9.45		49.80
13	12/20		33.00	3.75	3.80	8.75		49.30
14	12/21		33.00	4.15	2.85	10.00		50.00
15	12/22		33.00	2.95	4.15	11.25	coin op. 4.75	56.10
16	12/23		84.00	4.21	3.40	40.90		132.51
17	12/24		84.00	20.25	34.95	40.80		180.00
18	12/25		84.00	20.80	36.30	40.15		181.25
19	12/26		84.00	20.95	30.15	42.80	coin op. 4.75	182.65
20	12/27		84.00	22.10	31.75	40.10		177.95
21	12/28		84.00	21.75	31.90	40.25		177.90
22	12/29		84.00	23.10	26.75	40.45	coin op. 4.75	179.05
23	12/30		84.00	21.35	29.10	41.10		175.55
24	12/31	↓	84.00	21.25	29.45	42.90		177.60

* See instructions on reverse for details.

H-1382-1 - CHANGE OF STATION HANDBOOK
Employee and Immediate Family
Subsistence Expenses

DAYS	DATE IN '88	PLACE REMARKS	SUBSISTENCE EXPENSES				LAUNDRY CLEANING & PRESSING	DAILY TOTALS
			LODGING	BREAK FAST	LUNCH	DINNER		
25	1/1		84.00	22.15	31.75	39.75	coin.op. 4.75	182.40
26	1/2		84.00	23.40	31.50	43.00		181.90
27	1/3		84.00	22.10	32.80	42.95		181.85
28	1/4		84.00	21.45	31.75	41.00	coin.op. 4.75	182.95
29	1/5		84.00	22.85	30.30	41.45		178.30
30	1/6		84.00	21.10	31.15	41.10		177.35
							ACTUAL EXPENSE TOTAL	\$ 3,392.91

ACTUAL EXPENSE CANNOT EXCEED

Employee (for up to and including) 30 days	\$ 60.00	×	30	=	\$ 1,800.00		
Spouse and dependent(s) up to and including 15 days**	\$ 40.00	×	2	×	15	=	\$ 1,200.00
Dependent(s) under 12 years of age up to and including 15 days**	\$ 30.00	×	1	×	15	=	\$ 450.00
TOTAL ALLOWABLE							\$ 3,392.91

INSTRUCTIONS

1. **Eligible Conditions and Limitations.** Subsistence expenses are payable for whom a permanent change of station is being effected, approved, and each equal in number of family members for a period of not more than sixty (60) days, including the day of departure, be allowed when justified, when an employee occupies temporary quarters. Use of temporary quarters is defined as the first 30 days after date employee reports to duty at new official station. Time begins during this period that is later than that 30-day period and family vacates residence at official station, but not beyond the maximum time for beginning allowable travel and transportation. Time begins from date employee spouse or any member of immediate family occupies such quarters and shall run concurrently.

temporary quarters are as reasonable as to amount and quality. Allowable subsistence expenses include only charges for meals, lodging, laundry and tips incident thereto; laundry, cleaning and pressing of clothing. Expenses should be itemized daily on this form which may be attached to your Travel Voucher (SF 110) when reimbursement is requested. Expenses of local transportation for official purposes during occupancy of temporary quarters will not be allowed. Amounts claimed for lodging must be supported by receipts. Quarters must be supported on every day minimum.

2. **Allowable Items.** Reimbursement is allowed only for actual subsistence expenses incurred which are directly related to occupancy of temporary quarters. Reimbursements for occupancy of temporary quarters are allowable for actual subsistence expenses incurred, as defined above, but not in excess of amounts derived from applying the basic formula to the per diem rate specified in employee's transfer travel authorization for each thirty-day period that temporary quarters are necessarily occupied.

Remarks

*Supported by receipts

**Cross out the time period(s) first or second that does not apply. A separate Form 1380-7 must be prepared for each 30-day period for which reimbursement is being claimed. The rates applicable for that time period must be indicated in the space title: Actual Expense Cannot Exceed.

H-1382-1 – CHANGE OF STATION HANDBOOK
Travel Voucher – Transfer of Duty Station

1 DEPARTMENT OR ESTABLISHMENT BUREAU DIVISION OR OFFICE Bureau of Land Management		2 TYPE OF TRAVEL <input type="checkbox"/> TEMPORARY DUTY <input checked="" type="checkbox"/> PERMANENT CHANGE OF STATION		3 VOUCHER NO																													
4 SCHEDULE NO		5 SOCIAL SECURITY NO. 123-45-6789		6 PERIOD OF TRAVEL a FROM 12/5/87 b TO 12/23/87																													
7 TRAVEL AUTHORIZATION NUMBER(S) YA510-117 0107		8 OFFICE TELEPHONE NO. 555-9988		9 DATE(S) 10/12/87																													
10 TRAVELER (NAME (Last, first, middle initial)) L. John Jones		11 PRESENT DUTY STATION Denver, CO		12 RESIDENCE (City and State) Denver, CO																													
13 TRAVEL ADVANCE a Outstanding T 4,173.00 b Amount to be repaid 4,173.00 c Amount paid (Attachment) <input type="checkbox"/> Check <input type="checkbox"/> Cash 0 d Balance outstanding 0		14 CASH PAYMENT RECEIPT a DATE RECEIVED b AMOUNT RECEIVED		15 PAID BY																													
16 TRAVELER SIGNATURE		17 GOVERNMENT TRANSPORTATION TICKETS IF PURCHASED WITH CASH (List by number below and attach passenger receipts. If cash is used show dates of reverse side.)		18 TRAVELER'S INITIALS																													
19 AGENTS VALUATION OF TICKET (a)		20 ISSUING MODE (b)		21 CLASS OF SERVICE AND ACCOMMODATIONS (c)																													
22 DATE ISSUED (d)		23 FROM (e)		24 TO (f)																													
PARTIAL VOUCHER																																	
25 I certify that this voucher is true and correct to the best of my knowledge and belief, and that payment or credit has not been received by me. When applicable, this claim is based on the net cost of lodging incurred during the period covered by this voucher. TRAVELER SIGN HERE: L. John Jones DATE: 1/12/88 AMOUNT CLAIMED: \$ 4,262.86 NOTE: Fabrication of an item in an expense account is a forfeiture of claim (28 U.S.C. 2514) and may result in a fine of not more than \$10,000 or imprisonment for not more than 5 years or both (18 U.S.C. 207, c.d. 1001).																																	
26 This voucher is approved. Long distance telephone calls, if any, are certified as necessary in the interest of the Government. (NOTE: If long distance telephone calls are included, the approving official must have been authorized in writing by the head of the department or agency to so certify (31 U.S.C. 680a).) APPROVING OFFICIAL SIGN HERE: M. Jones DATE: 1/14/88																																	
27 FOR FINANCE OFFICE USE ONLY COMPUTATION a DIFFERENCES (If any, explain and show amount) b TOTAL VERIFIED CORRECT FOR CHARGE TO APPROPRIATION c NET TO TRAVELER																																	
28 THIS VOUCHER IS CERTIFIED CORRECT AND PROPER FOR PAYMENT AUTHORIZED CERTIFYING OFFICIAL SIGN HERE: DATE																																	
29 ACCOUNTING CLASSIFICATION <table border="1"> <thead> <tr> <th>FF</th> <th>OTC</th> <th>AT</th> <th>ACTIVITY</th> <th>CIC</th> <th>PROJECT</th> <th>DATE</th> <th>CLASS</th> <th>TR</th> <th>DEPT</th> <th>OF</th> <th>KEY</th> <th>LINE</th> <th>AMOUNT</th> </tr> </thead> <tbody> <tr> <td>AA</td> <td>190</td> <td>05</td> <td>4830</td> <td>05</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						FF	OTC	AT	ACTIVITY	CIC	PROJECT	DATE	CLASS	TR	DEPT	OF	KEY	LINE	AMOUNT	AA	190	05	4830	05									
FF	OTC	AT	ACTIVITY	CIC	PROJECT	DATE	CLASS	TR	DEPT	OF	KEY	LINE	AMOUNT																				
AA	190	05	4830	05																													
30 This is a partial voucher. See the attached Form 1380-7 for details of daily expenses for temporary quarters. The balance of the advance will be repaid on the next voucher which will reflect the remaining expenses for the above.																																	

NOTE: Travel Vouchers must be prepared in ink or typed. Pencil copy is not acceptable. Any erasures and/or white-outs of dollar amounts must be initialed.

INSTRUCTIONS

- Complete all personal data as shown in section 1.
- In section 2, indicate that this is a permanent change of station voucher.
- Leave sections 3 and 4 blank.
- In section 6, indicate the actual dates of travel to the new duty station.
- Section 7 – indicate the original Travel Authorization number and date.
- Section 8 – Insert the letter “T” in the space on line 8a, then the amount of the outstanding travel advance to date. On line 8b, insert the amount on this voucher to be applied to the advance. On line 8c, indicate the amount, if any, that is being repaid in addition to the amount being applied by the voucher. IN this example, the remaining balance will be repaid by the next voucher. In this example, the remaining balance will be repaid by the next voucher for the household goods move and the second 30-day temporary quarters expenses.
- Sections 9 through 11, leave blank.
- Section 12 – If you incurred transportation expenses by common carrier such as an advance house hunting trips, fill in the information from the carrier’s ticket here. If this voucher is a partial claim, make a notation to that effect in this section.
- Section 13 – Sign, date, and insert the total amount being claimed from your computations on the reverse of the voucher.
- Section 14 – The approving official should sign and date the front of the voucher here.
- Leave section 15, 16 and 17 blank.
- Section 18 – Insert the proper accounting cost data here. Any notes or statements concerning the voucher may also be made here.

H-1382-1 – CHANGE OF STATION HANDBOOK

Travel Voucher – Transfer of duty Station (Reverse of Travel Voucher)

SCHEDULE OF EXPENSES AND AMOUNTS CLAIMED		INSTRUCTIONS TO TRAVELER (Unlisted items are self-explanatory)							Complete this information if this is a continuation sheet											
		Col (c) If the voucher includes per diem allowances for members of employee's immediate family, show members' names, ages, and relationship to employee and marital status of children (unless information is shown on the travel authorization)		Complete only for actual subsistence travel		Col (d) Show amount incurred for each meal including tax and tip and daily total meal cost (a) Show expenses, such as laundry, cleaning and pressing of clothes, tips to bellboy, porters, etc. (other than for meals) (b) Complete for per diem and actual expense travel (c) Show total subsistence expense incurred for actual expense travel (d) Show per diem amount, limited to maximum rate, or if travel on actual expense, show the lesser of the amount from col (d) or maximum rate (e) Show expenses, such as taxi/limousine fares, air fare (if purchased with cash), local or long distance telephone calls for Government business, car rental, relocation other than subsistence, etc.		PAGE 1 OF 1 PAGES												
									TRAVEL AUTHORIZATION NO. YA510-TV7-0107											
									TRAVELER'S LAST NAME Jones											
DATE	TIME (Hour and am/pm)	DESCRIPTION (Departure/arrival city, per diem computation, or other explanation of expense)	ITEMIZED SUBSISTENCE EXPENSES					MILEAGE RATE 34 c NO OF MILES (k)	AMOUNT CLAIMED											
			BREAKFAST (a)	LUNCH (b)	DINNER (c)	TOTAL (d)	MISCELLANEOUS SUBSISTENCE (e)		LODGING (f)	TOTAL SUBSISTENCE EXPENSE (g)	MILEAGE (h)	SUBSISTENCE (i)	OTHER (j)							
12/05/88	8:00am	THIS IS THE FIRST VOUCHER OF A TWO PART CLAIM																		
	6:00pm	Lv: Prineville, OR (Employee Only) Ar: Boise, ID						34 00	18 75	52 75				52 75						
12/06	8:00am	Lv: Boise, ID																		
	5:00pm	Ar: Idaho Falls, ID				25 00		32 00		57 00				57 00						
12/07	8:00am	Lv: Idaho Falls, ID				25 00		35 00		60 00				60 00						
	7:00pm	Ar: Casper, WY																		
12/08	7:30am	Lv: Casper, WY				6 25	(MAX = 3 Days)		6 25	1100	374 00		6 25							
	7:15pm	Ar: Denver, CO																		
12/19	8:00am	Lv: Prineville, OR (Family)				42 19		50 00		92 19				92 19						
	5:30pm	Ar: Boise, ID																		
12/20	8:00am	Lv: Boise, ID				56 25		47 00		103 25				103 25						
	5:00pm	Ar: Idaho Falls, ID																		
12/21	7:30am	Lv: Idaho Falls, ID				56 25		55 00		111 25				111 25						
	6:00pm	Ar: Casper, WY																		
12/22	8:30am	Lv: Casper, WY				14 06	(MAX = 3 Days)		14 06					14 06						
	3:30pm	Ar: Denver, CO																		
		COMPUTATION OF EN ROUTE TRAVEL ALLOWANCES = 1100 miles/350 miles minimum = 3 days allowed																		
12/05/87		1/06/88 Temporary Quarters Allowances	See Attached Form 1380-1 for details													3,392 11				
		SUBTOTALS ▶																		
		TOTALS ▶																		
												374	000 888	86						
		Enter grand total of columns (i), (m) and (n), below and in item 13 on the front of this form.																		
		TOTAL AMOUNT CLAIMED ▶ 4,262 86																		

U.S. GOVERNMENT PRINTING OFFICE: 1987-773-017/61888

STANDARD FORM 1012 BACK (10-77)

INSTRUCTIONS

This travel voucher is a partial claim voucher. Additional claims for reimbursement may be made as expenses are realized. This would include claims for additional time in temporary quarters, real estate transactions, charges for transportation and storage of household goods under the commuted rate schedule, miscellaneous moving expense, etc.

Computation of Per Diem: In this example, the employee and their family took 3 ½ days to drive 1,100 miles. Since the minimum driving distance per day is set at 350 miles, dividing the 1,100 miles by 350 gives the 3 days maximum that can be claimed in computing per diem entitlements.

Computation of Mileage Allowance: The official mileage guide shows 1095 miles from Prineville, Oregon, to Denver, Colorado. You can use actual miles driven, as the case here, as long as the actual miles do not exceed the official mileage guide by more than a slight percentage. Note that in computing the mileage allowance in this example, the rate for both cars was totaled (34 cents) and then multiplied by the mileage to arrive at the allowance.

Computation for Temporary Quarters Allowances: Details for computing daily allowances for occupying temporary quarters are shown on Form 1380-8. Employee and Immediate Family Subsistence Expense.

H-1382-1 – CHANGE OF STATION HANDBOOK

Application and Account for Advance of Funds

<p>Standard Form No. 1038 7 GAO 1200 1038-102</p>	<p>APPLICATION AND ACCOUNT FOR ADVANCE OF FUNDS</p>	<p>Social Security <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr></table> Card No. 2-10</p>	1	2	3	4	5	6	7	8	9									
1	2	3	4	5	6	7	8	9												
<p>U. S. DEPARTMENT OF THE INTERIOR</p>		<p>Account No. _____</p>																		
<p>(Department or establishment)</p>		<p>(Bureau, division, or office)</p>																		
<p>An advance of funds is hereby requested for travel and other expenses to be incurred under authorization No. YA510-TV7-0107 dated 10/12/87.</p>		<p>FOR USE OF APPLICANT</p>																		
<p>Mail check to 123 MAIN AVENUE, Prineville, OR 97754</p>		<p>Balance due U. S. from previous advance \$ -0-</p>																		
<p>10/12/87 <i>L. John Jones</i></p> <p>(Date) (Signature of applicant)</p>		<p>Amount herein applied for <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td>4</td><td>1</td><td>7</td><td>3</td><td>0</td><td>35.44</td></tr></table></p>	4	1	7	3	0	35.44												
4	1	7	3	0	35.44															
<p>Approved: _____</p> <p>(Date) (Signature of approving officer)</p>		<p>TOTAL \$ 4,173.00</p>																		
<p>REMARKS: Needed for COS move beginning on or about Dec. 5, 1987 for enroute travel and temporary quarters.</p>		<p>STATE & OFFICE CODE <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td>Y</td><td>A</td><td>5</td><td>1</td><td>0</td></tr></table> 45-49</p> <p>TYPE ADVANCE (Check one)</p> <p>Regular Travel <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td><input checked="" type="checkbox"/></td><td>R</td></tr></table></p> <p>Continuous Travel <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td><input type="checkbox"/></td><td>C</td></tr></table> 10</p> <p>Transfer Of Station <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td><input checked="" type="checkbox"/></td><td>X</td></tr><tr><td><input type="checkbox"/></td><td>T</td></tr></table> (Appropriation to be charged)</p>	Y	A	5	1	0	<input checked="" type="checkbox"/>	R	<input type="checkbox"/>	C	<input checked="" type="checkbox"/>	X	<input type="checkbox"/>	T					
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<p>VOUCHER - SCHEDULE</p>		<p>DATE PAID <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> 81-84</p> <p>DATA Schedule Number <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> 55-59</p> <p>Block Number <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> 60-63</p>																		
<p>Complete the travel advance form as shown above. This form must be submitted far enough in advance of the travel to allow two weeks for processing and mailing the check. Once the form is completed, submit it with your Form 1380-1, Personnel Transfer Travel Data.</p>																				

H-1382-1 – CHANGE OF STATION HANDBOOK

COSTS INCURRED AND PAID IN SELLING RESIDENCE AT OLD OFFICIAL STATION OR PURCHASING RESIDENCE AT NEW OFFICIAL STATION LOCATION (OR BOTH)			
ITEM	EXPLANATION	Former Residence	New Residence
1.	BROKERAGE FEES: The sales commission paid to a broker or real estate agent for selling former residence. Also, fees for listing a residence and payment for multiple listing service, if not included in commission paid to the broker or agent	\$ 5,300.00	
2.	ADVERTISING: Expenses paid for newspaper and other advertising when a direct sale is made without the services of a real estate broker or real estate agent	\$	
3.	APPRAISAL FEE: The amount paid to a professional appraiser for establishing a suggested sale price for the residence	\$	
4.	LEGAL AND RELATED COSTS: The amounts paid for costs of (1) searching title, preparing abstract, and legal fees for a title opinion, or (2) title insurance policy when customarily furnished by the seller; costs of preparing conveyances, other instruments, and contracts; related notary fees; costs of making surveys, preparing drawings or plots, re-surveying fees and recording taxes or other charges paid incident to recordation (e.g., mortgage discharge, recording fees)	\$ 375.75	\$ 306.00
5.	MISCELLANEOUS COSTS: Amounts paid in connection with sale of former residence and purchase of a new residence. Normally, these expenses (except A) are paid by the purchaser; however, depending on local custom and practice, the seller may be required to pay some of them:		
A.	PREPAYMENT CHARGE: The amount paid as required in the mortgage or other security instrument as a charge for prepayment, or if not specifically required by the mortgage instrument, the amount paid limited to 3 months' prevailing interest on the loan balance	\$ 200.00	
B.	LENDER'S APPRAISAL FEE: The amount paid for the mortgage-lender's charge for residence appraisal	\$	\$ 45.00
C.	FHA OR VA APPLICATION FEE: The amount paid	\$	\$
D.	CERTIFICATIONS: The amount paid for any required certifications as to structural soundness or physical condition of property, when required by mortgage-lender, FHA or VA	\$ 25.00	\$
E.	CREDIT REPORT: The amount paid for credit or financial data report on the buyer, if required by mortgage-lender, FHA or VA	\$	\$ 21.00
F.	MORTGAGE TITLE POLICY: The amount paid for mortgage for lender's title insurance policy only, or distinguished non-ownership title insurance policy on the life of the borrower and the additional cost for an owner's title policy		\$
G.	ESCROW AGENT'S FEE: The amount paid to an escrow agent, title company, or similar entity for closing a real estate transaction	\$ 69.00	\$
H.	STATE REVENUE STAMPS: The amount paid	\$	\$ 190.60
I.	SALES OR TRANSFER TAXES; MORTGAGE TAX, IF ANY: The amount paid	\$	\$
6.	OTHER INCIDENTAL EXPENSES: Such other reasonable and customary charges or fees paid as may be authorized and not properly includable in items listed above (itemize and explain, if necessary, attach separate sheet)	\$	\$
TOTAL - FORMER RESIDENCE		\$ 5,969.75 ^{1-3/}	
TOTAL - NEW RESIDENCE			\$ 562.60 ^{2-3/}

NOTE: In accordance with the real estate expense provisions of the (FTR), the costs of insurance against damage or loss of property, maintenance and operating costs and property taxes are not reimbursable. Also, mortgage discounts, points, interest on loans, and losses in connection with the sale or purchase of a residence due to price or market conditions are not reimbursable. Notwithstanding the above, no fee, cost, charge, or expense is reimbursable which is determined to be a part of the finance charge under the Truth in Lending Act, Title I, Public Law 90-321, and Regulation Z issued pursuant thereto by the Board of Governors of the Federal Reserve System.

FOOTNOTES:
 1/ The aggregate amount of expenses which may be reimbursed is this amount, but it shall not exceed 10% of sale price or \$15,000, whichever is the smaller.
 2/ The aggregate amount of expenses which may be reimbursed is this amount, but it shall not exceed 5% of purchase price or \$7,500 whichever is the smaller.
 3/ If property is multiple family unit type (excluding condominium), expenses will be prorated and allowed for residence unit only.

H-1382-1 – CHANGE OF STATION HANDBOOK

Relocation Income Tax Allowance Certification

RELOCATION INCOME TAX ALLOWANCE CERTIFICATION

This Certification must be attached to SF 1012 (Travel Voucher) to support Relocation Income Tax Allowance claim.

Name: _____
 Reporting Date: _____
 Office Phone Number: _____

I certify that the following information, which is to be used in calculating the RIT Allowance to which I am entitled, has been (or will be) shown on the income tax returns filed (or to be filed) by me (or by my spouse and me) with the applicable Federal, State, and local tax authorities for the tax year 19__.

- Gross compensation as shown on all Form(s) W-2 for the tax year and/or net earnings (or loss) from self-employment income shown on Schedule SE (line 1 plus line 2):

	Forms W-2	Line 1 Plus Line 2 Schedule SE
Employee	\$ _____	\$ _____
Spouse (if filing joint return)	\$ _____	\$ _____
TOTAL	\$ _____	

Federal Tax

- Filing Status:

Check One: <input type="checkbox"/> Single	<input type="checkbox"/> Married Filed Separate Return
<input type="checkbox"/> Married Filing Joint Return	<input type="checkbox"/> Qualified Widow(er) with Dependent child
<input type="checkbox"/> Head of Household	

- State or states where a tax liability was incurred as a result of relocation allowance payments. _____
(See instructions for taxation by more than one state.)

- If total compensation shown above is less than \$20,000, indicate state income tax rate _____.

- State tax rate above is expressed as a percent of which of the following:

Check One: Income Federal Tax

H-1382-1 – CHANGE OF STATION HANDBOOK

Relocation Income Tax Allowance Certificaiton

- Locality or localities where a tax liability was incurred as a result of relocation allowance payments: _____
(See instructions for taxation by more than one locality.)
- Type of Locality: City or Municipality
- County
- Indicate local income tax rate for locality/localities: _____
- Local tax rate above is expressed as a percent (%) of which of the following:
 Check One: Income State Tax Federal Tax
 Is your new duty location at least 35 miles farther from your old residence than your old duty station was from your old residence? _____

The above information is true and accurate to the best of my knowledge but I(we) agree the notify the fiscal management of any changes to the above (i.e., from amended tax returns, tax audit, etc.) so that appropriate adjustment to the RIT Allowance can be made. The required supporting documents are attached. Additional documentation will be furnished if requested.

Employee's Signature

Date

Spouse's Signature
(If joint return)

Date

H-1382-1 – CHANGE OF STATION HANDBOOK

Cost Comparison for Shipping Household Goods

COST COMPARISON FOR SHIPPING HOUSEHOLD GOODS (Commuted Rate System Vs. GBL Method)					1 REQUEST NO	2 DATE OF REQUEST
3 TO GENERAL SERVICES ADMINISTRATION			4 FROM (Requesting agency name, address and ZIP Code)			
5 PERSON MAKING REQUEST (Name and title)				6 AGENCY TELEPHONE NO		
SHIPMENT DATA						
7 ORIGIN (City, County and State)			8 DESTINATION (City, County and State)			
9 ELEVATOR/STAIR CARRY NEEDED (Does not apply to single-family dwellings)	a AT ORIGIN		b AT DESTINATION			
	11 ELEVATOR <input type="checkbox"/> YES <input type="checkbox"/> NO	12 FLIGHTS OF STAIRS (No.)	11 ELEVATOR <input type="checkbox"/> YES <input type="checkbox"/> NO	12 FLIGHTS OF STAIRS (No.)		
10 EMPLOYEE RELOCATING	11 APPROX MOVING DATE	12 ESTIMATED WEIGHT	13 MILEAGE (GSA will determine)			
COST COMPARISON						
SERVICE OR ITEM A	COMMUTED RATE 1/		GBL METHOD 2/			
	RATE/CHARGE E	AMOUNT C	RATE/CHARGE D	AMOUNT E		
14 TRANSPORTATION 3/	\$ CWT	\$	\$ CWT	\$		
15 PACKING AND RELATED SERVICES 3/				CWT		
16 METROPOLITAN AREA ALLOWANCE/ CHARGE	a AT ORIGIN	CWT		CWT		
	b AT DESTINATION	CWT		CWT		
17 ELEVATOR/STAIR CARRY	a AT ORIGIN	CWT		CWT		
	b AT DESTINATION	CWT		CWT		
18 STORAGE IN TRANSIT AT (Check place)	a DAY 1 SIT	CWT		CWT		
	b DAY 2 THRU 90 SIT	CWT		CWT		
	c WAREHOUSE	CWT		CWT		
	c HANDLING	CWT		CWT		
<input type="checkbox"/> ORIGIN						
<input type="checkbox"/> DESTINATION						
19 OTHER SERVICES (Specify)						
20 TOTALS		\$		\$		
21 REMARKS (Use reverse if additional space is needed)						
22 SIGNATURE AND TITLE				23 DATE PREPARED	24 GSA CONTROL NO	
NOTES 1/ Authority GSA Bulletin FPMR A 2 General Supplements 2/ Authority 3/ Commuted rate includes \$ CWT allowance for packing etc. For comparison purposes ONLY same amount used to estimate costs for these services under the GBL method. Actual costs may be higher or lower.						
GENERAL SERVICES ADMINISTRATION				GSA FORM 2485 (REV 1-83)		

INSTRUCTIONS

Complete sections 7 -12 and submit the form to the Personnel Office at the new duty station to which you are transferring.