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WESTINGHOUSE HANFORD COMPANY

STANDARDS

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:	FUNCTIONAL AREA:
Plutonium Finishing Plant	*Quality Assurance*

SIGNATURES

FACILITY EXPERT:

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RESPONSIBLE FUNCTIONAL AREA MANAGER:

J. N. Nansen — 10/30/95 Date

INTERPRETIVE AUTHORITY CONCURRENCE:

J. M. Roberts — 10/30/95 Date

REVISION 0

WESTINGHOUSE HANFORD COMPANY

STANDARDS

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:	FUNCTIONAL AREA:
Plutonium Finishing Plant	*Fire Protection*

SIGNATURES

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REVISION 0

WESTINGHOUSE HANFORD COMPANY

STANDARDS

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:	FUNCTIONAL AREA:
Plutonium Finishing Plant	*Environmental Protection*

SIGNATURES

FACILITY EXPERT:

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C. M. Kronvall — Date: 10/31/95

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W T Dixon
W. T. Dixon — Date: 10/31/95

REVISION 0

WESTINGHOUSE HANFORD COMPANY

STANDARDS

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:	FUNCTIONAL AREA:
Plutonium Finishing Plant	*Occupational Safety and Health*

SIGNATURES

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REVISION 0

WESTINGHOUSE HANFORD COMPANY

STANDARDS

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:	FUNCTIONAL AREA:
Plutonium Finishing Plant	*Nuclear Safety*

SIGNATURES

FACILITY EXPERT:

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J. P. King/L. T. Nirider Date

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L. H. Rodgers 11/2/95 Date

INTERPRETIVE AUTHORITY CONCURRENCE:

E. J. Krejci 11/1/95

E. J. Krejci Date

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Plutonium Finishing Plant (PFP) Standards/Requirements Identification Document (S/RID)

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Westinghouse Hanford Company, Richland, WA 99352
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Abstract: This Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements for the Plutonium Finishing Plant (PFP). This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning. These standards/requirements are adequate to ensure the protection of the health and safety of workers, the public, and the environment.

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TABLE OF CONTENTS

1.0 MANAGEMENT SYSTEMS 1

1.1 MANAGEMENT AND ADMINISTRATION 4

1.1.1 Policies, Plans, and Procedures 4
1.1.2 Organization 4
1.1.3 Staffing 4
1.1.4 Training and Qualification 4

1.2 POLICY AND PROCEDURES 5

1.2.1 Preparation 5
1.2.2 Review and Approval 7
1.2.3 Control and Maintenance 8

1.3 ISSUE MANAGEMENT 9

1.4 COMPLIANCE MANAGEMENT 9

1.5 MANAGEMENT EVALUATION 10

1.5.1 Performance Improvement Assessment 10
1.5.2 Performance Indicators 10

1.5.2.1 Indicator Identification 10
1.5.2.2 Indicator Trending and Analysis 10
1.5.2.3 Indicator Reporting 11

1.6 OCCURRENCE REPORTING 11

1.6.1 Identification and Categorization 12
1.6.2 Notification and Reporting 12
1.6.3 Investigation 14
1.6.4 Tracking 17

1.7 OPERATIONAL READINESS REVIEWS 17

1.7.1 Approach and Organization 17

1.7.1.1 Need Determination 17
1.7.1.2 ORR Team Organization and Responsibilities 19

1.7.2 Plan of Action 20

1.7.2.1 Operational Readiness Reviews 21

1.7.2.1.1 Implementation Plan 23
1.7.2.1.2 Implementation 24

1.7.2.2 Readiness Assessment 24

1.7.3 Tracking and Closure of Findings 26
1.7.4 Documentation 26

1.8 DOCUMENT AND DATABASE CONTROL - RECORDS MANAGEMENT 27
1.8.1 Control 27

1.8.1.1 Document Control Systems 27
1.8.1.2 Computer Use 28

1.8.2 Storage 28

1.8.2.1 Controls and Facilities for Records Storage 28

1.8.3 Retention and Disposal 29

1.8.3.1 Controls for Records Retention and Storage Media 29

1.9 LESSONS LEARNED 29

1.10 KEY INTERFACES 30

1.10.1 Quality Assurance 30
1.10.2 Configuration Management 31
1.10.3 Training and Qualification 31
1.10.4 Emergency Management 31
1.10.5 Safeguards and Security 31
1.10.6 Engineering 31
1.10.7 Operations 31
1.10.8 Maintenance 31
1.10.9 Radiation Protection 31
1.10.10 Fire Protection 31
1.10.11 Packaging and Transportation 32
1.10.12 Waste Management 32
1.10.13 Nuclear Safety 32
1.10.14 Occupational Safety and Health 32
1.10.15 Environmental Protection 32

1.11 REFERENCES 32

1.11.1 Requirement Source Documents 32
1.11.2 Reviewed Documents Not Used as Requirement Sources 33

1.0 MANAGEMENT SYSTEMS

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Management Systems Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Management Systems activities, as such activities are included in the current mission of the facility.

The Management Systems Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. The subelements of element 1.3, Issue Management, and the subelement of element 1.7, Operational Readiness Reviews, were removed because both elements defer to the Westinghouse Hanford Company (WHC) Level S/RID for requirements definition. A new element addressing Lessons Learned was added as element 1.9. Key Interfaces was renumbered as 1.10. A reference section was added as element 1.11.

PFP operations have been in a shutdown condition since 1989 awaiting restart of plutonium recovery and stabilization operations. This effort is on hold pending approval of an Environmental Impact Statement and restart readiness reviews. Meanwhile, PFP is also tasked to participate in cleanup and remediation of retired portions of the complex as part of the transition to decommissioning the facility.

This functional area contains only those requirements which are applicable to PFP and for which implementation is under control of the facility manager. The Westinghouse Hanford Company (WHC) Level S/RID contains additional requirements which are applicable to PFP but which are implemented by other WHC organizations. In addition, all requirements contained in the PFP SAR are applicable to PFP, but are not included within the scope of this S/RID.

Management Systems provides the policy, commitment, accountability, and resources to implement the ES&H programs and ensure adequate management oversight. The scope of this functional area is the collection of those requirements to be followed by site organization management to develop a program of commitment to ES&H in a formal, controlled manner. Effective management systems are required to develop and maintain ES&H programs, ensure adequate guidance and oversight for the implementation of these programs, and maintain a commitment of resources to perform the required

ES&H functions. Management systems establish programs that are typically applicable to all organizations.

The following programmatic elements are addressed by the Management Systems functional area:

- Management and Administration
- Policy and Procedures
- Issue Management
- Compliance Management
- Management Evaluations
- Occurrence Reporting
- Operational Readiness Reviews
- Document and Database Control-Records Management
- Lessons Learned
- Key Interfaces
- References

Some source documents developed for a specific functional area, such as Operations, contain requirements that can be usefully applied to other functional areas for which corresponding requirements are not available or as well defined. Where requirements are cited in this S/RID from such source documents, application is intended for all other functional areas unless superseded by a program specific requirement or unless the topic being addressed is inappropriate. This approach permits broad application of useful requirements and enhances the level of consistency between functional areas.

Requirements are also included in this S/RID which refer to text elsewhere in the source document, such as examples or other unneeded material, e.g., "... the following list provides examples..." or "... as described in Section..." Such text is not included in this S/RID if the base requirement statement adequately addresses the intended application. This additional text should be reviewed for detail needed to develop policies and procedures which implement the cited requirements.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

1.1 MANAGEMENT AND ADMINISTRATION

1.1.1 Policies, Plans, and Procedures

Requirement DOE5480.19(920518) Chapter I, Section C.1, cited in the Operations Functional Area, applies to this subelement. Sentences 1, 3, and 4 define the need for polices and procedures to support operations at PFP.

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter I, Section C.1

"Procedures or other definitive documentation should specify policies that are to be applied for operations. These policies should specify goals and the means to achieve those goals. These documents should also provide for the types of controls necessary to implement policies as discussed in this and other chapters of the guidelines. Operations procedures should support facility and DOE guidance for operations. Responsibilities for implementing these policies, including the responsibility of shift personnel, if applicable, should be clearly defined. Operations personnel should clearly understand their authority, responsibility, accountability, and interfaces with other groups. Physical security should be in accordance with DOE 5630.11."

1.1.2 Organization

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter I, Section C.4

"Workers and their supervisors should be held accountable for operating performance. Personnel involved in significant or frequent violations of operating practices should be counseled, retrained, and disciplined, as appropriate. Supervisor performance appraisals and promotions should include an assessment of operating performance."

1.1.3 Staffing

The primary requirement source document for the qualification aspects of personnel selection, including background, experience, and education, is DOE Order 5480.20A, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities. General and detailed requirements from this and other source documents applicable to personnel selection and staffing are identified in the Training and Qualification (T&Q) Functional Area.

1.1.4 Training and Qualification

The primary requirement source document for personnel training is DOE Order 5480.20A, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities. General and detailed requirements from this and other source documents applicable to personnel training are identified in the T&Q Functional Area.

Responsible authorities of the various programs should interface closely with the T&Q Functional Area to coordinate development of training modules and determine the most effective way to accomplish the various types of training, e.g., what type of training would be most effective and which organization should develop and deliver the training.

1.2 POLICY AND PROCEDURES

Author's Note: The requirements from DOE5480.19 are implemented for operating procedures, with the exception of test procedures in the Plutonium Process Support Laboratory (PPSL). Requirement Source 10CFR830 Part 120(c)(2)(i) is the requirement that drives the PPSL test procedures.

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(i)

"Work Processes. Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained."

1.2.1 Preparation

Requirement DOE 5480.19(920518) Chapter I, Section C.1, cited in the Operations Functional Area, applies to this sub-element. Sentence 2 defines the general content of policies governing PFP operations.

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.1,Para 1 and 2, Sent 1 thru 3

"To ensure consistency among operations procedures, the methods for developing new procedures, including procedure formats, should be clearly defined. Administrative procedures and/or writers' guides should direct the development and review process for procedures.

Procedures should be developed for all anticipated operations, evolutions, tests, and abnormal or emergency situations. Annunciator/alarm response procedures that guide the operator in verifying abnormal conditions or changes in plant status and provide the appropriate corrective action should be developed for all alarm panels. All procedures should provide administrative and technical direction to conduct the intent of the procedure effectively."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.a, Sentence 1

"The scope and applicability of individual procedures should be readily apparent."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.a, Sentence 3

"In addition, to enhance rapid retrieval, emergency procedures should be distinguishable from other procedures."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.b

"Procedures should incorporate appropriate information from applicable source documents, such as the facility design documents, safety analysis documents, and vendor technical manuals."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.c, Sentence 1

"Prerequisites and initial conditions should be detailed."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.c, Sentence 3 thru 5

"In addition, any hoses, tools, or other temporary testing equipment should be verified operable, calibrated, or inspected and in good condition where possible, before implementing any test procedure, to ensure that they function as expected during the test. These verifications should be identified in the prerequisite section, with completion sign-offs required. "Hold" points (requiring independent verification and/or approval) should be clearly delineated."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.d

"Definitions used in the procedure should be explained."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.e

"Procedures should be easily understood, and actions should be clearly stated."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.f

"Procedures should contain only one action per step."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.g, Sentence 1

"Procedures should contain sufficient but not excessive detail."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.h, Sentence 1

"Warnings, notes, and cautions should be easily identifiable and should not contain action statements."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.i, Sentence 1 and 2

"Warnings and cautions should precede the step to which they apply. Warnings, notes, and cautions should appear on the same page as the step to which they apply."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.j, First seven words

"Procedures should be technically and administratively accurate"

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.k

"Individual sign-offs should be provided for selected critical steps. One sign-off should not be applied to more than one action."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.l

"Limits and/or tolerances for operating parameters should be specified and should be consistent with the readable accuracy of instrumentation. Operators should not be required to perform mental arithmetic to determine if a specified parameter is acceptable."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.m

"Acceptance criteria for surveillance or test procedures should be easily discerned, including tolerances and units. If calculations are needed to compare data to acceptance criteria, the calculations should be clearly explained."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.n, Sentence 1

"Sequence of procedural steps should conform to the normal or expected operational sequence."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.o, Sentence 1

"Procedures should be developed with consideration for the human-factor aspects of their intended use."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.q

"Portions or steps of other procedures that are used or referred to when performing a procedure should be specifically identified within the procedure so that operators will not be confused when transferring between procedures."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.2.r

"Component or system shutdown and restoration requirements following shutdown or a surveillance or test activity should be specific and controlled by the procedure."

1.2.2 Review and Approval

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.4, Paragraph 1 and 2, Sent 1

"Operating procedures should be approved by the operations supervisor. In addition, procedures that affect safety-related equipment and emergency procedures should be reviewed by the facility safety review committee or by another appropriate review mechanism. Procedure revisions should receive the same depth of review and level of approval as the initial versions. New and revised procedures should be approved prior to use.

Changes in Operations procedure that do not affect the intent of operations procedure should be approved by two individuals; one should be a qualified operator, and the other should be a member of facility management."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.5

"New and revised operations procedures should be reviewed prior to issuance and at periodic intervals to ensure that the information and instructions are technically accurate and that

appropriate human-factor considerations have been included. The frequency of subsequent reviews should be specified; it may vary with the type and complexity of the activity involved and with time as a given plant reaches operational maturity. Applicable procedures should be reviewed after an unusual incident (such as an accident, an unexpected transient, significant operator error, or equipment malfunction). During reviews, procedures should be compared to source documents to verify their accuracy. In addition, new procedures should be validated by walk-throughs in the facility or by operation on a facility-specific simulator to ensure workability."

1.2.3 Control and Maintenance

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VIII, Section C.10

"A system should be established to ensure that the operations personnel receive and utilize the latest revisions of engineering drawings and specifications. Operations personnel should be made aware of all changes to these documents. The document distribution should include all operations related activities such as procedures review groups, maintenance groups, facility safety analysis groups, and testing groups."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.3, Sentence 2

"The review and approval process for each procedure change or revision should be documented."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.3, Sentence 6

"Procedure changes do not involve retyping or reissuing a procedure. "Procedure revisions" constitute a new, retyped edition of the procedure. Procedure changes and revisions should conform to the following practices:

a. Procedure changes intended for use more than one time should be documented in a location readily available for operator reference. To avoid the possibility of error, these changes should also be referenced in procedure copies used by operators.

b. Appropriate procedure changes and revisions should be initiated when procedure inadequacies or errors are noted.

c. Procedure revisions should be initiated when a change has been outstanding for an extended period (e.g., greater than 6 months) or when a procedure has been affected by several changes (e.g., more than five). All currently effective procedure changes should normally be incorporated when the procedure is revised.

d. Procedure revisions should be implemented concurrently with modifications. Procedure updates required by temporary modifications should be handled as procedure "change" and implemented concurrently with the temporary modification installation.

e. Important information regarding changed or revised procedures should be communicated to appropriate operations personnel via the required reading system (Chapter XIV), a pre-shift briefing, or a similar method.

f. Documentation of the reason for key procedure steps should be maintained and reviewed when implementing changes or revisions that alter these steps. This practice is important to ensure that the reason for any step is not overlooked.

g. The review process should involve verification and validation of the procedure using walkthroughs or similar methods."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.6, Paragraph 1, Sentence 1

"A controlled copy of all operations procedures should be maintained in the control area for operator reference, and selected controlled procedures should be maintained at other appropriate locations."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XVI, Section C.7

"Facility operation should be conducted in accordance with applicable procedures that reflect the facility design basis. The requirements for use of procedures should be clearly defined and understood by all operators. If procedures are deficient, a procedure change should be initiated. In exception to this policy, operators may take whatever action is necessary during emergency conditions to place the facility in a safe condition, and to protect equipment, personnel, and public safety without first initiating a procedure change.

Operators should have procedures with them and follow them in a step-by-step manner when the procedures contain sign-offs for the various activities. In addition, procedures should be referenced during infrequent or unusual evolutions when the operator is not intimately familiar with the procedure requirements or when errors could cause significant adverse impact to the facility. Operators need not reference emergency procedures during the performance of immediate actions since these actions, are committed to memory; however, the emergency procedure immediate action instructions should be reviewed after the actions are performed, thus, verifying, that all required actions have been taken."

1.3 ISSUE MANAGEMENT

Issue Management is implemented at PFP in accordance with the requirements defined in the QA Functional Area.

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(1)(iii)

"Quality Improvement.

Processes to detect and prevent quality problems shall be established and implemented. Items, services, and processes that do not meet established requirements shall be identified, controlled, and corrected according to the importance of the problem and the work affected. Correction shall include identifying the causes of problems and working to prevent recurrence. Item characteristics, process implementation, and other quality-related information shall be reviewed and the data analyzed to identify items, services, and processes needing improvement."

1.4 COMPLIANCE MANAGEMENT

Author's Note: This S/RID is being developed as part of the implementation of DNFSB recommendation 90-2. It provides a primary tool of the compliance management program.

1.5 MANAGEMENT EVALUATION

1.5.1 Performance Improvement Assessment

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter I, Section C.3, Paragraph 5, Sent 2 thru 4

"Line managers and supervisors should perform routine observations of personnel performing operating activities. Deficiencies identified should be documented, trended, and corrected. Also, other groups, such as quality assurance personnel, should periodically review and assess operation performance."

1.5.2 Performance Indicators

REQUIREMENT SOURCE: DOE5480.26 Section 7.a.(3)

"Performance Indicators are designed to be reportable as numerical values on a consistent basis so that they are readily usable in trending analysis. For each facility included in the DOE PI program, the contractor shall gather, analyze and report the Performance Indicators data, to include narrative data, according to the requirements of this Order and the guidance provided in DOE-STD-1048-92."

1.5.2.1 Indicator Identification

REQUIREMENT SOURCE: DOE5480.26 Section 7.c

"Reportable Performance Indicators.
The Performance Indicators delineated in DOE-STD-1048-92 are the minimum required to be reported for each facility. For some facilities, certain information may not be applicable and, therefore, need not be reported. However, the report should so indicate. It is also expected that DOE line management may request additional Performance Indicators to be reported which they may determine to be relevant to their facilities. Detailed definitions and information concerning these PIs can be found in DOE-STD-1048-92."

1.5.2.2 Indicator Trending and Analysis

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.8

"Patterns of deficiencies such as operator errors or inadequate procedures should be trended. A periodic summary report of events, causes, and trends should be submitted to department heads, the facility manager, and appropriate managers. Department heads should ensure training programs include appropriate material from the summary report."

REQUIREMENT SOURCE: DOE5480.26 Section 6.f Introduction, and 6.f.(1)

"Facility Managers as defined in paragraph 4 of this Order shall:

(1) Assess facility Performance Indicators and other operations information, such as reportable occurrences, for trends in improving or deteriorating conditions; and"

REQUIREMENT SOURCE: DOE5480.26 Section 7.b.(1), Sentence 2

"Facility Managers shall assess their facility operating information for trends and indications of deteriorating/improving conditions and identify lessons-learned and good practices that should be used in their facility to prevent occurrences or to improve safety and/or operations."

1.5.2.3 Indicator Reporting

REQUIREMENT SOURCE: DOE5480.26 Section 7.a.(2)

"Departmental elements not included in the formal DOE PI Program shall internally establish and track operations using PIs appropriate to their organizations but are excluded from formal reporting requirements defined in DOE-STD-1048-92."

1.6 OCCURRENCE REPORTING

Emergency classification requirements are found in the Emergency Management Functional Area.

REQUIREMENT SOURCE: DOE-O-232.1 Part 4

Author's Note: DOE Manual 232.1-1 provides detailed information for categorizing and reporting occurrences at DOE facilities. It complements DOE O 232.1 and its use is required by that Order.

"REQUIREMENTS.
DOE M 232.1-1, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION, is required to implement this Order."

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.c., and 4.c.(1)

"Departmental Elements and contractors at facilities shall do the following:

(1) Develop or revise implementing procedures for the Occurrence Reporting Program at their facility to ensure appropriate categorization, notification, reporting, and investigating of events and/or conditions.

(a) On the effective date of this Order, all reporting requirements of this Order shall be implemented except for the submittal and approval of the site implementing procedures.

(b) Implementation procedures shall be submitted for approval to the respective DOE Secretarial Office within 4 months after approval of this Order.

(c) Implementation procedures submitted by the contractor or facility operator shall be considered automatically approved 2 months after submittal, if they are not deliberately approved or rejected by DOE prior to the automatic approval.

(d) Pending approval of new or modified implementing procedures, the procedures approved and in effect as of the effective date of this Order may be used."

1.6.1 Identification and Categorization

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.a.

"Immediately following an occurrence, DOE-owned or -operated facility staff and operators shall:

(1) ensure that appropriate immediate response(s) are taken to stabilize or return the facility/operation to a safe condition; and

(2) identify and promptly notify the Facility Manager of abnormal events and conditions and record and archive appropriate information pertaining to such occurrences."

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b, and 4.b.(1)

"Departmental Elements and contractors responsible for DOE-owned or -operated facilities shall ensure a Facility Manager or Facility Manager Designee is available at all times to carry out the following requirements.

(1) Perform categorization of the event.

(a) If the event is categorized as an Emergency in accordance with the DOE 5500 series Orders, then make the notification of the Emergency as required in the DOE 5500 series Orders and prepare the written Occurrence Reports in accordance with this Order.

(b) If the event is not categorized as an Emergency, then categorize the event as an Unusual or Off-Normal Occurrence as soon as practical but, in all cases, within 2 hours of identification.

(c) If the category is not clear or the occurrence exceeds the threshold of more than one criteria, the occurrence shall be categorized at the higher level being considered. As an example, discovery of a defective item, material, or service, normally reportable as an Off Normal Occurrence, that caused the reduction of safety margin below that prescribed in the authorization basis, would be reported as an Unusual Occurrence.

(d) The occurrence category shall either be elevated, maintained, or lowered as information is made available."

1.6.2 Notification and Reporting

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b.(2) Introduction

"Notify the DOE Facility Representative and the HQ Emergency Operations Center (HQ EOC) of an Unusual Occurrence as soon as practical but, in all cases, within 2 hours of categorization."

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b.(3)

"Prepare and submit a Notification Report as soon as practical but, in all cases, before the close of the next business day from the time of categorization (not to exceed 80 hours)."

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b.(4)

"Prepare and submit an Update Report when significant and new information is available or upon request of DOE."

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b.(5)

"Document any changes in categorization in an Update Report and submit before the close of the next business day from the time of recategorization (not to exceed 80 hours)."

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b.(6)

"Prepare and submit a Final Report to the DOE Facility Representative when the root cause of the occurrence has been analyzed, corrective actions determined and scheduled, and lessons learned identified. Submit the Final Report as soon as possible, but no later than 45 calendar days after initial categorization."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.c, Sentence 1

"The root cause of the event should be determined."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.d, Sentence 1

"Appropriate corrective action should be established for each event investigation, and specific personnel should be assigned responsibilities for the corrective action."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.d, Sentence 3

"The final approval for corrective action should be made by the facility manager."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.6, Paragraph 1

"An investigative report should be prepared in a timeframe determined by the responsible authority. The report should include a description of the event (including pertinent conditions), a discussion of the impact of the event, root cause, the lessons learned, and the proposed corrective action(s). The report should include positive aspects of the event (such as particularly effective personnel responses). The investigative report should be approved by the facility manager and reviewed by appropriate supervisors, managers, and the safety review committee."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.8

"Patterns of deficiencies such as operator errors or inadequate procedures should be trended. A periodic summary report of events, causes, and trends should be submitted to department heads, the facility manager, and appropriate managers. Department heads should ensure training programs include appropriate material from the summary report."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.9, Sentence 2

"If an act of sabotage is discovered or suspected, it is important to begin an investigation immediately and to accomplish the following:

a. Determine the condition of the affected system(s) and ensure the operability of all safety-related systems;

b. Decide if continued operation is justified or if systems are available to support safe facility shutdown; and

c. Minimize the impact of discovered acts of sabotage and deter future acts of sabotage."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VII, Section C. 1

"Procedures should be developed to address appropriate notifications and should include the following elements:

a. Specific responsibilities for notifications;

b. Identification of events and conditions requiring notifications;

c. Identification of primary and alternate personnel to be notified for various situations;

d. Establishment of time requirements for notifications that are consistent with the facility emergency plan; and

e. Definition of recordkeeping requirements that documents the reason for notifications, the time of notifications, and the person notified."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VII, Section C. 2, Sentence 1

"The operations supervisor should ensure that all appropriate personnel receive notification when required."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VII, Section C. 3

"Names of primary and alternate contacts and current phone numbers and page codes should be readily available to the person assigned to make the notifications."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VII, Section C. 4, Sentence 1

"All notifications should be documented."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VII, Section C. 5

"Adequate communication equipment should be maintained in the main control area to meet the objectives of this chapter."

1.6.3 Investigation

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.1, Sentence 1 thru 3

"Events that occur in the facility and adversely affect operations, personnel safety, or DOE requirements (DOE 5000.3A) should receive a thorough investigation. The criteria for when to perform an event investigation should be clearly established. Specific events requiring investigation should be listed for supervisory use, along with criteria for use in deciding what "near miss" situations should receive review."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.2, Sentence 1

"The operations supervisor or another manager should be responsible for event investigations."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.4, Paragraph 1, Sent 1 thru 3

"Sufficient data must be collected to allow the event investigators to perform a reconstruction and analysis of the event. An individual should be assigned responsibility for collecting the required information and assembling the information for review. It is important to collect the necessary information as soon as possible after the event."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.4, Paragraph 1, Sentence 5

"Information should be gathered in the following areas:

a. Initial facility conditions.

b. Statements of operators and personnel involved in the event (this should be permanently recorded).

c. Pertinent computed printouts (post-trip log sequence of events) and strip charts.

d. Pertinent documentation (such as operator logs, radiation work permits, chemistry logs, and radiological surveys) as required to establish conditions prior to and during the event."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.4, Paragraph 2, Sentence 3

"Methods for collecting this information can vary; however, the event investigation containing relevant information should be permanently recorded for future reference."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.4, Paragraph 3, Sent 2 and 3

"The collection of data should not interfere with the continued operation of the facility. Temporary interference should occur only if necessary to understand the event."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5, Sentence 1

"Upon completion of the data collection, a structured review of the abnormal event should occur."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5, Sentence 3

"Each event investigation should include the following steps, with emphasis placed on each individual step depending upon the severity or potential consequences of the event."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.a, Sentence 1

"The abnormal event should be reconstructed using the collected information."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.b, Sentence 1 thru 4

"Once the facts of the event have been established, the event should be analyzed to determine the response of equipment and involved personnel. During the analysis, emphasis should be placed on determining the proper response of systems, comparison of actual and expected response, adequacy of procedures, and factors affecting human performance. When available, the event should be compared with previous event investigations of similar events or transients. During the analysis, a safety evaluation should be performed to ascertain the proper response of equipment and to identify detrimental effects on facility equipment."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.c, Sentence 1

"The root cause of the event should be determined."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.d, Sentence 1

"Appropriate corrective action should be established for each event investigation, and specific personnel should be assigned responsibilities for the corrective action."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.5.d, Sentence 3

"The final approval for corrective action should be made by the facility manager."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.8

"Patterns of deficiencies such as operator errors or inadequate procedures should be trended. A periodic summary report of events, causes, and trends should be submitted to department heads, the facility manager, and appropriate managers. Department heads should ensure training programs include appropriate material from the summary report."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.9, Sentence 2

"If an act of sabotage is discovered or suspected, it is important to begin an investigation immediately and to accomplish the following:

a. Determine the condition of the affected system(s) and ensure the operability of all safety-related systems;

b. Decide if continued operation is justified or if systems are available to support safe facility shutdown; and

c. Minimize the impact of discovered acts of sabotage and deter future acts of sabotage."

1.6.4 Tracking

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b.(7)

"If the required analysis cannot be completed within 45 calendar days, submit an Update Report within the 45 days and include a detailed explanation of the delay and an estimated date for submittal of the Final Report."

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.b.(8)

"If the Final Report was rejected by either the Facility Representative or Program Manager, prepare and resubmit the revised Final Report within 21 calendar days of disapproval."

1.7 OPERATIONAL READINESS REVIEWS

Operational Readiness Reviews (ORRs) provides a structured methodology for determining that a facility, project, process, or activity is ready to be occupied and/or operated in a safe and controlled manner. For the remainder of this section the term "facility" will be used to include a facility, project, process, or activity.

It is DOE policy that no new hazardous or nuclear facilities be started, nor should such existing facilities be restarted, without a documented and approved review or readiness. The process is applied on a graded approach, which addresses all key elements of ORR. The ORR process includes, among other things, a determination of the level of compliance with ES&H Orders and OSHA regulations.

DOE 5480.31 establishes the actions to be taken, and assigns responsibility for authorizing the restart of nuclear facilities. RLID 5480.31 in turn implements the requirements of the order at the Hanford site.

This element identifies specific requirements to be addressed in determining the need for an conducting WHC ORRs at the Hanford site. DOE or other approvals necessary to proceed with an ORR or facility are identified. Interfaces and coordination with oversight organizations necessary for WHC ORRs are identified if specified in the requirement documents.

This element interfaces with all programs and functional area involved in the start, restart, operation, or support of a given facility.

1.7.1 Approach and Organization

REQUIREMENT SOURCE: RLID5480.31 Section 6.e(1)

"RL contractors with responsibilities for performance of ORRs and RAs shall be required to:

(1) Prepare an implementing procedure for use in performing startup and restart activities in accordance with this Implementing Directive."

1.7.1.1 Need Determination

REQUIREMENT SOURCE: RLID5480.31 Section 8.0

Author's Note: Only Paragraphs one and two apply.

"REQUIREMENTS. Quarterly, each responsible contractor shall identify to RL Line Management all facility new start and restart activities planned for the next two years. The responsible contractor shall provide a basic description of the facility/activity, identify the anticipated AA, for both the contractor and DOE, for each new start or restart action in accordance with this Implementing Directive requirements. (If the anticipated AA is not the same as required by this directive, the contractor shall provide justification as to why they believe this is acceptable.) This report will identify the hazard classification of the activity or facility in accordance with reference f (or existing hazard category and provide justification to the existing hazard category as to its comparison to hazard class), if the new start or restart is an ORR or RA (if the contractor anticipates that neither an ORR or RA is applicable to the startup or restart, they will justify this assumption), and the expected date of operation.

Where an unplanned shutdown occurs and an ORR or RA is required for restart, the responsible contractor shall notify RL line management verbally and in writing, as soon as practical.

RL line management will review the responsible contractor's proposal and, as necessary, recommend approval or modifications to DOE-HQ who will approve, or modify and approve, the contractor's proposal."

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.c

"Determination of when an ORR is performed is based on the hazard category, as defined in references f and g. The contractor shall conduct an ORR in accordance with this Implementing Directive when any of the following conditions occur:

(1) Initial start-ups of new hazard category 1, 2, and 3 facilities.

(2) Restart after an unplanned shutdown of a facility directed by a DOE management official for safety or other appropriate reasons.

(3) Restart after an extended shutdown for hazard category 1 and 2 facilities. Extended shutdown for a category 1 facility is 6 months. Extended shutdown for a category 2 facility is 12 months.

(4) Restart of hazard category 1 and 2 facilities after major plant or facility modifications required for future program work and/or for enhanced safety, which require changes in the safety basis previously approved by DOE.

(5) Restart after a facility shutdown because of operations outside the safety basis.

(6) When deemed appropriate for less than hazard category 3 facilities by DOE management officials, or deemed appropriate for restarts of hazard category 3 facilities."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.a

"RL contractors shall conduct RAs in accordance with internal approved procedures."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.b

"Requirements applicable to restarts of facilities/activities that do not involve RAs.

(1) A MOU will be developed between the contractor and RL line management and approved by the RL AA that defines which facilities/activities may be restarted without a RA. Normally these will be where:

(a) A pre-approved procedure is in place; or

(b) For short duration (less than 12 months), shutdowns with minor modifications to the facility or procedures.

The pre-approved procedures will be part of the MOU. Additionally, any time this means is used, the contractor shall inform RL line management verbally within one working day and in writing within one week.

For short duration shutdowns, the contractor shall provide adequate justification in the MOU to substantiate their rationale that a RA is not required."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.d

"Contractor management shall determine if a RA is required for startup of new facilities or restart of a facility, as well as recommend the level of involvement by RL using the requirements given below. If the recommendation for RL involvement does not meet these requirements the contractor shall provide a written justification for the appropriateness of this recommendation."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.e

"Determination of when a RA is performed is based on the hazard category as defined in reference f and g. The contractor shall conduct a RAs in accordance with this Implementing Directive, when any of the following conditions occur:

(1) Initial start-ups of new, less than hazard category 3 facilities.

(2) Restart after an extended shutdown for less than hazard category 2 facilities. Extended shutdown is 12 months or greater.

(3) Restart of less than hazard category 2 facilities after substantial plant or facility modifications required for future program work.

(4) Restarts from routine shutdowns for all facilities."

1.7.1.2 ORR Team Organization and Responsibilities

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.j

"The ORR Team Leader is a senior individual (for RL the individual shall be a senior DOE person) with the necessary qualifications for managing and conducting the ORR. The basis of the qualifications should include:

- Technical familiarity with the activities and functional areas being reviewed
- Previous performance-based review experience or training
- Demonstrated leadership and managerial skills
- ORR experience or formal training
- Be an independent person, as defined by reference j.

NOTE: In accordance with reference j, the definition of independent person is a condition characterizing an individual or group of individuals qualified to analyze, review, inspect, test, audit, or otherwise evaluate activities and work results because:

(a) They have no direct responsibility or involvement in performing the activity or work;

(b) They are not accountable for the activity or work results; and

(c) They do not report directly to the immediate supervisor who are responsible for performing the activity or work being evaluated.

The ORR team leader is responsible for overseeing the ORR process, including:

- Defining ORR team membership
- Preparing and approving the ORR IP
- Planning, scheduling, coordinating, and conducting the ORR
- Estimating the Man-Hours required to implement the plan
- Establishing ORR objectives and milestones
- Compiling or acquiring access to all necessary background information (e.g., description of process equipment and control measures)
- Acting as the team interface with management
- Manage the preparation and disbursement of the ORR report
- Remain available and assure team members are available for closure verification of findings
- For contractor ORRs where a PRP is used, approve the Plan.

A key responsibility of the team leader is selection and qualification of the team members. Team member qualification must be defined by the team leader. Each team member shall have the following qualifications, as defined and verified by the team leader:

- Technical knowledge of the area assigned for evaluation. The knowledge shall include working experience in the technical area
- Knowledge of performance-based assessment processes and methods. This knowledge may be gained through experience as an auditor or inspector, or it may be gained through training and evaluated as acceptable by the team leader
- Facility specific information which may be gained through a combination of required reading and facility tours and presentations."

1.7.2 Plan of Action

1.7.2.1 Operational Readiness Reviews

REQUIREMENT SOURCE: RLID5480.31 Attachment 10.9

"Each of the core requirements listed below, as a minimum, must be addressed when developing the breadth of an ORR. Justification must be provided in the POA, if it is determined that a particular core requirement is not applicable or will not be reviewed. The POA may reference a timely, independent review which addressed the requirements in a technically sound manner, to justify not performing further evaluation of a core requirement during conduct of an ORR. A graded approach, defined in Attachment 10.8, will be used to determine the level of analysis, documentation, and/or actions necessary to evaluate the core requirements listed below, or other core requirements in the defined breadth of the ORR. The minimum core requirements are as follows:

1. There are adequate and correct procedures and safety limits for operating the process systems and utility systems.

2. Training and qualification programs for operations and operations support personnel have been established, documented, and implemented (the training and qualification program encompasses the range of duties and activities required to be performed).

3. Level of knowledge of operations and operations support personnel is adequate based on reviews of examinations and examination results, and selected interviews of operating and operations support personnel.

4. Facility safety documentation is in place that describes the "safety envelope" of the facility. The safety documentation should characterize the hazards/risks associated with the facility, and should identify mitigating measures (systems, procedures, administrative controls, etc.) that protect workers and the public from those hazards/risks. Safety systems and systems essential to worker and public safety are defined, and a system to maintain control over the design and modification of facilities and safety-related utility systems is established.

5. A program is in place to confirm and periodically reconfirm the condition and operability of safety systems, including safety related process systems and safety related utility systems. This includes examinations of records of tests and calibration of safety system and other instruments which monitor limiting conditions of operation, or that satisfy TSRs. All systems are currently operable and in a satisfactory condition.

6. A process has been established to identify, evaluate, and resolve deficiencies and recommendations made by oversight groups, official review teams, audit organizations, and the operating contractor.

7. A systematic review of the facility's conformance to applicable DOE Orders has been performed, any nonconformances have been identified, and schedules for gaining compliance have been justified in writing and formally approved.

8. Management programs are established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure operational support services (e.g., training, maintenance, waste management, environmental protection, industrial safety and hygiene, radiological protection and health physics, emergency preparedness, fire protection, quality assurance, criticality safety, and engineering) are adequate for operations.

9. A routine and emergency operations drill program, including program records, has been established and implemented.

10. An adequate startup or restart test program has been developed, that includes adequate plans for graded operations testing to simultaneously confirm operability of equipment, the viability of procedures, and the training of operators.

11. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented with line management responsible for control of safety.

12. The implementation status for DOE 5480.19, CONDUCT OF OPERATIONS REQUIREMENTS FOR DOE FACILITIES, is adequate for operations.

13. There are sufficient numbers of qualified personnel to support safe operations.

14. A program is established to promote a sitewide culture in which personnel exhibit an awareness of public and worker safety, health, and environmental protection requirements and, through their actions, demonstrate a high priority commitment to comply with these requirements.

15. The facility systems and procedures, as affected by facility modifications, are consistent with the description of the facility, procedures, and accident analysis included in the safety basis.

16. Modifications to the facility have been reviewed for potential impacts on procedures and training and qualification. Procedures have been revised to reflect these modifications, and training has been performed to these revised procedures.

17. The technical and management qualifications of contractor personnel, responsible for facility operations, are adequate.

18. The technical and managerial qualifications of those personnel at the field organization and at DOE-HQ, who have been assigned responsibilities for providing direction and guidance to the contractor, including the Facility Representatives, are adequate (DOE ORR only).

19. The results of the responsible contractor ORR are adequate to verify the readiness of hardware, personnel, and management programs for operations (DOE ORR only).

20. Operations Office Oversight Programs, such as Occurrence Reporting, Facility Representative, Corrective Action, and Quality Assurance Programs, are adequate (DOE ORR only)."

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.f

Author's Note: Only Section 1 is applicable to PFP.

"Requirements applicable to start-ups or restarts of facilities/activities involving ORRs.

(1) A formal POA, IP, and final report including closure of prestart findings shall be prepared. The resolution of all findings from the ORR shall be documented and maintained with the POA, IP, and the final report. A copy of the contractor POA, IP, and final report shall be included in the DOE final report.

(2) The ORR is a verification of line management having achieved readiness to startup or restart the facility. Therefore, the prerequisite for starting the ORR is that line management certifies that readiness has been achieved. It may be appropriate to conduct ORRs at more than one point in the startup of a facility (e.g., energizing plant electric power system,

introduction of hazardous materials, introduction of fissionable materials to the site, initiation of nuclear operations, or initiation of decontamination and decommissioning). The POA approved by RL shall specify the prerequisites for starting the responsible contractor's ORR; the prerequisites shall address each core requirement determined to be applicable when developing the scope of the ORR. For the DOE ORR, as a minimum, the responsible contractor must have certified by formal correspondence that readiness to startup or restart the facility has been achieved, as documented by the responsible contractor ORR. In addition, the DOE POA shall specify additional prerequisites, such as certification of readiness to oversee facility operations by RL and DOE-HQ management."

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.i

"DOE line management shall appoint and ensure that contractor management appoints ORR teams in accordance with the following requirements.

(1) ORRs shall be conducted by personnel qualified in the technical activities involved.

(2) The DOE and contractor ORR team leaders will determine and document qualifications of the respective ORR team members.

(3) Team Members shall be technically qualified, thoroughly familiar with the activity being reviewed and have experience or training in performance-based review techniques.

(4) The training requirements shall indicate that the ORR team members visit the facility and/or review appropriate facility documentation, prior to the start of the ORR, to gain familiarization with the facility and any proposed changes, as applicable.

(5) The ORR teams shall not include, as senior members, individuals who are responsible for accomplishing the work being reviewed.

(6) Additionally, no ORR team member shall review work for which he or she is directly responsible."

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.l

"When an ORR is deemed necessary, for a less than hazard class 3 facility or activity, the contractor shall prepare a MOU to define the means to be used by the team in determining the approach to be used by the ORR team in documenting the facility's capability for safe startup or restart. The MOU shall be approved by the RL AA."

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.n

"The contractor will be required to perform its ORR after its line management certifies that the facility is ready to operate."

1.7.2.1.1 ***Implementation Plan***

REQUIREMENT SOURCE: RLID5480.31 Attachment 10.4, Section 1.0

"The ORR IP is developed by the team responsible for conducting the ORR. The IP is approved by the team leader designated in the ORR POA. This ORR IP documents not only the process by which the team conducts the review, but also defines the rationale for that process. A "Graded Approach" shall by used in the determination of the scope of the IP (see Attachment 10.10). The documentation includes the selection of CRAs, the review and

assessment methodology, and the procedures by which the team will develop findings and conclusions, and the criteria to be applied to categorize findings as prestart and poststart. The ORR IP is the document that provides for the depth of evaluation of the ORR breadth and execution of other details in the approved ORR POA.

The ORR IP shall provide sufficient detail to serve as both information to management and guidance to the ORR team members. The ORR IP details the objectives and sub-objectives of the review. The team preparing the ORR IP requires a thorough understanding of the facility and its associated issues. Pre-development onsite facility visits and interviews may be required before the ORR IP can be adequately developed.

The ORR IP shall be provided by the team leader through proper channels, to appropriate oversight and higher-level DOE management prior to commencement of the RL ORR.

The following outline provides a preferred format for the ORR IP."

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.m

"The ORR IP is approved by the ORR team leader and used by the ORR team leader to execute the ORR. The team leader will provide the ORR IP through normal channels to the appropriate oversight organizations."

1.7.2.1.2 ***Implementation***

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.p

"The contractor will be required to satisfy all prestart findings of the DOE ORR prior to startup or restart of the facility."

1.7.2.2 Readiness Assessment

REQUIREMENT SOURCE: RLID5480.31 Section 6.e(3)

"For RAs, prepare Readiness Plans for new starts, or as required by MOU for restarts, and submit it to the cognizant RL Line Management for review and approval a minimum of three months prior to the anticipated start date of the contractors RA."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.g

"Requirements applicable to start-ups or restarts of facilities/activities involving RAs.

(1) A MOU between the contractor and RL AAs defining the means to be used by the team in determining the approach to be used by the RA team in documenting the facility's capability for safe startup or restart.

The MOU is the agreement between the contractor and the RL AA as to the level of review for an RA. The MOU shall contain the technical justification for doing an RA, the means of accomplishing the RA, and the AA for the RA. It shall also contain the scope of the RA and the prerequisites for the RA.

The means for performing the RA may be a pre-approved procedure, check list, lines of inquiry, or CRA based. The means is to be based on the graded approach of Attachment 10.10 and shall be documented in the MOU.

(2) A formal Readiness Plan and final report shall be prepared. The resolution of all findings from the RA shall be documented and maintained in the final report.

(3) For new starts of less than hazard category 3 facilities, the RA is a verification of line management having achieved readiness to startup the facility. Therefore, for new starts of less than hazard category 3 facilities, the prerequisite for starting the RA is that line management certifies that readiness has been achieved. The Readiness Plan approved by RL shall specify the prerequisites for starting the responsible contractor's RA. For the RL RA, as a minimum, the responsible contractor must have certified by formal correspondence that readiness to startup or restart the facility has been achieved, as documented by the responsible contractor RA.

(4) For restarts of facilities, both extended and routine, the RA is a verification of line management having achieved readiness to restart the facility. However, the extent of the verification by line management for both the contractor and RL shall be specified in the MOU.

(5) A graded approach shall be used and documented in the MOU for the determination of both contractor and RL involvement in the RA."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.k

Author's Note: Only bullets 1-3 and 8-10 apply to the PFP facility.

"The RA Team Leader is a senior individual (for RL RAs the team leader will be a DOE person) with the necessary qualifications for managing and conducting the RA. The basis of the qualifications should include:

- Technical familiarity with the activities and functional areas being reviewed
- Previous performance-based review experience or training
- Demonstrated leadership and managerial skills.

The RA team leader is responsible for overseeing the RA process, including:

- Defining RA team membership
- Planning, scheduling, coordinating, and conducting the RA
- Compiling or acquiring access to all necessary background information (e.g., description of process equipment and control measures)
- Acting as the team interface with management.

A key responsibility of the team leader is selection and qualification of the team members. Each team member should have the following qualifications, as defined and verified by the team leader:

- Technical knowledge of the area assigned for evaluation. The knowledge shall include working experience in the technical area.
- Knowledge of performance-based assessment processes and methods. This knowledge may be gained through experience as an auditor or inspector, or it may be gained through training and evaluated as acceptable by the team leader.

- Facility specific information, which may be gained through a combination of required reading and facility tours and presentations."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.l

"The contractor will be required to perform its RA after its line management certifies that the facility is ready to operate."

REQUIREMENT SOURCE: RLID5480.31 Section 8.2.n

"The contractor will be required to satisfy all prestart findings of the DOE RA prior to startup or restart of the facility."

1.7.3 Tracking and Closure of Findings

Requirements which specify the process for tracking and closure of review findings, including independent verification of closure, are specified in this subelement.

REQUIREMENT SOURCE: RLID5480.31 Attachment 10.7, Section 3

"The contractor and RL management must prepare corrective action plans for the correction of all findings assigned to each element. The action plan shall be discussed in the closeout meeting, and should contain the following elements:

a. The finding, as written in the report submitted by the ORR team, and whether the finding is a prestart or poststart finding.

b. A detailed proposed action plan for addressing the deficiencies identified in that finding. The proposed action plan shall provide evaluation of any overall programmatic deficiencies or root causes related to a specific finding, which may lead to further similar occurrences, and include actions addressing such deficiencies or root causes. For prestart findings in the DOE ORR, DOE must approve the contractor's proposed corrective action plan.

c. The proposed dates by which the action elements will be completed. If the corrective actions for a finding are phased, then the dates for each phase shall be detailed.

d. If it is a poststart finding, a description of the risks and mitigating actions, if any, to be taken during the interim, which will reduce the risks associated with the finding to an acceptable level before final correction. Include justification that the activity can proceed with acceptable risk. DOE line management shall verify that the corrective action plan has been entered into the appropriate quality program issue management system."

1.7.4 Documentation

Requirements identified in this subelement specify documentation of the ORR, including the final ORR Report and the Readiness to Proceed Memorandum submitted for DOE approval and initiation of the DOE ORR process. Requirements pertaining to maintenance of records and documents is addressed in section 1.8 of this S/RID.

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.q

"Upon completion of the contractor or RL ORR, a final report shall be prepared and approved by the ORR team leader. The final report will document the results of the ORR and the conclusion of the ORR team as to whether startup or restart of the facility can proceed safely.

There shall be a statement in each ORR final report as to whether any identified nonconformances or schedules for gaining compliance with applicable DOE Orders, Secretary of Energy Notices, and Standards/Requirements Identification Documents (SRID) have been justified in writing, have been formally approved, and in the opinion of the ORR team, maintain adequate protection of the public health and safety, worker safety, or the environment. This conclusion will be based on:

(1) Review of the program to document conformance with applicable DOE requirements, including a process to address new requirements. This type of program may be a compliance review program, safety basis development program, or any other appropriate program documenting conformance with applicable requirements.

(2) Extensive use of references to DOE requirements in the ORR documentation.

Additionally, there shall be a "Lessons Learned" section of the final report which may be applied to future ORR efforts. This section may be completed subsequent to facility startup or restart."

REQUIREMENT SOURCE: RLID5480.31 Section 8.1.s

"The final report will be submitted to the AA and used by the AA as a basis to grant approval for the start or restart of the facility."

1.8 DOCUMENT AND DATABASE CONTROL - RECORDS MANAGEMENT

In the context of this element, the term "document" will be used to include policies, procedures, engineering drawings, databases, and other documents or information requiring control and retention.

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.c.(2)

"Retain all supporting information pertaining to each Occurrence Report (e.g., graphs, analyses) in accordance with DOE 1324.5B, RECORDS MANAGEMENT PROGRAM."

1.8.1 Control

1.8.1.1 Document Control Systems

Author's Note: Additional Requirements for this subelement are included in the PFP Quality Assurance Functional Area.

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.3.2.3, Paragraph 6

"Notification of Pending Changes. Pending changes are those for which conceptual design has been approved and the design change is in process, those changes that have been implemented in the field, but for which the document revision has not been completed. The document control organization should provide notice of pending changes to the persons on the controlled distribution list for the document involved. A notice of the pending change should also be attached to, or appropriately referenced on, the affected master document, in order to alert anyone requesting a copy of the document."

1.8.1.2 Computer Use

REQUIREMENT SOURCE: DOE1330.1D Section 8.g

"Each site will have procedures in place which discourage the abuse or misuse of the software operated at the site or any of the data associated with that software. Custom-developed software will have safeguards against abuse or misuse identified and incorporated into the software as early in the development process as possible."

1.8.2 Storage

1.8.2.1 Controls and Facilities for Records Storage

REQUIREMENT SOURCE: DOE1324.3 Chapter I, Section 5.a

"Decentralization of Files.

(1) Departmental policy provides for the maximum feasible decentralization of file stations. This policy provides for placing file stations where they will be readily accessible to those who use them most often. This keeps as many records as practicable in small, usable collections. In small files the difficulty of finding a particular document is reduced because there are fewer papers to search through.

(2) Duplicate file stations consisting of extra copies or other nonrecord material should be established only when official stations are not readily accessible to another group which needs frequent reference to the records."

REQUIREMENT SOURCE: DOE1324.6 Section 15

"RECORDS PROTECTION, PRESERVATION, AND ACCESS RESTRICTION.

Special precautions may need to be taken to ensure the safekeeping of electronically stored data. Before establishing safeguards, the sensitivity of the data should be determined, vulnerabilities identified, and the degree of risk considered. A primary method for identifying and determining the most cost-effective means of protecting such data is through risk assessment, i.e., an orderly process through which potential adverse events can be identified, evaluated, and controlled so as to minimize loss or harm to informational assets. Also, the following items need to be considered:

a. The desirability of retaining a duplicate copy of data (records) as a backup in the event that a recovery should be necessary. Backup copies should be stored in a different area to prevent possible destruction by the same source that destroyed the originals. The organization that supplies software (e.g.,application packages) must be consulted to ensure compliance with copyright provisions before any software can be copied.

b. The necessity for requiring physical security, i.e., limiting physical access to the hardware, assuring fire protection, maintaining an inventory, prohibiting smoking, drinking, or eating near the hardware.

c. Procedures for using the equipment and records may need to be examined to ensure that only authorized persons have access. Provisions of the Privacy Act require the protection of sensitive information. The use of passwords is one technical method of minimizing the possibility of unauthorized access. However, passwords must be adequately protected.

d. Further protection may be afforded the data by using encryption equipment or software that can either transmit or store data in encoded form.

e. Unclassified, sensitive electronic records shall not be processed without the express written approval of the Computer Protection Program Manager in accordance with DOE 1360.2, page 5, paragraph 6c(1), which states: "For new or significantly changed sensitive computer applications, protection specifications must be reviewed and approved in writing by the Computer Protection Program Manager prior to commencing acquisition or programming action." Consult him or her also for any specific requirements for processing unclassified data applications, e.g., color coded or specifically marked diskettes. In the Computer Protection Program Manager must certify "That new or significantly changed sensitive computer applications are designed reviewed and system tested prior to operational use... Upon successful completion of the system test, the Computer Protection Program Manager shall certify that the system meets the documented and approved system protection specifications; related applicable Federal policies, regulations, and standards; and that the results of the test demonstrate that the protection provisions are adequate to safeguard the sensitive data processed.""

1.8.3 Retention and Disposal

1.8.3.1 Controls for Records Retention and Storage Media

REQUIREMENT SOURCE: DOE1324.2A Preamble, Section 9.c

"Develop a planned approach to retire or transfer records no longer required for current activities to lower cost storage with a preference for use of Federal Records Centers over local records holding areas."

1.9 LESSONS LEARNED

The Lessons Learned (LL) program interfaces with all functional areas and programs since LL can originate from any source. PFP provides identified lessons learned to the site LL coordinator who ensures appropriate distribution.

REQUIREMENT SOURCE: DOE-O-232.1 Part 4.c.(3)

"Collect and disseminate to their personnel the lessons learned from the facility's respective occurrences and the operations information obtained from other similar DOE facilities."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.7, Sentence 1

"In-house events should be evaluated by the operations supervisor to determine if the event should be included in the training program for operations personnel."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VI, Section C.7, Sentence 3

"A mechanism should exist so that appropriate shift personnel could be immediately trained on an event when they next report for work."

1.10 KEY INTERFACES

The Management Systems Functional Area is a collection of systems and processes which service all other functional areas. Interfaces with the various Management Systems elements are identified by the other functional areas.

All the other functional areas interface with Management Systems for requirements/standards related to:

- Aspects of functional area management and administration regarding the need for policies and procedures, definition of an organizational structure, staffing, training, and qualification;
- Policy and procedure preparation, review, approval, control, and maintenance.
- Issue management systems for the identification, evaluation, and prioritization of issues, determination of root causes, and the development, tracking, and completion of appropriate corrective action;
- Compliance management processes for the identification and implementation of new and changed requirements/standards;
- Management assessments for the evaluation of PFP activities to determine the degree of compliance with applicable requirements/standards;
- Identification, categorization, notification, reporting, investigation, and tracking of occurrences;
- Operational readiness reviews and readiness assessments;
- Document control systems to ensure current documents are available to and used by PFP personnel;
- Records storage provisions to ensure records generated at PFP are available for future reference;
- Records disposition measures to ensure records generated at PFP are retained only until their specified retentions; and
- Lessons learned processes for the identification and dissemination of information regarding PFP activities and events to permit continuation of those that are desirable and prevention of those that are not.

Specific interfaces between PFP functional areas are discussed in the following sections.

1.10.1 Quality Assurance

Sub-elements 1.1.1 and 1.1.2 interface with the Quality Assurance Functional Area for requirements/standards related to the need for:

- Procedures, instructions, and other appropriate means to perform work at PFP;
- An organizational structure, functional responsibilities, levels of authority, and interfaces for the managing, performing, and assessing work at PFP.

1.10.2 Configuration Management

Sub-element 1.8.1 interfaces with the Configuration Management Functional Area for requirements/standards related to measures for the protection of master copies of PFP documents.

1.10.3 Training and Qualification

The Training and Qualification Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.4 Emergency Management

The Emergency Management Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.5 Safeguards and Security

The Safeguards and Security Functional Area for PFP has no interface with Management Systems beyond those discussed above.

1.10.6 Engineering

The Engineering Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.7 Operations

Sub-elements 1.1.1 and 1.2.1 interface with the Operations Functional Area for PFP for requirements/standards related to definition of:

- The need for policies and procedures to support operations at PFP;
- The general content of polices governing PFP operations.

1.10.8 Maintenance

The Maintenance Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.9 Radiation Protection

The Radiation Protection Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.10 Fire Protection

The Fire Protection Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.11 Packaging and Transportation

The Packaging and Transportation Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.12 Waste Management

The Waste Management Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.13 Nuclear Safety

Sub-element 1.2.2 interfaces with the Nuclear Safety Functional Area for PFP for requirements/standards related to safety evaluations for Unreviewed Questions.

1.10.14 Occupational Safety and Health

The Occupational Safety and Health Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.10.15 Environmental Protection

The Environmental Protection Functional Area for PFP has no interfaces with Management Systems beyond those discussed above.

1.11 REFERENCES

1.11.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this S/RID:

10 CFR 830, Nuclear Safety Management, Part 120, Quality Assurance Requirements, 5/5/94.

DOE O 232.1, Occurrence Reporting and Processing of Operations Information, 10/30/95.

DOE 1324.2A, Records Disposition, 9/13/88; Change 1, 4/9/92.

DOE 1324.3, Files Management, 3/2/81; Change 1, 4/9/92.

DOE 1324.6, Automated Office Electronic Recordkeeping, 7/8/87; Change 1, 6/12/92.

DOE 1330.1D, Computer Software Management, 5/18/92.

DOE 5480.19, Conduct of Operations Requirements for DOE Facilities, 7/9/90; Change 1, 5/18/92.

DOE 5480.26, Trending and Analysis of Operations Information Using Performance Indicators, 1/15/93.

DOE-STD-1073-93, Guide to Operational Configuration Management Program, 11/93.

RLID 5480.31, Startup and Restart of Facilities Operational Readiness Review and Readiness Assessments, 09/26/94.

1.11.2 **Reviewed Documents Not Used as Requirement Sources**

The following documents were reviewed as requirement sources but were not used in the development of this S/RID:

10 CFR 50 Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, 3/25/94.

DOE 1300.2A, DOE Technical Standards Program, 5/19/92.

DOE 1324.4A, Micrographics Management, 5/18/92.

DOE 1324.5A, Records Management Program, 4/30/92.

DOE 1340.1B, Management of Public Communications Publications and Scientific, Technical, and Engineering Publications, 1/7/93.

DOE 1360.1B, Acquisition and Management of Computing Resources, 1/7/93.

DOE 1360.6A, ADP Equipment/Data Systems, 11/12/92.

DOE 1430.1D, Scientific and Technical Information Management, 6/30/94.

DOE 1430.2B, Scientific and Technical Information Management Program, 2/25/93.

DOE 1430.4A, Library Services, 5/18/92.

DOE 2300.1B, Audit Resolution and Followup, 6/8/92.

DOE 2320.1C, Cooperation with the Inspector General, 5/18/92.

DOE 2320.2B, Establishment of Departmental Position on Inspector General Reports, 5/18/92.

DOE 3220.1A, Management of Contractor Personnel Policies and Programs, 5/14/92.

DOE 3220.3A, Human Resource Development for M&O Contractors, 5/18/92.

DOE 3410.1B, Training Management Plan; Change 2, 5/18/92.

DOE 4320.2A, Capital Assessment Management Process, 2/10/94.

DOE 4330.4B, Maintenance Management Program, 2/10/94.

DOE 4700.1, Project Management System, 3/6/87; Change 1, 6/2/92.

DOE 5000.3B, Occurrence Reporting and Processing of Operations Information, 1/19/93; Change 1, 7/2/93.

DOE 5480.20A, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities; Change 1, 11/15/94.

DOE 5480.21, Unreviewed Safety Questions, 12/24/91.

DOE 5480.22, Technical Safety Requirements, 2/25/92; Change 1, 9/15/92.

DOE 5480.23, Nuclear Safety Analysis Reports, 4/03/92; Change 1, 3/10/94.

DOE 5480.29, Employee Concerns Management System, 1/15/93.

DOE 5480.31, Startup and Restart of Nuclear Facilities, 9/15/93.

DOE 5482.1B, Environmental, Safety, and Health Appraisal Program, 9/23/86; Change 1, 11/18/91.

DOE 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements, 2/24/81; Change 7, 10/17/90.

DOE 5500.1B, Emergency Management System, 4/30/91; Change 1, 2/27/92.

DOE 5500.2B, Emergency Categories, Classes, and Notification and Reporting Requirements, 4/30/91; Change 1, 2/27/92.

DOE 5500.3A, Planning and Preparedness for Operational Emergencies, 4/30/91; Change 1, 2/27/92.

DOE 5632.5, Physical Protection of Classified Matter, 12/3/88; Change 1, 7/30/93.

DOE 5635.1A, Control of Classified Documents and Information, 2/12/88.

DOE 5639.1, Information Security Program, 10/19/92.

DOE 5650.2B, Identification of Classified Information, 12/31/90; Change 2, 4/28/93.

DOE 5650.3A, Identification of Unclassified Controlled Nuclear Information, 6/8/92.

DOE/EH 0135, Criteria for Technical Safety Appraisals, 4/90.

DOE-STD-3006-93, Planning and Conduct of Operational Readiness Reviews, 11/93.

DOE NE/SP-0001T, Writer's Guide for Technical Procedures, 9/91.

DOE-SAGD, Self Assessment Guidance Document, 12/92.

RL 5482.1B, ES&H QA Appraisal and Surveillance Program, 3/4/87.

NUREG-0899, Guidelines for Preparation of Emergency Operating Procedures, 8/82.

ASME-NQA-1-1994, Quality Assurance Program Requirements for Nuclear Facility Applications, 1994.

BMP-86-024, Software Controls for Plant Computers, 12/91.

BMP-85-026, Writing Guidelines for Maintenance, Test, and Calibration Procedures, 6/85.

BMP-90-015, Performance Objectives and Criteria for Operating and Near Term Operating License Plants, 8/90.

TABLE OF CONTENTS

2.0 QUALITY ASSURANCE 1

2.1 MANAGEMENT AND ADMINISTRATION 3

2.2 QUALITY ASSURANCE PROGRAM 3

2.3 TRAINING AND QUALIFICATION OF PERSONNEL 3

2.4 QUALITY IMPROVEMENT 3

2.5 DOCUMENTS AND RECORDS 3

2.6 WORK PROCESSES 4

2.7 DESIGN 4

2.8 PROCUREMENT 4

2.9 INSPECTION AND ACCEPTANCE TESTING 4

2.10 MANAGEMENT ASSESSMENT 5

2.11 INDEPENDENT ASSESSMENT 5

2.12 KEY INTERFACES 5

2.12.1 Training and Qualification 5
2.12.2 Management Systems 5
2.12.3 Construction 5
2.12.4 Maintenance 5
2.12.5 Engineering Program 6
2.12.6 Environmental Protection 6

2.13 REFERENCES 6

2.13.1 Requirement Source Documents 6
2.13.2 Reviewed Documents Not Used as Requirement Sources 6

2.0 QUALITY ASSURANCE

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Quality Assurance Functional Area describes programmatic controls, activities, personnel, and programs involved in executing Quality Assurance activities, as such activities are included in the current mission of the facility.

The definition of a Quality Assurance Program, as specified by this document, is intended to address Defense Nuclear Facilities Safety Board Recommendation 90-2, which calls for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders. The PFP is considered a nuclear facility, therefore, requirements included are citations directly extracted from 10 CFR 830.120, "Quality Assurance Requirements."

The Quality Assurance Program is outlined in this document in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements. The specific 10 CFR 830.120 requirement that serves as the basis for each element is identified and aligned accordingly.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to PFP, but are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words "shall" and "should" in requirements statements both indicate mandatory compliance. The Key Interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements.

The company-level QA Functional Area Document addresses QA requirements which are implemented at a company level. These company-level QA requirements apply to Management and Administration of the WHC QA Program, Standards Laboratory control of Measurement and Test Equipment (M&TE), independent assessment, and corrective action activities.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at the PFP include:

Stabilizing reactive residual plutonium-bearing materials at the PFP to a form suitable for long-term storage;

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use; and,

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and cleanup of radioactive surface contamination as well as routine operations and maintenance.

The requirements of this functional area document are addressed in the latest DOE-approved revision of the Westinghouse Hanford Company Quality Assurance Program and Implementation Plan (Implementation of Title 10 Code of Federal Regulations Part 830.120), WHC-SP-1131.

2.1 MANAGEMENT AND ADMINISTRATION

Author's Note: The requirements for Management and Administration of the WHC QA Program are included in the company-level Quality Assurance Functional Area Document for implementation.

2.2 QUALITY ASSURANCE PROGRAM

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(1)(i)

"Program. A written QAP shall be developed, implemented, and maintained. The QAP shall describe the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing the work. The QAP shall describe management processes, including planning, scheduling, and resource considerations."

2.3 TRAINING AND QUALIFICATION OF PERSONNEL

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(1)(ii)

"Personnel Training and Qualification. Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained."

2.4 QUALITY IMPROVEMENT

Author's Note: The company corrective action management system [Hanford Action Tracking System (HATS)] is implemented at the company level and requires use by the facilities.

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(1)(iii)

"Quality Improvement.

Processes to detect and prevent quality problems shall be established and implemented. Items, services, and processes that do not meet established requirements shall be identified, controlled, and corrected according to the importance of the problem and the work affected. Correction shall include identifying the causes of problems and working to prevent recurrence. Item characteristics, process implementation, and other quality-related information shall be reviewed and the data analyzed to identify items, services, and processes needing improvement."

2.5 DOCUMENTS AND RECORDS

Author's Note: The document control and records storage and retrieval processes have been deferred to the PFP Management Systems Functional Area Document.

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(1)(iv)

"Documents and Records.

Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained."

2.6 WORK PROCESSES

Author's Note: As discussed in the ES&H Configuration Guide, requirements for monitoring, surveillance, and inspection activities which, upon implementation, prevent, detect, and mitigate the release of harmful materials into the environment by providing for the collection, preparation, analysis, validation, verification, and documentation of environmental data are addressed in the PFP Environmental Protection (EP) Functional Area Document. Specifically, requirements have been extracted from the following source documents and included in Element 20.3 (Environmental Monitoring, Surveillance, and Inspections) of the PFP EP Functional Area Document:

- WAC 246-247 (Section 075), "Radioactive Air Emissions"

- 40 CFR 61 (Subpart 93), "National Emission Standards for Hazardous Air Pollutants (NESHAPS)"

- TPA (Attachment 2, Section 6.5), "Hanford Federal Facility Agreement and Consent Order [Tri-Party Agreement (TPA)]"

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(i)

"Work Processes. Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained."

2.7 DESIGN

Author's Note: Specific requirements for design have been deferred to the PFP Engineering Program Functional Area Document.

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(ii)

"Design. Items and processes shall be designed using sound engineering/scientific principles and appropriate standards. Design work, including changes, shall incorporate applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be verified or validated by individuals or groups other than those who performed the work. Verification and validation work shall be completed before approval and implementation of the design."

2.8 PROCUREMENT

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(iii)

"Procurement. Procured items and services shall meet established requirements and perform as specified. Prospective suppliers shall be evaluated and selected on the basis of specified criteria. Processes to ensure that approved suppliers continue to provide acceptable items and services shall be established and implemented."

2.9 INSPECTION AND ACCEPTANCE TESTING

Author's Note: Calibration requirements for the Standards Lab control of Measurement and Test Equipment (M&TE) are addressed in the company-level QA Functional Area Document.

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(iv)

"Inspection and Acceptance Testing. Inspection and testing of specified items, services, and processes shall be conducted using established acceptance and performance criteria. Equipment used for inspections and tests shall be calibrated and maintained."

2.10 MANAGEMENT ASSESSMENT

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(3)(i)

"Management Assessment.

Managers shall assess their management processes. Problems that hinder the organization from achieving its objectives shall be identified and corrected."

2.11 INDEPENDENT ASSESSMENT

Author's Note: The area of audits and assessments is a major interface with all organizations in the dissemination of audit and assessment results and follow-up and closure of audit findings and assessment deficiencies or recommendations. Requirements for this element are addressed in the company-level QA Functional Area Document. The PFP is committed to having independent assessments conducted in accordance with the company-level QA Functional Area Document.

2.12 KEY INTERFACES

2.12.1 Training and Qualification

The QA Functional Area includes the requirement that personnel shall be trained and qualified to ensure they are capable to perform their assigned work. The Training and Qualification Functional Area addresses, in detail, the general and specialized training requirements which are necessary to satisfy the QA requirement.

2.12.2 Management Systems

Requirements for Tracking and Trending Analysis of identified QA issues are addressed in the PFP Management Systems Functional Area Document. Document Control and records management processes established in the PFP Management Systems Functional Area Document apply to QA records.

2.12.3 Construction

The PFP Construction Functional Area Document incorporates QA requirements for construction program controls which are imposed by incorporation of appropriate quality assurance clauses in construction management and construction contracts, and implemented through procedures and instructions.

2.12.4 Maintenance

The PFP QA Functional Area Document specifies oversight and inspection requirements. The PFP Maintenance Functional Area has incorporated into its processes controls for ensuring inspections are complete, quality problems are detected and prevented, and quality improvement measures are imposed.

2.12.5 Engineering Program

The PFP Engineering Program Functional Area Document has incorporated QA requirements to ensure that appropriate controls are imposed for design processes and related activities.

2.12.6 Environmental Protection

The QA Functional Area addresses control of work processes which would include requirements pertaining to monitoring, surveillance, and testing activities. Per the ES&H Configuration Guide, the PFP EP Functional Area Document discusses these activities and has included QA requirements that provide programmatic controls and describe methods of implementation.

2.13 REFERENCES

2.13.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this Functional Area Document:

10 CFR Part 830, Nuclear Safety Management, Effective May 5, 1994

2.13.2 Reviewed Documents Not Used as Requirement Sources

The following documents were reviewed but were not used in the development of this Functional Area Document:

10 CFR 50 Appendix A, General Design Criteria for Nuclear Power Plants

10 CFR 50 Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Processing Plants

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DOE Order 5700.6C, Quality Assurance, 08/21/91

DOE/RW/0333P, QA Requirements and Description for the Civilian Radioactive Waste Management Program, 12/18/92

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International Organization for Standardization (ISO) 9004-1987, Quality Management and Quality System Elements-Guidelines

International Atomic Energy Agency (IAEA) International Nuclear Safety Advisory Group's Safety Series No. 75-INSAG-3, Basic Safety Principles for Nuclear Power Plants Use

U.S. EPA, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans (QAMS-005/80), 12/29/80

NUREG 1293 Rev. 1, Quality Assurance Guidance for a Low-Level Radioactive Waste Disposal Facility

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TABLE OF CONTENTS

3.0 CONFIGURATION MANAGEMENT 1

3.1 MANAGEMENT AND ADMINISTRATION 3

3.1.1 Program Boundary Definition 4
3.1.2 Program Assessment 4
3.1.3 Document and Database Control 6
3.1.4 Training 7
3.1.5 Graded Approach 8

3.2 TECHNICAL BASELINE 8

3.2.1 Establishing The Technical Baseline 8
3.2.2 Reconstitution of the Technical Baseline 8

3.3 CHANGE CONTROL 9

3.4 KEY INTERFACES 10

3.4.1 Management Systems 10
3.4.2 Engineering Program 10
3.4.3 Operations 10
3.4.4 Maintenance 11
3.4.5 Nuclear Safety 11
3.4.6 Training and Qualification 11
3.4.7 Quality Assurance 11
3.4.8 Radiation Protection 11
3.4.9 Fire Protection 11

3.5 REFERENCES 12

3.5.1 Requirement Source Documents 12
3.5.2 Reviewed Documents Not Used as Requirement Sources 12

3.0 CONFIGURATION MANAGEMENT

INTRODUCTION

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Configuration Management Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Configuration Management activities, as such activities are included in the current mission of the facility.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to PFP, but are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words "shall" and "should" in requirements statements both indicate mandatory compliance. The Key interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements.

The Configuration Management Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. Additional subelements were added to the basic format for further definition and clarity. Subelements 3.4.6, 3.4.7, 3.4.8, and 3.4.9 were added to identify Training and Qualification, Quality assurance, Radiation and Protection and Fire Protection interfaces respectively was added to define the training interface with Configuration Management. Element 3.5 was added to define the references utilized.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

3.1 MANAGEMENT AND ADMINISTRATION

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(i)

"Work Processes. Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.2, Paragraph 6

"The program management element should provide policy and procedures to ensure that important vendor activities and information are consistent with the CM program. The CM program should provide for the review and approval of vendor procedures prior to the commencement of work or impose the use of facility procedures in all work performed at the facility. In addition, acceptance criteria should be established by the facility to define when vendor work has been completed satisfactorily and is ready for turnover to the facility. After turnover, vendor information used by facility personnel should be incorporated directly into the facility document control program and kept current. The facility should have sufficient resources and talent to judge the quality of work and ensure adequate control over vendor activities. Vendor control measures might need to be implemented by contractor interface agreements and formal contracts, as appropriate."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.4.1, Paragraph 1

"Program management involves careful planning and effective controls to ensure that the effort is credible, timely, and cost-effective. Starting from the program, facilities should prepare action plans to provide further detail, as needed, on those program plan topics related to program development and implementation. These plans should serve as an important vehicle to get the various organizations and personnel at the facility to understand, accept, and support CM development efforts. They are the primary management tool for coordinating development and implementation activities; they should integrate and focus these activities to ensure that they can be implemented successfully, managed effectively, and monitored for progress. Configuration management action plans should be established following DOE review of the CM program plan and before program development commences."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.4.2, Paragraph 1

"Configuration management governing procedures should be developed after the CM program plan has been reviewed by DOE and should support the action plan. Governing procedures should be developed for each CM program element and adjunct program and should address each program element function and its relationships. The CM program plan should identify the CM governing procedures that will be developed."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.4.3, Paragraph 1

"The program management element should also ensure that appropriate implementing procedures prepared for each CM program function. In contrast with governing procedures, the implementing procedures provide the detailed instructions for carrying out CM program functions. Implementing procedures are developed for individual program elements as needed. The size of the operating organization influences the need to proceduralize CM activities; the larger the organization and the more numerous the interfaces, the greater the need for procedural controls."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.2.1.2, Paragraph 1

"The operational CM program should establish formal criteria for the design and construction turnover of new facilities or new modifications. When an effective interface can be established early in the design process, it is more likely that the needed design products will be provided and turnover can be successful. To ensure effective turnover, the operational CM program should (1) specify the format and content of design basis and design output documents at design inception to ensure that they will be compatible with the CM program needs, (2) periodically monitor the preparation of design basis and design output documents, and (3) provide review and approval of the format and content of final design basis and final design output documents and accept responsibility for their configuration management at turnover."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.2.1.5, Paragraph 1

"The CM equipment database should be established to cross-reference the CM program SSC's with their design requirements, design basis, and associated documents. It should use the BEST Available Design Information to fill the database fields. The Best Available Design Information comes from three basic sources:

(1) existing design information,
(2) new or revised design information, and
(3) reconstituted design information."

3.1.1 Program Boundary Definition

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.1.2, Paragraph 1

"The types of equipment to be included in the CM program should be identified. The equipment scope of the CM program should be based on the functions provided by the SSCs and should include those SSCs involving safety design requirements (those necessary to protect off-site personnel, on-site personnel, and facility workers from nuclear and other hazards), environmental design requirements (those necessary to protect the environment from significant damage or to satisfy environmental requirements or permits), and mission design requirements (those necessary to avoid substantial interruptions of the programmatic mission or severe cost impacts)."

3.1.2 Program Assessment

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.5.1, Paragraph a

"Initial assessments. During the planning for the CM program, initial assessments should be conducted to determine the strengths and weaknesses of existing programs and procedures with regard to determining where upgrade actions and resource investments are necessary. Two vertical slice assessments relevant to the facility should be conducted. One of these should be on a safety system related to the principal facility hazard, either nuclear or non-nuclear. Two horizontal slice assessments relevant to the facility should also be performed. One of these should be on change control and the other on a technical topical area, such as seismic qualification or fire protection."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.5.1, Paragraph b

"Post-implementation assessments. After the CM program upgrades are implemented, a horizontal slice assessment should be performed for each CM program element to determine if that element addresses identified weaknesses and is effective in accomplishing the CM functions. For each system design information summary (DIS) developed by the DR adjunct program, a field validation should be performed to ensure that the design requirements are accurately reflected in the physical configuration

and the associated facility documentation. After the MCA adjunct program is developed, a technical quality review should be performed of its assumptions, methods, and products."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.5.1, Paragraph c

"Periodic effectiveness assessments. After the CM program and its adjunct programs have been implemented, a combination of vertical and horizontal slice assessments should be performed periodically to measure the overall CM program effectiveness and to determine if CM controls are adequate and appropriate. The results of these assessments should establish the basis for revisions to the CM program plan, either increasing or decreasing controls."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.5.2

"Physical configuration assessments, or walkdowns, should be performed for representative sample SSCs to determine the degree of agreement between the physical configuration and the configuration depicted in the facility documentation. Physical walkdowns should be included as part of the programmatic assessments conducted during the initial assessments, post-implementation assessments, and periodic effectiveness assessments. If substantive discrepancies (either in number or type) are discovered, appropriate immediate corrective actions should be developed to establish agreement between the physical configuration and the documentation. The corrective actions should include additional walkdowns to characterize the problem and to determine the extent of the problem. They should also include technical evaluations to determine whether the physical configuration or the documentation should be changed."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.5.3

"Structures, systems, and components within the CM program should be tested periodically to determine if they are still capable of meeting their design requirements. This monitoring should also address surveillance actions, periodic in-service inspections and tests, and other monitoring of SSCs to ensure safe and reliable operation of the facility. Monitoring should also include measurements and trending of data related to the actual aging degradation of equipment, to the extent identified by the MCA adjunct program and approved by the design authority."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.5.4

"An SSC within the CM program should be tested after modification (and before being turned over for service) to determine if it is capable of meeting its design requirements (i.e., the post-implementation acceptance criteria). If a changed SSC fails to meet its post-implementation acceptance criteria, turnover for operation should be postponed until either a technical review has been completed and any follow-up actions are completed or until the SSC is returned to its original condition and tested satisfactorily."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.3.1.1, Paragraph 2

"First, a complete survey of document types in use should be conducted with support of the various organizations at the facility. Each organization should identify the document types it prepares and the important document types it uses. Document types identified during the initial assessments should also be addressed."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.5.3.1

"These assessments periodically examine existing functions and processes related to the CM program to ensure their continued effectiveness and to identify improvements and enhancements, if needed. Similar to the initial assessments, periodic program effectiveness assessments use a combination of

vertical slice and horizontal slice assessment methods. Objective measures and criteria to assess effectiveness should be defined and used. These periodic assessments should be used as the technical basis for adjusting the CM program by increasing or decreasing the controls. Periodic program assessment should be performed at sufficient intervals (such as every 3 years for full vertical slice or horizontal slice assessments) after implementation to provide management with the assurance that these CM control programs are functioning as intended."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.5.3.3, Paragraph 3

"Performance monitoring programs should be implemented to routinely monitor, collect (using calibrated instrumentation), trend, and analyze performance data (including thermal, hydraulic, electrical, and mechanical data) for SSC's within the CM program. The methods of implementation should include procedures, checklists, or other guidance documents necessary to conduct these activities. Specific facility personnel, such as system engineers, should be assigned to each SSC and held responsible for establishment of performance monitoring activities on assigned SSC's. This responsibility should include the establishment of performance goals and acceptance criteria consistent with the associated SSC design requirements. Examples of major tests that should be included in the performance monitoring program are as follows:
-Heat exchanger performance tests (e.g., fouling and heat transfer rate)
-Pump performance tests (e.g., head versus flow tests)
-Valve performance tests (including stroke times)
-Vibration monitoring for major rotating equipment
-Battery capacity and performance tests
-Other major equipment tests, as applicable (e.g., diesel generators and inverters)"

3.1.3 Document and Database Control

Note: Requirement DOE-STD-1079-93 Chapter 2, Section 2.2.1.5, Paragraph 1 as located in element 3.1 is also applicable to this sub-element.

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(1)(iv)

"Documents and Records.

Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.1.5

"Databases for use in the identification, storage, control and retrieval of information important to configuration management should be established, and policy and criteria for their use should be defined."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.3, Paragraph 2

"Well coordinated and controlled databases become primary focal points of effective CM programs. There are two general types of CM databases that need to be established and controlled: equipment databases and document databases. Equipment databases contain and correlate information about the SSC's within the CM program, while document databases convey information about the documents, including their status. Both databases provide information useful for the evaluation of changes. Properly designed and well-managed equipment and document databases are essential configuration management tools; they support many functions important to safe facility operation. Such databases are

included in the scope of the CM program because they contain and correlate vital configuration management information."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.3, Paragraph 3

"Because of the importance of these databases to the CM program, the program management element should define policies and procedures for establishing and controlling them. A site/division CM directive could be used to define general policy and criteria for CM equipment and document databases. The CM program plans should discuss the steps necessary for developing (or validating) and controlling these databases."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.3, Paragraph 7, Sentence 2

"Special controls should be instituted to ensure that any database used for configuration management purposes will be protected to prevent inadvertent or unauthorized changes of the data."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.3, Paragraph 8

"Equipment databases should specify equipment classifications, contain or reference equipment design requirements, and cross-reference supporting CM information. These databases should provide current information on facility SSC's and associated documents within the CM program, with emphasis on design documents. An approach that has proven successful elsewhere is the development of a computerized CM master equipment database that includes every facility component. Each component is assigned a unique identifier based on system, component type, and component function before it is included in the database. This database can serve as the primary source of descriptive, testing, and operational data on hardware and instrumentation. Equipment databases are discussed further in the implementation guidance for the design requirements program element."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.3.2.4, Paragraph 3

"As defined in the program criteria, the document database should have the capability to identify documents within the CM program on the basis of their relationship to particular SSC's (such as a particular pump), types of SSC's (such as motor-operated valves), technical topics (such as fire protection), and other relational data (such as the specific vendor) necessary for the identification of documents. This information should be integrated with the types of information discussed above (e.g., information regarding pending changes) for document control and tracking. Consideration should be given to assigning key words or using fully searchable text files for the most important documents."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.3.2.4, Paragraph 4, Sent. 1 and 6

"Availability and retrieval times should be based on the needs of document owners and users. This should be followed by periodic monitoring to ensure that document retrieval requirements continue to be adequate."

3.1.4 Training

Training requirements are addressed in the Training and Qualification Functional Area Document.

3.1.5 Graded Approach

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.4.2.5, Paragraph 1

"The graded approach involves both the assignment of grades and the subsequent application of those grades in determining the degree of implementation. The importance and priorities of SSCs within a facility need to be considered within the context of the overall importance of the facility. The objective is to ensure that the highest level of attention and resources is applied to the most important SSCs at the most important facilities. Grading should focus on avoiding the cost of applying high levels of attention where such attention is not warranted. It is important that the grading system include consideration of both the overall facility importance grade and the importance grades for the SSCs within the facility."

3.2 TECHNICAL BASELINE

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.2.1, Paragraph c

"The design requirements should be incorporated into an equipment database that correlates each SSC with the SSC grade, the design requirements, technical topics involved, and associated documentation."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.2.1, Paragraph d

"The design requirements for new facilities and modifications to existing facilities should be established, categorized, and documented as they are developed, in a form amenable to review and addition to the equipment database."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.2.2

"The boundaries for each system and process should be established in such a manner as to contain the components necessary to satisfy the design requirements for that system or process."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.2.3

"Each SSC should be assigned a grade based on the most important type of design requirements applicable to it. The SSC grade should be used as the basis for the degree of control on all activities associated with the SSC."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.2.4

"On the basis of the equipment scope criteria and the assignment of SSC grades, the specific SSCs included in the CM program should be identified."

3.2.1 Establishing The Technical Baseline

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.2.5, Paragraph b

"The design basis for new or modified design requirements should be established and documented as these requirements are developed."

3.2.2 Reconstitution of the Technical Baseline

Note: This subelement is not applicable to PFP.

3.3 CHANGE CONTROL

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(ii)

"Design. Items and processes shall be designed using sound engineering/scientific principles and appropriate standards. Design work, including changes, shall incorporate applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be verified or validated by individuals or groups other than those who performed the work. Verification and validation work shall be completed before approval and implementation of the design."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.4.2

"Each specific proposed change should be reviewed to determine if it is within the bounds of the design requirements. Changes to the design requirements should be evaluated and approved by design authority prior to implementation. The technical reviews should evaluate safety, environmental, and mission impacts; determine appropriate post-implementation acceptance criteria; and identify the affected SSCs and facility documentation."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.4.3

"Before implementation, management should review proposed changes (including those that do not involve a change to design requirements) to verify that the technical reviews have been performed adequately, that the change package is complete and ready for implementation, and that any external approvals necessary prior to implementation have been obtained. On the basis of these reviews, management should take approval action."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.4.4

Author's Note: Criterion 1.3.5.4 in section 3.1.2.

"Each change should be implemented in accordance with its approved change package. The change process should include mechanisms for field change requests, and technical reviews and approvals of field changes should be commensurate with those of the original change package. The change process should generate accurate as-built information. After the physical implementation of changes, post-modification testing should be conducted (see criterion 1.3.5.4)."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.4.5

"Each change should be documented and that documentation should include a description of the change, as well as an account of the technical reviews, management approvals, as-built information, and post-modification test results. Documents that are included in the CM program and are affected by a change, either directly or indirectly, should be revised."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.4.1.1, Paragraph 2, Sentence 4

"Mechanisms for temporary physical changes and temporary document changes should be identified for formal change control."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.4.1.2, Paragraph 1

"After the various sources of change have been identified, a determination should be made regarding which of those processes alter the configuration and therefore need formal controls. Formal control

measures should be provided for any change process that affects either (1) the physical configuration, as defined by the SSC's included in the CM program or (2) the facility documents included in the CM program. An example of a change mechanism that might be out of scope is the control of scaffolding that cannot affect an SSC within the CM program (i.e., no system interaction through falling, etc.) or its associated documentation."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.4.2.1

"Specific changes should be identified only within established change processes. The need for a potential change may be identified by anyone within the facility and should be documented by the requester to support the processing of the change request. As defined by the CM program criteria, each proposed change should be described adequately to support technical and management reviews prior to approval. Change initiation should include the name of the requester, a description of the proposed change, the affected SSCs and associated SSC grade, the reason for the change, alternative solutions, due date, and constraints. It should also include any other information needed for review, tracking, approval and further processing."

3.4 KEY INTERFACES

3.4.1 Management Systems

The CM Functional Area interfaces with several elements of Management Systems. Issue Management should provide a process for the handling of possible discrepancies between a reconstituted technical baseline and the existing configuration. Compliance Assessment should be used to verify CM Program conformance to requirements.

CM policies and procedures and supporting requirements for Document Control Records Management are elements of the Management Systems Functional Area. Management Systems provides the necessary infrastructure and ensures that positive administrative controls are in place to support CM Program development, implementation, and maintenance. CM policies and procedures must be developed and promulgated by management in accordance with requirements identified in the Management Systems Functional Area.

3.4.2 Engineering Program

The Engineering Program Functional Area should provide for the establishment and maintenance of the engineering related technical requirements and should include technical review of changes within the scope of the CM Program. Material Condition and Aging is covered in the Engineering Program Functional Area.

The design process is established in accordance with requirements specified in the Engineering Program Functional Area. The CM Program must effectively control the data and information that is used as design input and created as design output by the Engineering Program function.

3.4.3 Operations

Operational activities can contribute to inadvertent and undocumented changes that may deviate from the established technical baseline. The Operations Functional Area should provide requirements to ensure that the proper technical reviews to guard against these kinds of changes are conducted.

The CM Program ensures the adequacy, accuracy, and currency of the drawings, procedures, and data/information used to operate the facility. The technical requirements identified and controlled by the CM Program are used by procedure developers and operators to control equipment and systems

within safe operating envelopes. Changes to either the design or the equipment installed are translated to effective operations via the CM process.

3.4.4 Maintenance

Maintenance activities contribute significantly to changes in the configuration, and the Maintenance Functional Area should provide for requirements and technical reviews to guard against inadvertent configuration changes.

The interface between the Maintenance functional element and CM include the provision of as-built drawings, vendor documentation and design data, and information to support conduct of maintenance/work activities and maintenance procedure development. Maintenance activities can also contribute to configuration changes in the accomplishment of work (spare part replacements and minor modifications).

3.4.5 Nuclear Safety

The Nuclear Safety Functional Area should include the appropriate safety requirements which are included in the technical baseline which forms the foundation of the CM Program and that technical reviews conducted on changes incorporate the needed nuclear safety attributes.

The CM Program helps ensure that the information used for Nuclear Safety analyses is accurate, complete, and up-to-date. The CM process should ensure that the impact of design and facility changes will be identified and addressed to ensure that the SSCs are operated and maintained within the maximum safe limits.

3.4.6 Training and Qualification

Training is required for personnel to perform certain CM Program specific activities. Additional training is required for a broader spectrum of the PFP staff to provide awareness of the CM Program, its elements, and functions.

3.4.7 Quality Assurance

Quality Assurance has a direct interface with Configuration Management Programs by establishing configuration management oversight of configuration management.

3.4.8 Radiation Protection

Activities in the Configuration Management Functional Area must interface to the Radiation Protection (RP) Functional Area to ensure that current radiation protection systems are not compromised by modifications, and that new activities receive the proper review in case new systems are needed as part of routine surveillance/maintenance and/or as part of deactivation activities.

3.4.9 Fire Protection

The fire Protection Functional Area evaluates fire hazards and identifies necessary design features necessary to mitigate fire hazards. The Configuration Management Functional Area maintains the technical baseline of the installed fire protection systems and related equipment, construction services, and temporary modifications to existing and new facilities.

3.5 REFERENCES

3.5.1 Requirement Source Documents

10 CFR Part 830, Nuclear Safety Management, 04/05/94

DOE-STD-1073-93 DOE Standard, Guide for Operational Configuration Management Program, Parts I and II, November 1993

3.5.2 Reviewed Documents Not Used as Requirement Sources

DOE 4330.4B, Maintenance Management Program, February 10, 1994.

DOE 4700.1, Project Management System, Change 1, June 2, 1992.

DOE 5480.19,Conduct of Operations Requirements for DOE Facilities, Change 1, May 18, 1992.

DOE 5700.6C, Quality Assurance, August 21, 1991.

DOE 6430.1A, General Design Criteria, April 6, 1989.

DOE Implementation Guide for 10 CFR 830.120, 08/94

DOE/EH0135, Criteria for Technical Safety Appraisal, June 1990.

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ASME-NQA-1-1994, Quality Assurance Program Requirements for Nuclear Facility Applications, 1994.

NIRMA-PP02-1989, Position Paper on Configuration Management.

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NUREG/CR-5147, Fundamental Attributes of a Configuration Management Program.

EPRI NP-5640, Modification and Design Control Guidelines for Generic Problem Prevention (NCIG-06), Volumes 1 and 2, March 1988.

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TABLE OF CONTENTS

4.0 TRAINING AND QUALIFICATION 1

4.1 MANAGEMENT AND ADMINISTRATION 3

4.1.1 Program Policy 3
4.1.2 Training Organization Staffing and Training 4

4.2 ADMINISTRATION OF TRAINING 5

4.2.1 Selection and Qualification 7
4.2.2 Training Needs Assessment 8
4.2.3 Design and Development 9
4.2.4 Implementation 10
4.2.5 Evaluation 10
4.2.6 Facilities and Equipment 11
4.2.7 Training Schedules 11
4.2.8 Testing, Qualification, Certification 11

4.2.8.1 Testing 11
4.2.8.2 Qualification and Requalification 13
4.2.8.3 Certification and Recertification 15

4.2.9 Revision and Update of Training 17
4.2.10 Extension, Exceptions and Alterations 17

4.3 TRAINING CATEGORIES AND SUBJECTS 19

4.3.1 General Employee Training 19

4.3.1.1 Platform Safety Training 25
4.3.1.2 Hazardous Waste Training 25
4.3.1.3 Permit and Confined Space Training 28
4.3.1.4 Lockout and Tagout Training 29
4.3.1.5 Lead Exposure Training 31
4.3.1.6 Hazard Communication Training 32
4.3.1.7 Asbestos Training 33

4.3.2 Radiation Protection Training 33

4.3.2.1 ALARA Training 37

4.3.3 Maintenance Training Program 37
4.3.4 Management and Supervisory Training 40
4.3.5 Operator Training 43
4.3.6 Continuing Training 47
4.3.7 Technical Support Personnel Training 48
4.3.8 Configuration Management Training 50
4.3.9 Nuclear Criticality Safety Training 51
4.3.10 Emergency Response Organization (ERO) Training 53

4.3.11 Fire Protection Training 55
4.3.12 Security Training 55
4.3.13 Safeguards Training 56

4.4 TRAINING RECORDS AND DOCUMENTATION 56

4.5 ACCREDITATION 59

4.6 KEY INTERFACES 59

4.6.1 Management Systems 59
4.6.2 Quality Assurance 60
4.6.3 Configuration Management 60
4.6.4 Emergency Management 60
4.6.5 Safeguards and Security 60
4.6.6 Engineering Program 61
4.6.7 Construction Program 61
4.6.8 Operations 61
4.6.9 Maintenance 61
4.6.10 Radiation Protection 61
4.6.11 Fire Protection 62
4.6.12 Packaging and Transportation 62
4.6.13 Environmental Restoration 62
4.6.14 Decontamination and Decommissioning 62
4.6.15 Waste Management 62
4.6.16 Research and Development and Experimental Activities 62
4.6.17 Nuclear Safety 62
4.6.18 Occupational Safety and Health 63
4.6.19 Environmental Protection 63

4.7 REFERENCES 63

4.7.1 Requirement Source Documents 63
4.7.2 Reviewed Documents Not Used as Requirement Sources 64

4.0 TRAINING AND QUALIFICATION

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Training and Qualification Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Training and Qualification activities, as such activities are included in the current mission of the facility. The requirements in this S/RID were identified based on the nature of the facility, its mission, hazards, and specific conditions existing at the PFP. The job positions/titles and the activities performed by the individuals in these jobs were important considerations.

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment. The PFP S/RID contains standards/requirements that are necessary for safe operation of the PFP facility, and that are the direct responsibility of the facility manager.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to PFP, but are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words " shall" and "should" in requirement statements both indicate mandatory compliance. The key interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements. Additionally, some of the requirements cited int his document are intentionally duplicated in the corresponding Company Level S/RID. This was necessary to address required implementation responsibilities occurring at both the company and facility levels.

The Training and Qualification Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. Several additional subelements have been included in this S/RID that are not specifically identified in the ES&H Configuration Guide. This has been done to improve the readability and usability of the S/RID. Some subelements have been divided in order to allow readers to focus on requirements in logical groups. Additionally, subelements have been added to accommodate the transfer of training related requirements from other functional area S/RIDs, thus allowing all training requirements to be contained in the Training and Qualification S/RID. Subelements added for these reasons include: Program Policy (4.1.1), Training Organization and Staffing (4.1.2), Testing (4.2.8.1), Qualification and Requalification (4.2.8.2), Certification and Recertification (4.2.8.3), Extension, Exceptions and Alterations (4.2.10), General Employee Training

(4.3.1), Platform Safety Training (4.3.1.1), Hazardous Waste Training (4.3.1.2), Permit and Confined Space Training (4.3.1.3), Lockout and Tagout Training (4.3.1.4), Lead Exposure Training (4.3.1.5), Hazard Communication Training (4.3.1.6), Equipment Operator Training (4.3.1.7), Asbestos Training (4.3.1.8), Radiation Protection Training (4.3.2), ALARA Training (4.3.2.1), Maintenance Training Program (4.3.3), Management and Supervisory Training (4.3.4), Operator Training (4.3.5), Continuing Training (4.3.6), Technical Support Personnel Training (4.3.7), Configuration Management Training (4.3.8), Nuclear Criticality Safety Training (4.3.9), Emergency Response Organization Training (4.3.10), and Fire Protection Training (4.3.11), Security Training (4.3.12), and Safeguards Training (4.3.13). Subelements 4.6.1 thru 4.6.19 were added to provide further key interface definition. Element 4.7 was added to address document references.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

4.1 MANAGEMENT AND ADMINISTRATION

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(3)(i)

"Management Assessment.

Managers shall assess their management processes. Problems that hinder the organization from achieving its objectives shall be identified and corrected."

4.1.1 Program Policy

REQUIREMENT SOURCE: WAC-173-303 Section 330(1)

"Training program. The facility owner or operator shall provide a program of classroom instruction or on-the-job training for facility personnel. This program must teach personnel to perform their duties in a way that ensures the facility's compliance with this chapter 173-303 WAC, must teach facility personnel dangerous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed, must ensure that facility personnel are able to respond effectively to emergencies, and shall include those elements set forth in the training plan required in subsection (2) of this section. In addition:

(a) The training program shall be directed by a person knowledgeable in dangerous waste management procedures, and must include training relevant to the positions in which the facility personnel are employed;

(b) Facility personnel must participate in an annual review of the training provided in the training program;

(c) This program must be successfully completed by the facility personnel:
(i) Within six months after these regulations become effective; or

(ii) Within six months after their employment at or assignment to the facility, or to a new position at the facility, whichever is later. Employees hired after the effective date of these regulations must be supervised until they complete the training program; and

(d) At a minimum, the training program shall familiarize facility personnel with emergency equipment and systems, and emergency procedures. The program shall include other parameters as set forth by the department, but at a minimum shall include, where applicable:

(i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) Key parameters for automatic waste feed cut-off systems;

(iii) Communications or alarm systems;

(iv) Response to fires or explosions;

(v) Response to ground-water contamination incidents; and

(vi) Shutdown of operations."

REQUIREMENT SOURCE: WAC-173-303 Section 330(2)

"Written training plan. The owner or operator shall develop a written training plan which must be kept at the facility and which must include the following documents and records:

(a) For each position related to dangerous waste management at the facility, the job title, the job description, and the name of the employee filling each job. The job description must include the requisite skills, education, other qualifications, and duties for each position;

(b) A written description of the type and amount of both introductory and continuing training required for each position; and

(c) Records documenting that facility personnel have received and completed the training required by this section."

4.1.2 Training Organization Staffing and Training

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 2

"TRAINING ORGANIZATION REQUIREMENTS. The operating contractor shall establish one or more organizations to be responsible for the training of operating organization personnel. This organization(s) shall be held accountable for providing facility line management with the support necessary to ensure that personnel in the operating organization are qualified to safely and effectively meet job requirements. In some cases (e.g., Category B reactors, low-hazard (category 3) non-reactor nuclear facilities, or less complex, small facilities) this function may be integrated into the operating organization and may not necessarily be officially designated as a training organization. The responsibilities, qualifications, and authority of training organization personnel shall be documented, and managerial responsibilities and authority clearly defined. This organization may include subcontracted personnel who conduct training activities. At sites where a central training organization is used, this organization may be separate from the facility operating organization for support in areas of regulatory training. For example, central training organizations that provide support to line operating organizations may conduct training for the operating organization in regulatory compliance issues (e.g., OSHA training, Radiation Worker training, supervisory/management training, etc.) that have site-wide application, and which have content that is defined from other sources."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 3

"SUBCONTRACTOR PERSONNEL QUALIFICATION REQUIREMENTS. Subcontractor personnel shall meet the qualification requirements for the job function to be performed. In addition, the operating organization shall ensure that subcontractor and temporary personnel who perform specialized activities (e.g., radiation protection, maintenance, in-service inspection, radiography, and welding) are qualified to perform their assigned tasks. Personnel shall be considered adequately qualified with proper documentation of at least one of the following:

a. The satisfactory result of an audit of subcontractor records which relate to qualification of the subcontractor personnel being considered for assignment by the operating organization, or;

b. The operating organization's previous verification (within 2 years) of the ability of the subcontractor employee to perform assigned tasks safely and efficiently, or;

c. Successful completion by the subcontractor employee of those segments of the operating organization's qualification program which are considered pertinent to accomplishment of the task to be performed.

For subcontractor personnel who do not meet the requirements, work activities on engineered safety features as identified in the facility Safety Analysis Report shall be supervised by a person who meets the qualification criteria established by the operating organization for conduct of the activities."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 4.a

"The operating contractor shall establish a process for selection and assignment of personnel into the operating organization. This process should consider factors such as background, experience, and education and should be based on the ability of the person to meet job performance requirements. Selection of operating organization personnel may involve a selection test."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 4.b

"If an individual does not meet the experience requirements of this Order, consideration may be given to the collective experience of the operating organization. Individuals who do not meet the experience requirements for a position may be assigned to that position provided the overall operating organization is considered balanced and strong and that DOE approval is obtained on a case-by-case basis."

4.2 ADMINISTRATION OF TRAINING

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(1)(ii)

This citation is included for completeness. It is recognized that DOE5480.20A Paragraph 5 states that "Implementation of the requirements of this Order will meet 10CFR830.120, Criteria 2 - Personnel Training and Qualification."

"Personnel Training and Qualifications. Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained."

REQUIREMENT SOURCE: DOE5480.20A Preamble, Attachment 1

Paragraph 5 does not apply to PFP. The PFP is neither a Category A test reactor nor a research reactor.

"DOE 5480.20A, PERSONNEL SELECTION, QUALIFICATION, AND TRAINING REQUIREMENTS FOR DOE NUCLEAR FACILITIES, of (date), requires that the following requirements be applied to contractors awarded DOE procurement management[sic spelling error] and operating contracts for operable DOE nuclear facilities. Management and operating contractors shall:

1. Implement the requirements of DOE 5480.20A as they apply to the facility and the position;

2. Prepare and submit a Training Implementation Matrix to the Operations Office Manager for review and approval;

3. Prepare and submit procedures which establish the requirements for granting exceptions to specific training or qualification requirements for an individual to the Operations Office Manager for review and approval;

4. Provide written requests for certification extensions to the Operations Office Manager for approval; and

5. Prepare and submit an assessment of the need for a simulator to the Operations Office Manager for review and approval (Category A test and research reactors only).

6. Perform periodic systematic evaluations of training and qualification programs."

REQUIREMENT SOURCE: DOE5480.20A Preamble, Section 8.a

"A Training Implementation Matrix shall be required and must be approved by the cognizant Operations Office for all new DOE reactor and non-reactor nuclear facilities prior to operations. The operating contractor shall meet the requirement of this Order to the extent possible prior to operation. The matrix shall be based on the status of existing compliance and shall include the time-frame for incremental implementation and full implementation of the requirements that are not being met at the time the facility begins to operate."

REQUIREMENT SOURCE: DOE5480.20A Preamble, Section 8.b

"Contractors with an approved Training Implementation Matrix previously submitted in accordance with the 2-20-91 issuance of this Order shall be required to submit (as necessary) either an addendum or page changes to the Training Implementation Matrix to reflect the changes made as a result of the revision to this Order. Changes shall be submitted to the cognizant Operations Office for approval within 90 days from the issue date of this Order."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7 Introduction, Sentence 1 and 2

"TRAINING REQUIREMENTS. Training to support qualification and certification programs shall be based on a systematic approach to training. A graded approach shall be used to establish the systematic approach to training for operations personnel, maintenance personnel, technicians, and the technical staff."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.a.(1) Introduction

Author's Note: The last sentence is not applicable to PFP. The PFP Training Implementation Matrix is not combined with that of other facilities.

"A Training Implementation Matrix which defines and describes the application of the selection, qualification, certification, and training requirements of this Order shall be prepared by the contractor operating organization. The Matrix shall clearly define the organization, planning, and administration of the qualification program and set forth the responsibility, authority, and methods for conducting training. Suitable justification for exceptions shall be included in the Matrix for any requirement not implemented. At some sites with several facilities, a combined Training Implementation Matrix may be submitted."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.a.(1)(a)

"Personnel who are appointed to positions in the operating organization subsequent to approval of the Training Implementation Matrix required by DOE 5480.20 of 2-20-91 shall meet the

education and experience requirements of this Order. This excludes personnel who held positions prior to the approval of the Training Implementation Matrix from meeting the education and experience requirements stated for these positions."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.a.(1)(b)

"The Training Implementation Matrix should identify whether future persons selected for these positions will meet the education and experience requirements or include a request for an exception from the requirements for all future appointees if the requirement is deemed inappropriate on the basis of the hazard involved, the complexity of the operation, or the risk involved. This relief from the education and experience requirements does not, however, exclude these personnel from the training requirements identified in this Order for their job positions. Participation is required in job-specific training and qualification/certification programs and subsequent continuing training programs."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.a.(2)

"The training and qualification program for nuclear facilities should be developed on the basis of the hazards involved and risk associated with the operation of the facility or activity. Accordingly, the level of detail of and content of the Training Implementation Matrix and content of the training programs should reflect the training and qualification needs of these facilities to assure personnel are qualified to carry out their assigned responsibilities (i.e., a graded approach should be applied)."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.c, Sentences 1-3

"Initial Training Requirements. An initial training program shall be established for operating organization personnel at operable nuclear facilities to develop or enhance their knowledge and skills to perform job assignments. These programs should be structured commensurate with specific position needs. Examinations (written, oral, operational evaluations, performance demonstrations) on material included in the training programs shall be administered and documented as appropriate."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.c, Sentences 4-5

"Personnel who are in-training shall not independently make decisions or take actions that could affect facility safety, nor shall personnel who are in-training be placed in such positions. However, they may independently perform specific tasks or job assignments for which they are qualified."

4.2.1 Selection and Qualification

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 616.1

"Instructor Training and Qualifications. All instructors should be qualified in accordance with the contractor's site Instructor Qualification Program or possess equivalent qualifications."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 616.2

"Instructors should have the technical knowledge, experience and instructional skills required to fulfill their assigned duties."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 616.3

"Instructors-in-training shall be monitored by a qualified instructor."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 616.4

"Subject matter experts without instructor qualification may provide training in their areas of expertise. However, these subject matter experts should be trained as instructors when this occurs routinely."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 3

"MEDICAL EXAMINATION REQUIREMENTS. Operating contractor management shall determine the physical demands imposed upon operating organization personnel by the job tasks that are required to perform both routine and emergency functions. An initial medical examination shall be given to candidates and a reexamination shall be given at least every two years to certified operators, fissionable material handlers, and certified supervisors to verify health and physical fitness to safely perform their assigned tasks. Certified operators, fissionable material handlers, and certified supervisors must also be cleared by medical examination prior to returning to work following any illness or injury which keeps the individual from performing his or her duties for a period exceeding one month. Medical examination requirements for other operating organization personnel shall be in accordance with operating contractor procedures."

4.2.2 Training Needs Assessment

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.a.(3), Sentences 2-3

"The concept of training personnel as a team, stressing team communications and interaction, shall be used where job functions require team solutions and activities. For example, many facility normal and abnormal operations require interaction and coordination of duties among the operating personnel. In cases such as these, team training is necessary."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.b Introduction, Sentences 1 and 2

"Training Process. Initial and continuing training programs shall be established to ensure that operating organization personnel are qualified to perform job requirements. This shall be achieved by using a systematic approach to training."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.b.(1), Paragraphs 1 thru 3

"Analysis typically involves the conduct of job analysis, needs analysis, or both; job analysis to determine tasks for training, and needs analysis to distinguish between actual and desired performance and to propose workable solutions. The analysis should include both normal and emergency duties. Program goals are then established and the scope of training program content is defined.

A graded approach should be used when analyzing jobs. For example, experience with the conduct of job and task analysis has shown that detailed methods such as those described in

industry task analysis procedures or in the DOE Guidelines for Job and Task Analysis for Department of Energy Nuclear Facilities, DOE/EP-0095, are rarely needed. Rather, using qualified trainers and subject matter experts, more simplified methods can produce equivalent results as effectively and more efficiently. One method that can be used to conduct a job analysis is the table-top job analysis method.

This is a method where a team of trainers, subject matter experts (e.g., qualified employees), and supervisors meet to identify duty areas involved in a specific job, tasks performed within each duty area, and tasks that should be included in the training program. The resulting task list typically ranges from the teens to approximately 250 tasks with the average being 125 - 150 for an operator or maintenance program. At non-reactor nuclear facilities where operator positions are sometimes more narrowly defined than a reactor operator job, the average is less. The verification and modification of task lists from similar facilities and jobs has also been found to be an effective method of job analysis. Similarly, table-top methods can also be used to derive learning objectives from task lists. These methods are less time consuming, more cost effective, and are usually self-validating."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.b.(2)

"Learning objectives derived from the analysis of the job that describe desired performance after training.

Learning objectives define the content of the training program. They are derived from task statements and represent the knowledge and skills necessary to perform the job. The objectives are organized into instructional units and sequenced to aid in the learning process. The objectives form the "blueprint" which guides the development of all training materials, tests, and strategies. Objectives are determined using one or more content analysis techniques. The most common techniques include verification analysis, document analysis, templating, detailed task analysis, or group brainstorming. In most cases the learning objectives, which address the knowledge and skills necessary to perform the task, can be developed directly from the task list and do not require additional analysis. A graded approach should be used to select the most effective technique for determining the learning objectives. For example, experience has shown that detailed task analysis is not necessary when good operating procedures exist or if improper performance of the task is of low consequence. Group brainstorming or a joint review of the procedure by a trainer and a subject matter expert (SME) can produce acceptable results."

4.2.3 Design and Development

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.a Introduction

"General. Training programs shall consist of a combination of classroom-type and on-the-job training, and include simulator and laboratory training as it applies to the position. Classroom-type training may include lectures, seminars, computer-based training, and structured self-study activities."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.b.(3)

"Training design, development, and implementation based on the learning objectives.

Materials (e.g., lesson plans and OJT guides, training aids, and student materials) are developed to conduct training. The materials should reflect good instructional design and incorporate methods and activities that maximize knowledge and skill retention. Development of additional learning objectives, and in some cases, rewording of objectives also occurs. A graded approach should be used to develop training materials. For example, the training

materials used to guide discussions with technical staff trainees could include a one-page outline of the lesson content that includes the key points and a student handout to distribute. The level of detail should take into account the job position and experience of the designated instructor. This approach may also be sufficient for much of the training that is conducted at category 3 hazard nuclear facilities. Training/Evaluation standards are also developed to provide guidance for on-the-job training. Additional activities include development of test items and examinations. Technical and instructional reviews of the products that are developed should be conducted. Recommendations resulting from these reviews should be incorporated as necessary to assure that program content is both technically and educationally sound.

Program implementation consists of activities related to the actual conduct of training, as well as resource allocation, planning, and scheduling. Implementation requires assigning instructors and support staff, scheduling training and facilities, and conducting training."

4.2.4 Implementation

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.b.(4)

"Evaluation of trainee mastery of the objectives during training.

Mastery of the learning objectives by the trainees should be evaluated periodically during the training. Evaluation methods include oral questioning, written examinations, performance of related tasks by the use of evaluation instruments (e.g., qualification standards, checklists, performance tests, job performance measures (JPM), or other similar methods). Evaluations should be content valid, administered consistently, controlled, and documented as appropriate to the level of assurance needed. Content valid examinations are examinations that accurately and consistently measure the associated learning objectives. A graded approach should be used during evaluation. For example, structured on-the-job familiarization can be used in lieu of formal on-the-job evaluation for managers, non-certified supervisors, and technical staff personnel. Much of the training for managers, non-certified supervisors, and technical staff personnel occurs in nontraditional settings such as discussions with individual managers. In addition, learning objectives for managers, non-certified supervisors, and technical staff personnel may not be readily adaptable to prescribed standards or quantitative testing. In such instances, qualitative evaluations are acceptable. For example, trainee mastery could be assessed from responses during discussions, behavior during role-playing, or material developed during training exercises. Qualitative evaluations may also be used to assess trainee mastery of learning at category 3 hazard nuclear facilities."

4.2.5 Evaluation

REQUIREMENT SOURCE: DOE5480.20A Preamble, Section 6.b

"Evaluations of training and qualification programs shall be conducted using DOE-STD-1070-94."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.a.(3), Sentence 1

"Qualification and certification programs shall be reviewed by contractor facility management and shall be kept up to date to reflect changes to the facility, Safety Analysis Reports, Technical Safety Requirements, procedures, regulations, and applicable industry operating experience."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.b.(5)

"Evaluation and revision of the training based on the performance of trained personnel in the job setting.

Evaluation provides the critical feedback loop to ensure the training is up to date and reflects the requirements of the job. Specifically, training programs are evaluated for program and lesson content adequacy, test adequacy, presentation adequacy, documentation adequacy, and post-training job performance. In addition, the operating performance of job incumbents should be monitored to determine individual strengths and weaknesses. The feedback received from the evaluation process is used to modify and improve program content and delivery. Program content should be periodically monitored and revisions should be made (as appropriate) to include changes in areas such as policies and/or procedures, system or component design, job requirements, regulatory requirements, and industry guidelines or commitments. Adjustments should also be made as a result of reviews of operating experience information such as Occurrence Reports, inspection reports, information notices, and bulletins. Feedback obtained from instructors, students, and supervisors is also reviewed for its potential impact on future training programs. The results are translated into action items or recommendations which are factored into program content."

4.2.6 Facilities and Equipment

DOE 5480.20A Preamble, Section 6.b which is in 4.2.5 of this document contains requirements applicable to this subelement.

4.2.7 Training Schedules

Author's Note: Requirements for this section are included in 4.2.

4.2.8 Testing, Qualification, Certification

4.2.8.1 Testing

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 8 Introduction

"OPERATOR AND SUPERVISOR EXAMINATION REQUIREMENTS. Comprehensive written and oral examinations and operational evaluations shall be prepared and administered to demonstrate that certified operator and certified supervisor candidates possess the required knowledge and skills. Comprehensive written examinations and individual performance demonstrations shall be administered to ascertain the qualification of other operator and supervisor candidates that include duties that are important to engineered safety features as identified in the Safety Analysis Report. For Category A reactor facility certified personnel, the oral examination shall be separate from the operational evaluation. Operational evaluations and oral examinations may be combined for Category B reactor and non-reactor nuclear facility certified personnel. These examinations shall contain a representative sampling of the knowledge and skills identified in and derived from the learning objectives resulting from the systematic analysis of the position. Examinations should include questions from sources such as Safety Analysis Reports, Technical Safety Requirements, system description manuals, operating procedures, Occurrence Reports, and other applicable sources."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 8.a

"Written procedures that establish requirements for examinations shall be developed and implemented. These procedures shall address, at a minimum, examination/evaluation

development, approval, security, administration, remediation, and maintenance of examination question banks."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 8.b

"Oral examinations may be conducted as a one-on-one walkthrough or by an oral board or committee consisting of personnel identified by contractor facility management. The oral examination content shall be tailored to evaluate the candidate's operational knowledge (initial/continuing training program subjects) and organizational awareness (e.g., operating philosophy, use of procedures, shift and relief turnovers, verification of system/equipment status) to determine how the individual will function in an operating environment."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4.d

"Certified Operator Written Examination Contents. Written examinations shall be administered to certified operator candidates (fissionable material handlers and other positions that have been designated as certified, e.g., tritium facility operators, chemical process operators, waste tank operators, and enrichment facility operators). These examinations shall contain a representative selection of questions on the knowledge and skills identified from learning objectives developed from the analysis of the job and from information in Safety Analysis Reports, Technical Safety Requirements, system description manuals and operating procedures, lessons learned from Occurrence Reports, and other applicable sources. The examination shall include a representative sampling from the following items, in addition to the items listed in paragraph 4a, as appropriate to the position and to the facility.

(1) Facility control and safety systems, including design, principles of operation, components, functions, instrumentation, signals, interlocks, failure modes, and automatic and manual features;

(2) Nuclear facility operating characteristics, and reasons for these operating characteristics, including causes and effects of temperature and pressure changes, and operating limitations;

(3) Principles of facility operation, including the process involved and technical terminology for the chemical, physical, and metallurgical reactions;

(4) Emergency systems, including components, functions, and limitations.

(5) Criticality safety principles, controls, and specifications.

(6) Radiation monitoring systems, including purpose, operation, alarms, and survey equipment alarms; and

(7) Radioactive and hazardous materials and effluent, including procedures, equipment, handling, and disposal."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4.e

"Certified Supervisor Written Examination Contents. Written examinations shall be administered to certified supervisor candidates. These examinations shall be based on the sources discussed in paragraph 4d. The examination shall include a representative sampling from the following items, in addition to those required for certified operators, as appropriate to the position and to the facility.

(1) Design, control, and operating limitations for the nuclear facility, including instrumentation characteristics and adjustment, nuclear facility operation, and nuclear facility console control mechanisms;

(2) Radiation hazards that may arise during the performance of experiments;

(3) Nuclear and radiation theory, including details of the fission process, neutron multiplication, source effects, and neutron poison effects;

(4) Procedures and limitations involved in initial equipment loading, alterations in fissionable material configuration, and determination of various internal and external effects on criticality safety;

(5) Procedures, equipment, and facilities available for handling and disposing of radioactive materials and effluent;

(6) Functions, assignments, and responsibilities of the maintenance and technical support organizations as related to nuclear facility safety; and

(7) Applicable portions of the facility Safety Analysis Report."

4.2.8.2 Qualification and Requalification

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5 Introduction

"QUALIFICATION PROCESS REQUIREMENTS. Qualification is defined in terms of education, experience, training, examination, and any special requirements necessary for performance of assigned responsibilities. The requirements in this Order are based on industry standards and are intended to provide reasonable assurance that personnel at DOE nuclear facilities possess qualifications to operate and maintain the facility safely and reliably under all conditions."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5.a

"Operating organizations shall define qualification requirements for personnel in each functional level based on the criteria contained in this Order. The relative importance of managerial and technical competence should be considered by management in establishing these requirements. Specific knowledge and skills differ for each level in the organization. At the higher functional level, managerial competence is the dominant need, whereas technical competence is the dominant need at other functional levels."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5.b

"Even though applied broadly to personnel in the operating organization, the term qualification has a different application for different positions. For example, managers and technical staff personnel may be considered qualified by virtue of meeting the entry-level requirements associated with the position and by completing applicable position-specific training (see paragraph 7h and 7i). A comprehensive examination need not be administered to determine their qualification. Continuing training and professional development programs should be established to meet the needs of the individual and the position. Chapter I, paragraph 7d(1) contains requirements that shall be included in the continuing training program to the extent to which they apply to the position. Satisfactory performance of their assigned duties and assessment of individual performance such as that which is typically included in personal performance appraisals may be used to document continued satisfactory performance."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5.c

"Technician and maintenance personnel qualification shall include demonstrated performance capabilities (performance demonstrations) to ascertain their ability to adequately perform assigned tasks. Written examinations should also be administered to personnel in these positions. However, a comprehensive final examination need not be administered to ascertain formal qualification of technicians and maintenance personnel (with the exception of radiological control technicians, who shall comply with the requirements of the DOE Radiological Control Manual). Participation in continuing training programs is required to maintain and improve their abilities to continue to function safely in the operating organization. The requirements that are described in Chapter I, paragraph 7d, shall be implemented to the extent to which they apply to the position. Their continued satisfactory performance of assigned duties and their satisfactory participation in the continuing training program (classroom, OJT, laboratory, etc.) serves as sufficient evidence of maintenance of their qualification."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5.d, Sentences 1 and 4

"Qualification of operators and their immediate supervisors shall include examinations (written, oral, operational evaluations, performance demonstrations) as applicable to the position. Written examinations and performance demonstrations shall be administered to qualified operators and supervisors. Written and oral examinations and operational evaluations shall be administered to certified operators and supervisors. Initial qualification/certification for a position shall include a comprehensive examination to ascertain the person's suitability to perform assigned duties."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5.d, Sentences 5 and 7

"Participation in the continuing training program described in Chapter I, paragraph 7d shall be required following initial qualification to the extent to which it applies to the position. Upon completion of the continuing training program requalification may be achieved by either administering a comprehensive requalification examination, including any operational evaluations or performance demonstrations that may be specified, or by administering periodic examinations (e.g., quarterly) during the requalification cycle. Whether a comprehensive examination or periodic examinations are administered, after completing the continuing training program, the operating organization shall indicate by signature that the person has successfully completed the requalification program and is formally requalified."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5.e

"Qualification may be granted only after assuring that all requirements (including training and examinations as required) and other specified requirements (e.g., medical examination) have been satisfactorily completed."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 5.f

"Qualification of operators and their immediate supervisors in the operating organization is valid for a period not to exceed two years unless revoked for cause (e.g., medical disqualification, performance deficiencies)."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 9

Author's Note: Paragraph 2, Sentence 1 does not apply to PFP.

"OPERATOR AND SUPERVISOR REEXAMINATION REQUIREMENTS. Reexaminations for certified and qualified operators and supervisors shall include subjects in which the person is expected to be knowledgeable and emphasize those subjects covered by the continuing training program. The contractor shall administer comprehensive biennial examinations, or administer periodic (e.g., quarterly) examinations throughout the continuing training cycle. Written examinations and performance demonstrations shall be administered to qualified operators and supervisors. Written and oral examinations and operational evaluations shall be administered to certified operators and supervisors.

For Category A reactor facility certified personnel, the oral examination shall be separate from the operational evaluation. Operational evaluations and oral examinations may be combined for Category B reactor and non-reactor nuclear facility certified personnel. Written examinations for certified operators and certified supervisors shall include a representative sampling of the topics specified in Chapters II, III, and IV to the extent applicable to the position and the facility. Operational evaluations shall require certified operators and certified supervisors to demonstrate an understanding of and the ability to perform a representative sampling of the control manipulations specified in Chapters II, III, and IV to the extent applicable to the position and the facility."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 10 Introduction

"REQUALIFICATION REQUIREMENTS. Operators and their immediate supervisors shall not be allowed to continue to function in qualified or certified positions if they have not completed all of the requalification or recertification program elements within the two year continuing training cycle. The program elements consist of the continuing training program and the associated reexaminations. If a qualified or certified operator or supervisor fails a requalification or recertification examination, or shows serious job performance deficiencies which indicate that he or she may perform in an unsafe manner, the person shall be removed from activities requiring qualification or certification."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 10.a

"Qualification or certification may be regained after completing remedial training designed to correct the deficiency(s) and satisfactorily completing a reexamination. In addition, recertification shall be based on the following:

(1) A review of individual operating performance during the past certification period by either line management, by a committee, or by a person designated by management; and

(2) A current medical examination as required by Chapter II paragraph 3, Chapter III paragraph 3, or Chapter IV paragraph 3."

4.2.8.3 Certification and Recertification

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 6.a

"The program leading to certification shall be governed by written procedures that include requirements for documented assessment of the person's qualifications through examinations and operational evaluations."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 6.b, Sentence 1

"Certification may be granted only after all qualification requirements (including written and oral examinations and operational evaluations) and other specified requirements (e.g., medical examination) have been satisfactorily completed, and management has assured that the person is capable of safely performing all functions of the position."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 6.b, Sentence 2

"Satisfactory completion of qualifications which result in certification shall be verified by a person or group other than the candidate's immediate supervisor or the person/group that provided the training."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 6.b, Sentence 3

"Certification shall be valid for a period not to exceed two years unless revoked for cause (e.g., medical disqualification, performance deficiencies, or failure to maintain proficiency)."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 6.c

"Reactor operators and senior reactor operators at Category A and B reactors, and fissionable material handlers and fissionable material handler supervisors at non-reactor nuclear facilities shall be certified. For all other operators and their immediate supervisors, the operating organization shall identify in the Training Implementation Matrix any additional positions that will be certified (e.g., tritium facility operators, enrichment facility operators, tank farm operators, and their immediate supervisors)."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 10.b

"When a certified operator or certified supervisor has been absent from certification duties for greater than 3 months, but less than 12 months, selected retraining (including written and oral examinations and operational evaluations, as deemed necessary) shall be given prior to reassignment to certification duties. The certification base date remains the same as it was before the absence. However, if the absence is greater than 12 months, comprehensive written and oral examinations and operational evaluations (as required of initial candidates) shall be given to determine weak areas. Retraining and reexamination shall be required in areas of weakness, and upon successful completion, a new certification date may be established."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 5 Introduction, Sentences 1 and 2

"OPERATOR, FISSIONABLE MATERIALS HANDLER, AND SUPERVISOR PROFICIENCY REQUIREMENTS. Certified operators, fissionable material handlers, and certified supervisors shall actively perform job functions associated with their certification to maintain proficiency. Actively performing job functions associated with certification means that the certified individual has a position on the shift crew, and that the individual carries out and is responsible for the day-to-day duties of the certified position."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 5 Introduction, Sentences 3 and 4

"If certified operators, fissionable material handlers, or certified supervisors are absent from activities associated with the certified position for extended periods of time, their ability and readiness to perform at a high level of vigilance can reasonably be expected to decrease. The

proficiency requirement is imposed to ensure that certified personnel continue to possess and practice the skills and abilities necessary to operate the systems and equipment for which they are responsible in a safe and reliable manner during both normal and abnormal facility operations and system transients."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 5.a

"The operating organization shall establish procedures which define requirements and frequency (e.g., 8 hours per month) necessary to maintain an active status."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 5.b

"If active status (proficiency) is not maintained, certification shall be suspended. Prior to resuming duties associated with certification, the operating contractor shall ensure that:

(1) Certification is otherwise current and valid; and

(2) The certified operator, fissionable material handler, or certified supervisor has performed certification duties under the direct supervision of a certified person, as appropriate to the position, for a specific period of time (e.g., 6 hours.)"

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 5.c

"If the nuclear facility is not operated frequently enough to meet established requirements, the operating contractor shall ensure that certification is reinstated prior to facility operation. Administering written and oral examinations and operational evaluations and conducting facility walkthroughs, cold operations, and/or simulated operations should be considered to ensure adequate operational knowledge (as determined by the duration of the facility shutdown). A graded approach should be used to determine the extent of activities necessary to reinstate certification. DOE 5480.31, STARTUP AND RESTART OF NUCLEAR FACILITIES, contains detailed requirements for facility restart."

4.2.9 Revision and Update of Training

Requirements applicable to this subelement are included in 4.2, Administration of Training.

4.2.10 Extension, Exceptions and Alterations

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 11 Introduction

"EXCEPTIONS TO TRAINING REQUIREMENTS. The initial training programs that are described in this Order were developed for persons assumed to have the entry-level knowledge and skills required of the position for which they are to fill, on the basis of meeting the education and experience requirements contained in this Order. Some candidates may already possess the knowledge and skills necessary for certain of their job requirements, and may be excepted from certain areas of training programs on the basis of prior education, experience, training, and/or testing. Testing (i.e., performance demonstrations, written examinations, oral examinations) is the preferred method for excepting persons from specific areas of training. In all cases, the requisite examinations (as described in paragraph 8) to establish qualification/certification shall be completed."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 11.a

"The operating organization shall establish an administrative procedure that describes the methods used to administer and document exceptions to initial training program requirements. The name of the person and the specific subject for which the exception is requested, along with justification for the exception, shall be included as part of the documentation. In all cases, the operating organization shall ensure that sufficient facility-specific instruction is provided to enable the candidate to perform job requirements. The operating organization shall submit the procedure for granting exceptions to the Operations Office Manager for approval."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 11.b

"Personnel placed in the training program who have satisfactorily completed training programs comparable in content and in performance standards may be released (excepted) from portions of training on an individual case basis. Exception from training should be based on a review of previous training records (i.e., transcripts), personal interviews, and on examinations that are based on the objectives stated for the training program."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 11.c

"Exceptions from qualification or certification requirements may be approved by contractor management after approval of the exception procedure by the Operations Office Manager."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 11.d

"Persons who believe that they have knowledge or skills equivalent to that which is addressed by the training may challenge the requirement to attend individual portions of the training program. In situations such as these, examinations (written or performance) may be administered by the operating contractor. If challenge examinations are administered, they shall be sufficiently comprehensive to adequately test the learning objective(s) that are stated in the training program. The use of challenge tests is not considered taking an exception to the training and, as such, challenge tests are excluded from the requirements for exceptions contained in preceding portions of this section. Accordingly, they do not need to be approved on a case-by-case basis."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 12 Introduction

"EXTENSION REQUIREMENTS. An extension of qualification or certification may be granted to persons on a case-by-case basis in order to support operational and schedular commitments."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 12.a

"The operating organization shall establish an administrative procedure for granting extensions to qualification or certification. At a minimum, the documentation to support the extension should include:

(1) Responsibility for approval of the extension;

(2) Length of the extension; and

(3) Explanation of the circumstances that prevented the person from completing the requirements."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 12.b

"Extensions of certification of operators and supervisors may be approved only by the Operations Office Manager. Extensions of qualification of operators and supervisors may be approved by contractor facility management."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 13.a

"Alternatives to Education. Educational requirements are described as either baccalaureate or associate degree, or high school diploma. In each case, the type of degree/diploma required is a function of the person's responsibilities. Persons who do not possess the formal educational requirements specified shall not be automatically eliminated where other factors provide sufficient assurance of their abilities to fulfill the duties of a specific position. These factors shall be evaluated on a case-by-case basis and approved and documented by the operating organization. The following are examples that may be considered in making the evaluation of an acceptable alternative to the educational requirements:

(1) General Education Development (GED) test for a high school diploma;

(2) Professional engineers license or completion of Engineer in Training (EIT) examination for a baccalaureate or associate degree requirement;

(3) Completion of technical portions of an engineering, engineering technology, or related science program may substitute for the baccalaureate or associate degree. Successful completion shall be determined by a transcript or other certification by an accredited institution. For example, completion of 80 semester credit hours may be substituted for the baccalaureate requirement and 43 semester credit hours for the associate degree. The courses shall be in appropriate technical subjects relevant to the position to be filled; and

(4) Related experience may substitute for education at the rate of six semester credit hours for each year of experience up to a maximum of 60 credit hours."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 13.b

"Alternatives to Experience. Experience in design, construction, and operational training may be considered applicable nuclear experience and should be evaluated on a case-by-case basis.

(1) Where course work is related to job assignments, post-secondary education may be substituted. Formal education shall not be allowed to substitute for more than 50 percent of the experience requirement unless otherwise stated in Chapters II, III, or IV.

(2) Job-related training in the position sought may qualify as equivalent to nuclear experience on a one-for-one basis for up to a maximum of two years."

4.3 TRAINING CATEGORIES AND SUBJECTS

4.3.1 General Employee Training

REQUIREMENT SOURCE: 29CFR1910 Part 38(b)(4)

Author's Note: The last sentence of this requirement does not apply to PFP.

"Training

(i) The employer shall apprise employees of the fire hazards of the materials and processes to which they are exposed.

(ii) The employer shall review with each employee upon initial assignment those parts of the fire prevention plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept in the workplace and made available for employee review. For those employers with 10 or fewer employees, the plan may be communicated orally to employees and the employer need not maintain a written plan."

REQUIREMENT SOURCE: 29CFR1910 Part 120(q)(6)(i) and (ii)

"Training. Training shall be based on the duties and function to be performed by each responder of an emergency response organization. The skill and knowledge levels required for all new responders, those hired after the effective date of this standard, shall be conveyed to them through training before they are permitted to take part in actual emergency operations on an incident. Employees who participate, or are expected to participate, in emergency response, shall be given training in accordance with the following paragraphs:

(i) First responder awareness level. First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the authorities of the release. First responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

(A) An understanding of what hazardous substances are, and the risks associated with them in an incident.

(B) An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.

(C) The ability to recognize the presence of hazardous substances in an emergency.

(D) The ability to identify the hazardous substances, if possible.

(E) An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.

(F) The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

(ii) First responder operations level. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:

(A) Knowledge of the basic hazard and risk assessment techniques.

(B) Know how to select and use proper personal protective equipment provided to the first responder operational level.

(C) An understanding of basic hazardous materials terms.

(D) Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.

(E) Know how to implement basic decontamination procedures.

(F) An understanding of the relevant standard operating procedures and termination procedures."

REQUIREMENT SOURCE: 29CFR1910 Part 120(q)(8)

"Refresher training.

(i) Those employees who are trained in accordance with paragraph (q)(6) of this section shall receive annual refresher training of sufficient content and duration to maintain their competencies, or shall demonstrate competency in those areas at least yearly.

(ii) A statement shall be made of the training or competency, and if a statement of competency is made, the employer shall keep a record of the methodology used to demonstrate competency."

REQUIREMENT SOURCE: 29CFR1910 Part 145(c)(1)(ii)

"All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary."

REQUIREMENT SOURCE: 29CFR1910 Part 145(c)(2)(ii)

"All employees shall be instructed that caution signs indicate a possible hazard against which proper precaution should be taken."

REQUIREMENT SOURCE: 29CFR1910 Part 1450(f)(1)

"Employee information and training. The employer shall provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area."

REQUIREMENT SOURCE: 29CFR1910 Part 1450(f)(2)

"Employee information and training. Such information shall be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. The frequency of refresher information and training shall be determined by the employer."

REQUIREMENT SOURCE: 29CFR1910 Part 1450(f)(3)

"Information. Employees shall be informed of:

(i) The contents of this standard and its appendices which shall be made available to employees;

(ii) The location and availability of the employer's Chemical Hygiene Plan;

(iii) The permissible exposure limits for OSHA regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable OSHA standard;

(iv) Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory; and

(v) 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 the chemical supplier."

REQUIREMENT SOURCE: 29CFR1910 Part 1450(f)(4)(i)

"Training. Employee training shall include:

(A) Methods and observations that may be used to detect the presence or release of a hazardous chemical (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemical when being released, etc.);

(B) The physical and health hazards of chemicals in the work area; and

(C) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used."

REQUIREMENT SOURCE: 54FR3904 Part (c)(4)(i)

"Ensure that all employees understand the hazards to which they may be exposed and how to prevent harm to themselves and others from exposure to these hazards, so that employees accept and follow established safety and health protections."

REQUIREMENT SOURCE: DOE5480.10 Section 9.a(4)

"First-line Supervisors should be required to: (a) maintain healthful working conditions within his or her own organization and implement industrial hygiene recommendations; (b) train employees to perform assignments in a safe manner; and (c) follow administrative procedures to allow appropriate disciplinary action to be taken when health and safety rules are violated."

REQUIREMENT SOURCE: DOE5480.10 Section 9.b(5)

"Employee Education. The industrial hygiene staff shall assist the first level supervisor in the development of an employee information and training program whenever a potential health hazard exists requiring engineering controls, administrative procedures, or personal protective equipment. The program shall include written notification of employees of environmental monitoring results when the results indicate that the employees are exposed above permissible limits. Training should include information on operations that may lead to exposure, the potential health effects of the hazard, the content of applicable standards, and the purpose and results of environmental monitoring. Training should be updated and repeated periodically."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.e Introduction

"General Employee Training (GET) Requirements. All persons employed either full- or part-time in DOE nuclear facilities shall be trained commensurate with their job duties"

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.e.(1)

"GET programs shall include training on the following areas as they relate to individual jobs:

(a) General description of facilities;

(b) Job related policies, procedures, and instructions;

(c) Radiological health and safety program;

1 Training program content shall be in accordance with DOE/EH-0256T, Radiological Control Manual, Chapter 6, Training and Qualification.

(d) Facility emergency plans;

(e) Industrial safety/hygiene program;

(f) Fire protection program;

(g) Security program;

(h) Quality assurance program; and

(i) Criticality safety.

1 Training program content shall be in accordance with ANSI/ANS 8.20 - 1991, Criticality Safety Training."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.e.(2)

"Visitors, contracted personnel, and temporary personnel shall be under continuous escort while at the facility unless they have been trained in appropriate areas from the above list to the extent necessary to ensure safe execution of their duties. For example, short-term visitors should be given instruction in items (a), (c), (d), (e), and (g), while contracted and temporarily assigned personnel may need training in additional topics as related to their assignments."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.e.(3)

"For persons requiring long-term (i.e., more than 1-2 weeks) access, understanding of the information provided by the GET program shall be evaluated by administering a written examination. The examination should cover areas selected for training and should be of sufficient difficulty to ensure the person has adequate knowledge to work independently at the facility. Persons who do not pass this examination shall not be permitted access without a continuous escort."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(11)(a)

"Training must be provided annually to workers who may have to take protective actions (e.g., assembly, evacuation) in the event of an emergency."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(11)(b) Introduction

"A formal training program must be in place for the instruction and qualification of all personnel (i.e., primary and alternate) comprising the facility emergency response organization

to include initial training and annual retraining for both onsite and offsite incidents, including transportation incidents."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(11)(b)(1)

"All training must be systematic and performance based, i.e., based on an analysis of tasks to be performed during an emergency, and developed with performance objectives, emphasis on team training, and facility-specific emergency response scenarios."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(11)(b)(2)

"Annual retraining shall include training on weaknesses detected during drills and exercises, changes to plans, procedures, and lessons learned from emergencies at DOE and other industrial facilities."

REQUIREMENT SOURCE: WAC-296-155 Section 00035(2)

"The employer shall permit only those employees qualified by training or experience to operate equipment and machinery."

REQUIREMENT SOURCE: WAC-296-155 Section 00100(2)

"Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal protective measures required."

REQUIREMENT SOURCE: WAC-296-155 Section 00100(3)

"In job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury."

REQUIREMENT SOURCE: WAC-296-155 Section 00100(4)

"Employees required to handle or use flammable liquids, gases, or toxic materials shall be instructed in the safe handling and use of these materials and made aware of the specific requirements contained in Parts B, D, and other applicable parts of this standard."

REQUIREMENT SOURCE: WAC-296-155 Section 00110(3)

"The following are the minimal program elements for all employers:
A safety orientation program describing the employer's safety program and including:
(a) How, where, and when to report injuries, including instruction as to the location of first-aid facilities.
(b) How to report unsafe conditions and practices.
(c) The use and care of required personal protective equipment.
(d) The proper actions to take in event of emergencies including the routes of exiting from areas during emergencies.
(e) Identification of the hazardous gases, chemicals or materials involved along with the instructions on the safe use and emergency action following accidental exposure.
(f) A description of the employer's total safety program.
(g) An on-the-job review of the practices necessary to perform the initial job assignments in a safe manner."

4.3.1.1 Platform Safety Training

REQUIREMENT SOURCE: 29CFR1910 Part 66(i)(1)(ii)

"All employees who operate working platforms shall be trained in the following:

(A) Recognition of, and preventive measures for, the safety hazards associated with their individual work tasks.

(B) General recognition and prevention of safety hazards associated with the use of working platforms, including the provisions in the section relating to the particular working platform to be operated.

(C) Emergency action plan procedures required in paragraph (e)(9) of this section.

(D) Work procedures required in paragraph (i)(1)(iv) of this section.

(E) Personal fall arrest system inspection, care, use and system performance."

REQUIREMENT SOURCE: 29CFR1910 Part 66(i)(1)(iii)

"Training of employees in the operation and inspection of working platforms shall be done by a competent person."

REQUIREMENT SOURCE: 29CFR1910 Part 66(i)(1)(iv)

"Written work procedures for the operation, safe use and inspection of working platforms shall be provided for employee training. Pictorial methods of instruction, may be used, in lieu of written work procedures, if employee communication is improved using this method. The operating manuals supplied by manufacturers for platform system components can serve as the basis for these procedures."

REQUIREMENT SOURCE: 29CFR1910 Part 66(i)(1)(v)

"The employer shall certify that employees have been trained in operating and inspecting a working platform by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training and the date that the training was completed. The certification record shall be prepared at the completion of the training required in paragraph (i)(1)(ii) of this section, and shall be maintained in a file for the duration of the employee's employment. The certification record shall be kept readily available for review by the Assistant Secretary of Labor or the Assistant Secretary's representative."

4.3.1.2 Hazardous Waste Training

REQUIREMENT SOURCE: 29CFR1910 Part 120(p)(7)(i)

"New employees. The employer shall develop and implement a training program, which is part of the employer's safety and health program, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not endanger themselves or other employees. The initial training shall be for 24 hours and refresher training shall be for eight hours annually. Employees who have received the initial training required by this paragraph

shall be given a written certificate attesting that they have successfully completed the necessary training."

REQUIREMENT SOURCE: 49CFR172 Part 702

"Applicability and responsibility for training and testing.

(a) A hazmat employer shall ensure that each of its hazmat employees is trained in accordance with the requirements prescribed in this subpart.

(b) A hazmat employee who performs any function subject to the requirements of this subchapter may not perform that function unless trained in accordance with the requirements prescribed in this subpart. It is the duty of each hazmat employer to comply with the applicable requirements of this subchapter and to thoroughly instruct each hazmat employee in relation thereto.

(c) Training may be provided by the hazmat employer or other public or private sources.

(d) A hazmat employer shall ensure that each of its hazmat employees is tested by appropriate means on the training subjects covered in 172.704."

REQUIREMENT SOURCE: 49CFR172 Part 704

"Training requirements.

(a) Hazmat employee training shall include the following:

(1) General awareness/familiarization training. Each hazmat employee shall receive general awareness/familiarization training designed to provide familiarity with the requirements of this subchapter and to enable the employee to recognize and identify hazardous materials consistent with the hazard communication standards of this subchapter.

(2) Function-specific training.

(i) Each hazmat employee shall receive function-specific training concerning requirements of this subchapter which are specifically applicable to the functions the employee performs.

(ii) Training conducted by hazmat employers, as necessary, to comply with, and when subject to, the requirements of the ICAO Technical Instructions or the IMDG Code, as authorized in 171.11 and 171.12 of this subchapter, respectively, may be used, when appropriate, to the extent they serve as a substitute for the requirements of this section.

(3) Safety training. Each hazmat employee shall receive safety training concerning-

(i) Emergency response information required by subpart G of part 172;

(ii) Measures to protect the employee from the hazards associated with hazardous materials to which they may be exposed in the work place, including specific measures the hazmat employer has implemented to protect employees from exposure; and

(iii) Methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials.

(b) OSHA or EPA Training. Training conducted by employers to comply with the hazard communication programs required by the Occupational Safety and Health Administration

(OSHA) of the Department of Labor (29 CFR 1910.120) or the Environmental Protection Agency (EPA) (40 CFR 311.1), to the extent that training addresses the training specified in paragraph (a) of this section, may be used to satisfy the training requirements in paragraph (a) of this section, in order to avoid unnecessary duplication of training.

(c) Initial and recurrent training.-

(1) Initial training. Each hazmat employer shall train each hazmat employee as follows:

(i) Training for a hazmat employee employed on or before November 15, 1992, shall be completed prior to April 1, 1993.

(ii) Training for a hazmat employee employed after November 15, 1992, shall be completed within 90 days after employment.

(iii) A hazmat employee who changes hazardous materials job functions shall complete training in the new job function(s) within 90 days after the change.

(iv) A hazmat employee described in paragraph (c)(1) (ii) or (iii) of this section, may perform new hazardous materials job functions prior to the completion of training provided the employee performs those functions under the supervision of a properly trained and knowledgeable hazmat employee.

(2) Recurrent Training. A hazmat employee shall receive the training required by this subpart at least once every two years.

(3) Relevant Training. Relevant training received from a previous employer or other source may be used to satisfy the requirements of this subpart provided a current record of training is obtained from hazmat employees' previous employer.

(4) Compliance. Each hazmat employer is responsible for compliance with the requirements of this subchapter regardless of whether the training required by this subpart has been completed.

(d) Recordkeeping. A record of current training, inclusive of the preceding two years, in accordance with this subpart shall be created and retained by each hazmat employer for each hazmat employee for as long as that employee is employed by that employer as a hazmat employee and for 90 days thereafter. The record shall include:

(1) The hazmat employee's name;

(2) The most recent training completion date of the hazmat employee's training;

(3) A description, copy, or the location of the training materials used to meet the requirements in paragraph (a) of this section;

(4) The name and address of the person providing the training; and

(5) Certification that the hazmat employee has been trained and tested, as required by this subpart.

(e) Limitation. A hazmat employee who repairs, modifies, reconditions, or tests packagings as qualified for use in the transportation of hazardous materials, and who does not perform any other function subject to the requirements of this subchapter, is not subject to the safety training requirement of paragraph (a)(3) of this section."

4.3.1.3 Permit and Confined Space Training

REQUIREMENT SOURCE: 29CFR1910 Part 146(g)(1)

"Training. The employer shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section."

REQUIREMENT SOURCE: 29CFR1910 Part 146(g)(2)

"Training shall be provided to each affected employee:

(i) Before the employee is first assigned duties under this section;

(ii) Before there is a change in assigned duties;

(iii) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;

(iv) Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by paragraph (d)(3) of this section for that there are inadequacies in the employees's knowledge or use of these procedures."

REQUIREMENT SOURCE: 29CFR1910 Part 146(g)(3)

"The training shall establish employee proficiency in the duties required by this section and shall introduce new or revised procedures, as necessary, for compliance with this section."

REQUIREMENT SOURCE: 29CFR1910 Part 146(g)(4)

"The employer shall certify that the training required by paragraphs (g)(3) of this section has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives."

REQUIREMENT SOURCE: 29CFR1910 Part 146(h)

"Duties of authorized entrants. The employer shall ensure that all authorized entrants:

(1) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

(2) Properly use equipment as required by paragraph (d)(4) of this section;

(3) Communicate with the attendant as necessary to enable the attendant to alert entrants of the need to evacuate the space as required by paragraph (i)(6) of this section;

(4) Alert the attendant whenever:

(i) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or

(ii) The entrant detects a prohibited condition; and

(5) Exit from the permit space as quickly as possible whenever:

(i) An order to evacuate is given by the attendant or the entry supervisor,

(ii) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,

(iii) The entrant detects a prohibited condition, or

(iv) An evacuation alarm is activated."

4.3.1.4 Lockout and Tagout Training

REQUIREMENT SOURCE: 29CFR1910 Part 147(c)(7)

"Training and communication.

(i) The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. The training shall include the following:

(A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

(B) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

(C) All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

(ii) When tagout systems are used, employees shall also be trained in the following limitations of tags:

(A) Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

(B) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.

(C) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.

(D) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

(E) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

(F) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

(iii) Employee retraining.

(A) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.

(B) Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

(C) The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

(iv) The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training."

REQUIREMENT SOURCE: 29CFR1910 Part 147(c)(7)(i), Sentence 1

"The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees."

REQUIREMENT SOURCE: 29CFR1910 Part 147(c)(7)(ii)

"When tagout systems are used, employees shall also be trained in the following limitations of tags:

(A) Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restrain on those devices that is provided by a lock.

(B) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be by passed, ignored, or otherwise defeated.

(C) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.

(D) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

(E) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

(F) Tags must be securely attached to energy isolating devices so that they cannot inadvertently or accidentally detached during use."

REQUIREMENT SOURCE: 29CFR1910 Part 147(c)(7)(iii)

"Employee retraining

(A) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.

(B) Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

(C) The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary."

REQUIREMENT SOURCE: 29CFR1910 Part 332 [R]

Employees who face risk of electrical shock (e.g., electricians, mechanics, welders) shall be provided training on electrical awareness safety and proper electrical safety work practices.

REQUIREMENT SOURCE: 29CFR1910 Part 332(b)(3)

"Training. Additional requirements for qualified persons. Qualified persons (i.e., those permitted to work on or near exposed energized parts) shall, at a minimum, be trained in and familiar with the following:(i)The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment, (ii) The skills and techniques necessary to determine the nominal voltage of exposed live parts, and (iii) The clearance distances specified in 29 CFR 1910.333(c) and the corresponding voltages to which the qualified person will be exposed. Note 1: for the purpose of 29 CFR 1910.331 through 1910.335, a person must have the training required by paragraph (b)(3) of this section in order to be considered a qualified person. Note 2: Qualified persons whose work on energized equipment involves either direct contact by means of tools or materials must be also have the training needed to meet 29 CFR 1910.333(c)(2)."

4.3.1.5 Lead Exposure Training

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(1)(i)

"Employee information and training. Training program. Each employer who has a workplace in which there is a potential exposure to airborne lead at any level shall inform employees of the content of Appendices A and B of this regulation."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(1)(ii)

"The employer shall institute a training program for and assure the participation of all employees who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritation exists."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(1)(iii)

"The employer shall provide initial training by 180 days from the effective date for those employees covered by paragraph (l)(1)(ii) on the standard's effective date and prior to the time of initial job assignment for those employees subsequently covered by this paragraph."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(1)(iv)

"The training program shall be repeated at least annually for each employee."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(1)(v)

"The employer shall assure that each employee is informed of the following:

(A) The content of this standard and its appendices;

(B) The specific nature of the operations which could result in exposure to lead above the action level;

(C) The purpose, proper selection, fitting, use, and limitations of respirators;

(D) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females);

(E) The engineering controls and work practices associated with the employee's job assignment;

(F) The contents of any compliance plan in effect; and

(G) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(2)(i)

"Access to information and training materials. The employer shall make readily available to all affected employees a copy of this standard and its appendices."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(2)(ii)

"The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(l)(2)(iii)

"In addition to the information required by paragraph (l)(1)(v), the employer shall include as part of the training program, and shall distribute to employees, any materials pertaining to the Occupational Safety and Health Act, the regulations issued pursuant to that Act, and this lead standard, which are made available to the employer by the Assistant Secretary."

REQUIREMENT SOURCE: 29CFR1910 Part 1025(r)(4)

"Initial training and education shall be completed as soon as possible but no later than 180 days from the effective date."

4.3.1.6 Hazard Communication Training

REQUIREMENT SOURCE: 29CFR1910 Part 1200(h)

"Hazard Communication
Employee information and training. Employers shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area."

REQUIREMENT SOURCE: 29CFR1910 Part 1200(h)(1)

"Hazard Communication
Employee information and training.

Information. Employees shall be informed of:

(i) The requirements of this section;

(ii) Any operations in their work area where hazardous chemicals are present; and,

(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section."

REQUIREMENT SOURCE: 29CFR1910 Part 1200(h)(2)

"Hazard Communication
Employee information and training

Training. Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical and health hazards of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information."

4.3.1.7 Asbestos Training

REQUIREMENT SOURCE: 29CFR1910 Part 1001(j)(5)(ii)

"Training shall be provided prior to or at the time of initial assignment and at least annually thereafter."

4.3.2 Radiation Protection Training

REQUIREMENT SOURCE: ANSI-Z88.2-1992 Section 8.1

"Training for employees. The supervisor, person issuing respirators, respirator wearers, and emergency/rescue teams shall be given adequate training (and periodic retraining) by a qualified person(s) to ensure the proper use of respirators. Written records shall be kept of the names of persons trained and the dates when training occurred."

REQUIREMENT SOURCE: ANSI-Z88.2-1992 Section 8.2

"Training frequency. Each respirator wearer shall be trained upon initial assignment and be retrained once every 12 months."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 142.1

"Radiological Control Manager Qualifications
The Radiological Control Manager should be an experienced professional in radiological control and be familiar with the design features and operations of the facility that affect the potential for exposures of persons to radiation."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 142.2

"The Radiological Control Manager should have the technical competence and experience to establish radiological control programs and the supervisory capability to direct the implementation and maintenance of radiological control programs."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 142.3

"The Radiological Control Manager should have a minimum of a bachelor's degree or the equivalent in science or engineering, including some formal training in radiological control. Advanced academic degrees can count as experience where course work related to radiological control is involved. At least three years of professional experience should be in applied radiological control work. Certification by the American Board of Health Physics provides equivalency to the above."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 142.4

"In situations where the most effective manager for this position does not satisfy the above qualifications, special arrangements should be made. In these situations, the assignment of a deputy with the requisite expertise and qualifications can satisfy the requirement."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 142.5

"Management should provide persons assigned to or being considered for the Radiological Control Manager a structured program leading to certification by the American Board of Health Physics."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 143.2

"Radiological support personnel provide health physics and radiological engineering, dosimetry, bioassay, independent oversight, instrumentation and calibration functions. These personnel should have technical qualifications pertinent to their assigned duties."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 144.1

"Radiological workers should be sufficiently qualified to recognize questionable or deteriorating radiological conditions and seek advice from Radiological Control Technicians and their supervisors."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 4, Article 146.3

"Radiological Assessor
This position should be staffed by a professional who is adept at identifying technical and management problems. This person should participate in continuing training to develop professional and management skills."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 612.5

"The site Radiological Control Manager or a designee shall concur in site-generated radiological training material."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 613. 3

"General Employee Radiological Training shall be completed every 2 years. Changes to the program shall be incorporated as they are identified and a decision made if retraining prior to the 2 year period is needed. In the alternate year when full retraining is not completed, the latest General Employee Radiological Training Handbook (Student Guide) should be distributed for self-study."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 613. 4

"Radiological Worker I and II retraining shall be completed every 2 years. In the alternate year when retraining is not performed, refresher training shall be completed."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 1, Article 613. 5

"Site-specific training and refresher training shall include changes in requirements and updates of lessons learned from operations and maintenance experience and occurrence reporting, for the site and across the DOE complex."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 2, Article 621.5, Paragraph 1

"Additional training beyond General Employee Radiological Training is necessary for unescorted entry into Radiological Buffer Areas or areas posted for radiological control other than Controlled Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 2, Article 622.1

"Visitors who enter the Controlled Area shall receive a radiological safety orientation that should include the following topics:
a. Basic radiation protection concepts;
b. Risk of low-level occupational radiation exposure, including cancer and genetic effects;
c. Risk of prenatal radiation exposure;
d. Radiological protection policies and procedures;
e. Visitor and management responsibilities for radiation safety;
f. Adherence to radiological posting and labeling;
g. Applicable emergency procedures;
h. Training for issuance of dosimeters, where applicable."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 2, Article 622.2

"Information may be communicated by videotape or handout to personnel entering a site. An examination is not required."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 2, Article 622.3

"Records of the orientation shall be maintained. Visitor sign-in logs may be used as orientation records."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 2, Article 622.4

"The orientation for continuously escorted individuals or groups should be commensurate with the areas to be visited. Records of orientation for such individuals or groups should be retained."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 2, Article 622.5

"Further requirements for Visitors, Tour Groups, Visiting Dignitaries, Scientists and Specialists are addressed in Article 657."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 4, Article 642.1

"Radiological Control Technician
Radiological Control Technician qualification consists of the standardized core course training material, on-the-job training per the Qualification Standards, and passing both a final comprehensive written examination and final Oral Examination Board."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 4, Article 642.4

"Entry-level prerequisites shall be established to ensure that Radiological Control Technicians meet standards for physical condition and education. At a minimum, these standards should include the following:
a. High school education or equivalency;

b. Fundamentals of mathematics, physics, chemistry and science;
c. Systems and fundamentals of process, operations and maintenance;
d. Reading and comprehension level sufficient to follow procedures, write permits, prepare survey maps, write reports and prepare shipping and transfer permits;
e. Ability to work in a support role, including communicating verbal instructions to others;
f. Physical requirements to handle Personal Protective Equipment, other equipment and assist others in work locations, commensurate with assignment."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 4, Article 644.1

"Radiological Control Technician Supervisors
Radiological Control Technician Supervisors shall have qualified as Radiological Control Technicians and should participate in continuing radiological training programs."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 4, Article 644.2

"Radiological Control Technician Supervisors should have supervisory and leadership capabilities to direct the work of technicians; effectively interact with crafts, line supervisors, professional staff and other managers; and be able to respond and direct others in emergency and abnormal situations."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 657.1

"Sites should establish radiological control training for tour groups and visiting dignitaries, scientists and specialists commensurate with the areas they are to enter. This training is intended for individuals not performing hands-on work."

4.3.2.1 ALARA Training

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 652

"Technical Support Personnel
Appropriate technical support personnel (engineers, schedulers, procedure writers) should be trained in the principles of ALARA, basic ALARA techniques and dose reduction techniques. They should also participate in selected portions of job-specific and specialized training, particularly in situations using mock-ups."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 654.4

"Radiological support personnel who are responsible for implementing the site ALARA program shall receive ALARA training."

4.3.3 Maintenance Training Program

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 2.3.3, Paragraph 1, Sentences 1 thru 4

"Maintenance managers are responsible for helping to select high-quality personnel, for effective use of available resources, for assessment of resource adequacy, and for making recommendations regarding needed changes to the appropriate managers. They should be

involved in defining entry-level criteria and screening of new personnel. High-quality personnel should be selected to establish a staff of supervisory, engineering, planning, technical (craft), warehousing, and other support personnel needed to support the maintenance program. The entry-level criteria should ensure that maintenance personnel have the requisite background and experience to be trainable for work in nuclear facilities."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 2.3.3, Paragraph 2

Author's Note: Only sentences 1 and 2 apply to this functional Area. The remaining text in this citation is applicable to the Maintenance Functional Area.

"The maintenance staff should have sufficient personnel and time for training activities. A training and qualification program should be developed for maintenance supervisors, planners, craft, and warehouse personnel to ensure that high-quality performance by maintenance personnel is achieved and maintained. Career progression plans should be developed that help ensure that future maintenance staff vacancies can be filled with qualified personnel. These progression plans include providing experience opportunities and training to potential candidates for specific positions. All maintenance management and supervisory positions should be filled with permanent contractor personnel."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.1

"The responsibilities for establishing, maintaining, and implementing the maintenance training programs should be clearly defined and understood. A key element for success is personal involvement of managers and supervisors in the development, scheduling, and conduct of maintenance training."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.2

"Training should be defined and should include managerial, supervisory, planning, engineering, warehousing, craft positions, contractor personnel, and other positions, as deemed necessary. Courses should then be obtained or developed."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.4, Bullet 1

"OJT Program Adherence--OJT should be conducted in accordance with formally defined training programs that specifically identify items the trainee must accomplish. Knowledge requirements for each item, as well as what the trainee must do (perform, simulate, observe, or discuss), should be defined. Both the trainer and the trainee should understand what is required for each training item."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.4, Bullet 2, Sentence 1

"OJT Trainer Qualification--OJT should be conducted by personnel who have successfully qualified as OJT trainers."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.4, Bullet 3, Sentence 1

"Trainee Supervision and Control--When trainees perform maintenance on installed equipment, a qualified OJT instructor should observe the work so that the trainee properly accomplishes the activity and understands how to avoid errors that could affect personnel safety or adversely impact the facility."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.5, Sentence 1

"In conjunction with the training organization, maintenance management should review an individual's training accomplishments prior to qualification for a given task."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.6, Sentence 1

"In addition to training in technical maintenance functions as described in the preceding, a select group or team should be schooled in principles and methods of root-cause analysis."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.7, Sentence 1

"The maintenance manager should be directly involved in approving and periodically reviewing the maintenance training program."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 3.3.8, Sentence 1

"There should be a formalized training program that addresses and provides the necessary training to develop and maintain management and supervisory skills."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Section 8.3.6, Paragraphs 1 and 2

"Non-facility contractor and subcontractor personnel who perform maintenance or modifications on facility systems should be trained and qualified for the work they are to perform. These personnel should also receive general employee training and specific training in appropriate facility administration, safety, quality control, and radiation protection procedures and practices. Adequate time should be provided for this training. Recognition should be given to individual needs and previous training and experience. Experienced personnel could be allowed to bypass training by proving proficiency through examination and demonstration. Non-facility contractor and subcontract personnel who are not fully trained and qualified for the job to be performed should be continually supervised by qualified personnel.

Non-facility contractor and subcontract personnel should perform maintenance under the same controls as and to the same high work standards expected of facility maintenance personnel. Non-facility contractor and subcontract managers and supervisors should be held accountable for the work performance of their personnel. Facility supervisors should review the work of these personnel during preparation for work, at the job site, and during post-maintenance testing and acceptance inspections to the extent needed to enforce these requirements."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.g.(1)

"All technicians and maintenance personnel shall be qualified to perform the tasks associated with their specialty, or work under the direct supervision of personnel qualified to perform the activity or task."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.g.(2)

"Training on engineered safety features as identified in the facility Safety Analysis Report shall be conducted for personnel who perform work on those systems/components. Included in this category are systems having a direct impact on the safe operation of the facility. Examples of engineered safety feature systems are emergency core cooling systems, instrumentation systems that provide protective functions, emergency electrical power distribution systems, and other

systems whose failure could have an adverse affect to the environment or the health and safety of the public. System training shall, at a minimum, include the following elements:

(a) Purpose of the system;

(b) General description of the system including major components, relationship to other systems, and all safety implications associated with working on the system; and

(c) Related industry and facility-specific experience."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.d

"Technicians. Technicians are principally involved in calibration, inspection, troubleshooting, testing, maintenance, and radiation protection activities at the facility. Examples are laboratory technicians, instrument technicians, and radiological control technicians.

(1) Experience:
Job related 1 year"

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.e

"Maintenance Personnel. Maintenance personnel are responsible for the maintenance and repair of mechanical and electrical equipment.

(1) Experience:
Maintenance related 1 year"

4.3.4 Management and Supervisory Training

REQUIREMENT SOURCE: 54FR3904 Part (c)(4)(ii)

"So that supervisors will carry out their safety and health responsibilities effectively, ensure that they understand those responsibilities and the reasons for them, including:

(A) Analyzing the work under their supervision to identify unrecognized potential hazards;

(B) Maintaining physical protections in their work areas; and

(C) Reinforcing employee training on the nature of potential hazards in their work and on needed protective measures, through continual performance feedback and, if necessary, through enforcement of safe work practices."

REQUIREMENT SOURCE: 54FR3904 Part (c)(4)(iii)

"Ensure that managers understand their safety and health responsibilities, as described under (c)(1), "Management Commitment and Employee Involvement," so that the managers will effectively carry out those responsibilities."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 2, Article 124 Introduction

"Radiation and Risk Communications
Due to the continuing concerns of many people related to low radiation exposure and health impacts, managers should be trained to deal with the perception of personnel concerning

radiation risks. Managers and first-line supervisors should be sensitive to the fact that workers have to understand the fundamentals of radiation, its risks and their role in minimizing exposure. It is not sufficient to rely solely on regulatory limits for establishing or defining acceptable work practices and work environments."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 2, Article 124.1

"Appropriate personnel should receive training which is helpful in their dealing with workers who have anxiety about radiation. This training should include the following:
a. Guidance on handling such personnel interactions
b. Emphasis on being factual
c. Fundamentals of communicating risks
d. Importance of keeping management informed."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 651

"Other Radiological Training
Management Training
Line Managers (DOE and contractors) who manage, supervise or provide oversight of Radiological Control Programs shall be trained in the principles of this Manual. Such training should be based on DOE standardized core course training materials supplemented by site-specific procedures and be completed by new personnel prior to formally assuming line supervision and management responsibilities. Incumbents should participate in continuing training. The continuing training should emphasize self-assessment and external evaluations including performance indicators, root causes and lessons learned based on operational experience."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.i Introduction

"Management and Supervisory Training Requirements. The topics listed in paragraph 7h shall be considered for applicability when developing manager and supervisor training programs. If training related to those topics is applicable to the position, that training shall be included in addition to the topics listed below, as appropriate to their job responsibilities. Supervisory skills and management training need not be subject to examination as part of initial training, nor is it necessary to include training on these topics in the continuing training program. It may, however, be appropriate to include additional topics such as these as part of the ongoing professional development program for managers and supervisors."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.i.(1)

"Supervisory Skills Training. The supervisory skills training program shall include the following (or equivalent):

(a) Leadership;

(b) Interpersonal communication;

(c) Responsibilities and authority;

(d) Motivation of personnel;

(e) Problem analysis and decision making;

(f) Fitness for duty procedures; and

(g) Administrative policies and procedures."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.i.(2)

"Management Training. The management training program should include:

(a) Supervisory skills training;

(b) Quality assurance and quality control;

(c) Facility security and emergency plans;

(d) Purchasing;

(e) Material storage;

(f) Facility modifications (configuration control);

(g) Nuclear, industrial, and radiation safety;

(h) Environmental issues; and

(i) Budgeting."

REQUIREMENT SOURCE: DOE5480.20A Chapter II, Section 4

"ENGINEERING EXPERTISE ON SHIFT REQUIREMENTS. The operating organization shall ensure that the operating shift possesses adequate engineering and accident assessment expertise. This may be accomplished by designating a Shift Technical Advisor (STA) for each shift, or by combining the STA position with the shift supervisor or an on-shift senior reactor operator. If the combined approach is utilized, the designated STA shall meet the following qualifications:

a. Currently certified as a senior reactor operator; and

b. Successful completion of the STA training requirements in paragraph 6a, and one of the following educational requirements:

(1) Baccalaureate in engineering;

(2) Professional engineer's license;

(3) Baccalaureate in engineering technology including course work in the physical, mathematical, or engineering sciences; or

(4) Baccalaureate in a physical science including course work in the physical, mathematical, or engineering sciences."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.a

"Managers. The term "Manager" refers to a person whose assigned responsibilities include ensuring that a plant or facility is safely and reliably operated, and that supporting operational and administrative activities are properly controlled. Managers are responsible for nuclear safety, operational efficiency and reliability, control of onsite emergencies, and any other activities necessary to safeguard the health and safety of the workforce, the general public, and

the environment. Operational responsibilities include prioritizing and assessing facility activities including modifications, and overseeing the operating organization. Administrative responsibilities include maintenance of a qualified staff, budgets, maintaining employee performance, administering disciplinary actions consistent with company policies, public information, and coordination with corporate offices. This functional level typically includes the Plant/Facility Manager or Director, the Operations Manager, the Maintenance Manager, the Training Manager, and the Technical Manager. Prior to assuming the duties of the assigned position, persons at the manager level shall meet the following requirements:

(1) Education: Baccalaureate in engineering or related science

(2) Experience:
Nuclear 4 years

(3) Special Requirements:

(a) Education or experience that is job-related may be substituted for a degree on a case-by-case basis. The degree may fulfill 3 of the 4 years of nuclear experience required on a one-for-one time basis;

(b) Managers shall receive facility-specific training based upon a comparison of the individual's background and abilities with the responsibilities and duties of the position; and

(c) The Training Manager shall have a baccalaureate including courses in education and technical subjects (baccalaureate need not be in engineering or related science)."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.b

"Supervisors. This functional level consists of those individuals who are responsible for the quantity and quality of work performed and who direct the actions of operators, technicians, or maintenance personnel. Their duties include ensuring that work is performed in compliance with procedures, policies, and industrial safety practices. Prior to assuming the duties of the assigned position, supervisors shall meet the following requirements:

(1) Education: High School Diploma

(2) Experience:
Nuclear 3 years

(3) Special Requirement: Full-time academic training (i.e., degree programs, trade schools, vocational programs, etc.) may be substituted on a one-for-one basis for 2 of the 3 years of required nuclear experience."

4.3.5 Operator Training

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter V, Section C.1

"On-shift training should be conducted in accordance with training programs that specifically identify items the trainee must accomplish on shift. The knowledge requirements for each item should be defined as well as what the trainee must do (perform, simulate, observe, or discuss). Both the instructor and the trainee should understand what is required for each training item."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter V, Section C.2, Sentence 1

"On-shift training should be conducted by qualified operators."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter V, Section C.2, Sentence 4

"The on-shift instructors should be specifically selected, taking into account communication skills, technical knowledge, and ability to provide trainees with hands-on experience."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter V, Section C.4

"The operator qualification program should be approved by the operations supervisor, and changes to the program should be coordinated with the training department. For operating positions requiring certification, qualifications should be based on one-to-one instruction at that station."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VIII, Section C. 3, Sentences 1 thru 4

Author's Note: Only the last sentence applies to the S/RID. The remaining text in this citation is applicable to the Operations Functional Area S/RID.

"Locks and Tags should be used on those components that require special administrative control for safety or other reasons. Locks and Tags provide some security that a component will be operated only by authorized facility personnel performing required evolutions in a controlled fashion. Additionally, Locks and Tags should alert the operator of the importance of the component and remind him/her that special controls over repositioning are to be maintained. In this respect, all personnel should receive training regarding their responsibilities concerning the manipulation of locked or tagged controls."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter X, Section C.3, Sentence 1 and 2

Author's Note: Only the first sentence applies to this S/RID. The remaining test applies to the Operations Functional Area S/RID.

"Operators should be trained in the appropriate techniques for verifying the positions of all facility components. In addition, a reference document should be provided explaining what an operator should do when verifying a component position."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter XIII, Section C.2, Paragraph 1, Sentence 1

"Operators should be knowledgeable about aspects of facility processes and safety that affect operation and should be able to analyze off-normal situations and take appropriate action to correct the causes(s) of problems."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.c

"Operators. Operators are persons responsible for performing operations associated with engineered safety features as identified in the Safety Analysis Report, operating support systems which could affect engineered safety features, or conducting activities with radioactive

materials. Duties may include manipulating facility controls, monitoring parameters, and operating equipment in facility safety systems. Operators include fissionable material handlers, tritium facility operators, chemical process operators, waste tank operators, and enrichment facility operators.

(1) Education: High School Diploma"

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4 Introduction

"SPECIFIC TRAINING REQUIREMENTS. The depth and scope of training and qualification programs for operating organization personnel at non-reactor nuclear facilities shall be commensurate with the hazard level and complexity of the operations (i.e., a graded approach should be used to develop and implement the training programs). This section provides specific training requirements for operators, fissionable material handlers, and supervisors."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4.a

"Operators. Operator training shall be sufficiently comprehensive to cover areas which are fundamental to the candidate's assigned tasks to ensure that personnel are capable of safely performing their job duties. The training program shall include the following:

(1) A core of subjects such as industrial safety, instrumentation and control, basic physics, chemistry, industry operating experience, and major facility systems, as applicable to the position and the facility.

(2) On-the-job and classroom-type training to ensure that personnel are familiar with all aspects of their positions. Such training shall include but not be limited to:

(a) Normal and emergency procedures;

(b) Administrative procedures;

(c) Radiation control practices;

(d) Location and functions of pertinent safety systems and equipment;

(e) Procedures for making changes or alterations in operations and operating procedures; and

(f) Technical Safety Requirements."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4.b

"Fissionable Material Handlers. Fissionable material handler candidates shall be trained in the following subject areas in addition to that required in paragraph 4a above to the extent applicable to the position:

(1) Instrumentation and control, including types of instruments and control systems, principles of operation, and consequences of malfunctions;

(2) Facility operating characteristics, including principal features, operating parameters, and operating limits of the facility (to include auxiliary systems); and

(3) Principles of nuclear facility operation, including the processes involved and technical terminology for the chemical, physical, and metallurgical reactions and criticality safety principles, controls, and specifications."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4.c

"Supervisors. The supervisor training program shall include the categories and on-the-job training specified for operators and fissionable material handlers to the extent to which they are applicable. This training shall be of increased depth to reflect the added responsibility of the supervisor position."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4.f

"Operational Evaluations. The operational evaluations administered to certified operator, fissionable material handler, and certified supervisor candidates shall be generally similar in scope. The evaluation shall contain questions and operational exercises and shall include a facility walkthrough, and may include system and/or component operation. Operational evaluations, to the extent applicable to the facility, shall require the candidate to demonstrate an understanding of, and the ability to perform the actions necessary to accomplish a representative sampling from the following items:

(1) Perform prestartup procedures, including operating of controls associated with equipment which could affect criticality safety;

(2) Manipulate the controls as required to control the nuclear process between system or component shutdown and normal process operation;

(3) Identify annunciators and condition-indicating signals and perform appropriate remedial actions;

(4) Identify instrumentation systems and the significance of associated instrument readings;

(5) Observe and safely control the operating behavior characteristics of the facility;

(6) Perform control manipulations to obtain desired operating results during normal, abnormal, and emergency situations;

(7) Safely operate auxiliary and emergency systems, including controls of facility equipment that could affect criticality safety or release radioactive or other hazardous material to the environment;

(8) Demonstrate or describe the use and function of radiation monitoring systems, including fixed radiation monitors and alarms, portable survey instruments, and personnel monitoring systems;

(9) Demonstrate knowledge of significant radiation hazards, including permissible levels in excess of those authorized and ability to perform other procedures to reduce excessive radiation levels and to guard against personnel exposure;

(10) Demonstrate knowledge of the emergency plan, including, as appropriate, nuclear facility operator or supervisor responsibility to decide whether the plan should be executed and assigned duties under the plan;

(11) Demonstrate knowledge and ability, as appropriate to the assigned position, to assume the responsibilities associated with safe operation; and

(12) Demonstrate the ability to function within the facility or the control room as a team, as applicable to the facility and to the position, in such a way that procedures are adhered to and Technical Safety Requirements are not violated."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 4.g

"Control Manipulations. The operating contractor shall prepare a list of control manipulations that is based on an analysis of the job. Certified operator, fissionable material handler, and certified supervisor candidates shall perform control manipulations for initial certification and on a biennial basis as part of the continuing training program after certification is achieved. Certified supervisors need only supervise or direct the performance of control manipulations to satisfy this requirement. Supervision of the performance of control manipulations is consistent with the normal responsibilities of supervisors. However, there may also be situations in which the nuclear facility could require that a certified supervisor actually perform the control manipulation as part of initial certification if the operation requires in-depth knowledge of the supervisor to ensure that the operation is performed safely and correctly."

4.3.6 Continuing Training

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d Introduction

"Continuing Training Requirements. Continuing training programs shall be established to maintain and enhance the knowledge and skills of operating organization personnel who perform functions associated with engineered safety features as identified in the facility Safety Analysis Report. The guidance in DOE-STD-1060-93, Guide to Good Practices for Continuing Training, should be used to develop continuing training programs that improve the knowledge and skills of operating organization personnel."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d.(1)

"These programs shall be structured commensurate with specific position needs, and shall be administered on a cycle not to exceed two years. Continuing training shall include, at a minimum, training in significant facility system and component changes, applicable procedure changes, applicable industry operating experience, selected fundamentals with emphasis on seldom used knowledge and skills necessary to assure safety, and other training as needed to correct identified performance problems."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d.(2)

"Periodic examinations (written, oral, operational evaluations, performance demonstrations, as applicable to the position) shall be administered and documented throughout the cycle on material included in the operator (operators and their immediate supervisors) training programs. Periodic examinations (written and/or performance demonstrations) of other members of the operating organization (i.e., maintenance personnel, technicians, technical staff) is also appropriate in some areas during the continuing training program."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d.(3) Introduction

"Continuing training programs for certified operations personnel shall consist of preplanned classroom-type training, on-the-job training, and operational evaluations on a regular and continuing basis. Continuing training programs for certified operators and certified supervisors shall include, at a minimum, the following as related to job performance:"

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d.(3)(a)

"Training and examination covering abnormal facility procedures and emergencies shall be required at least annually for certified operators and certified supervisors;"

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d.(3)(b)

"Drills conducted in the facility or on a simulator to enable personnel and operating teams to maintain their ability to respond to abnormal or accident situations. Training drills conducted in the facility shall not lead to or have the potential for safety concerns;"

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d.(3)(c)

"Instruction in the use of facility systems to control or mitigate accidents. Such training shall include both classroom-type training and training conducted in the facility;"

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.d.(3)(d)

"Training, as applicable to the position, in the following subjects where examinations and experience (industry and facility-specific) or other evidence indicates additional emphasis in scope and depth of coverage is needed:

1 Theory and principles of facility operation;

2 General and specific facility operating characteristics;

3 Facility instrumentation and control;

4 Facility protection systems;

5 Engineered Safety Features;

6 Normal, abnormal, and emergency procedures;

7 Radiation control and safety; and

8 Technical Safety Requirements."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.e.(4)

"Changes in GET areas identified in paragraph 7e(1) shall be included in continuing training programs for all facility personnel. Periodic examinations should be administered on areas of the GET program that are included in the continuing training program."

4.3.7 Technical Support Personnel Training

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 654.1

"Radiological Control Personnel
Radiological Control technical staff and management should have:
a. A combination of education and experience commensurate with their job responsibilities;
b. Continuing training based on an assessment of job responsibilities to maintain and enhance proficiency;
c. Continuing training to remain cognizant of changes to the facility, operating experience, procedures regulations and quality assurance requirements."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 654.3

"Radiological support personnel should have:
a. Applicable training on standardized core course topics from Radiological Worker I and II and Radiological Control Technician training and additional job-specific topics,
b. Training appropriate to the tasks to be performed;
c. Continuing training to provide continued improvement in knowledge and skills."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.h.(1)

"The contractor shall develop a list of specific technical staff positions that have a direct impact on employee, facility, or public safety."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 7.h.(2)

"Training shall be provided to entry-level technical staff personnel who provide technical support to the operating organization. Training in the following facility-specific subject areas shall be included as appropriate to the position:

(a) Facility organization;
(b) Facility fundamentals;

1 Heat transfer, fluid flow, and thermodynamics
2 Electrical science
3 Nuclear physics
4 Chemistry/chemistry controls
5 Process controls

(c) Facility systems, components, and operations;
(d) Simulator training;
(e) Environment, Safety, and Health Orders;
(f) Codes and standards overview;
(g) Facility document system;
(h) Safety Analysis Reports and Technical Safety Requirements;
(i) Nuclear criticality control;
(j) Material, maintenance, and modification control;
(k) ALARA and radwaste reduction program; and
(l) Quality Assurance/Quality Control practices."

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.f

"Technical Staff. Personnel in these positions are responsible for supervision and performance of technical support functions for the operating organization. Personnel involved in surveillance, testing, analyzing facility data, planning modifications, program review, and technical problem resolution in their area of expertise are also included. They have expertise in mechanical, electrical, instrumentation and control, chemistry, radiation protection, safety, or quality assurance/independent assessment. For personnel assigned to equivalent positions, non-reactor nuclear facilities should use the education and experience requirements contained in Chapter II, Category A Reactor Personnel, paragraph 2c. For positions for which there is no equivalent, the education and experience requirements are as listed below. The education and experience requirements listed below apply to supervisory positions or positions with authority to make independent decisions or to review and concur, and not to entry-level positions.

(1) Education: Baccalaureate in engineering or related science

(2) Experience:

Job related	2 years
Nuclear	1 year"

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.g.(1)

"Training Coordinators.

(a) Education: High School Diploma

(b) Experience:

Nuclear	2 years
Onsite	6 months"

REQUIREMENT SOURCE: DOE5480.20A Chapter IV, Section 2.g.(2)

Author's Note: Only Paragraph 6 applies to this S/RID. The remaining text in this citation is applicable to the Fire Protection Functional Area and the Site Level Training and Qualification S/RID.

"Training Instructors.

(a) Education: High School Diploma

(b) Experience: Consistent with the material being presented.

(c) Special Requirements:

1 Instructors who are responsible for instruction on subjects such as Technical Safety Requirements shall have received training on facility operating characteristics and principles, and operating limits (Safety Limits, Limiting Control Settings, and Limiting Conditions for Operation) and their bases; and

2 Instructors shall have demonstrated knowledge of instructional techniques through training or experience and be qualified by the Training Manager (or equivalent) for the material being presented."

4.3.8 Configuration Management Training

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.1.6, Paragraph 1, Sentence 3

"The CM program should include training on CM concepts, terminology, definitions, and procedures."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.4.4, Paragraph 1

"As policy, plans, and procedures are established, associated training should be provided to communicate expectations and to ensure effective implementation. In addition to standardizing terminology and establishing an integrated system of procedures regarding CM activities, a formal training program in configuration management can be very important in properly orienting facility personnel. The program management element should establish and oversee CM program training activities, including (1) initial awareness or orientation training, (2) follow-up training on development and implementation of the CM program elements and

functions, and (3) subsequent refresher training as needed. As defined in the program criteria, training should be provided on CM concepts, terminology, definitions, and procedures."

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 2, Section 2.1.4.4, Paragraph 2

"Training should be started early in the development of a CM program to acquaint users with the new concepts, to ensure a common understanding of the objectives, and to communicate responsibilities for implementing the program (i.e., CM-awareness training). Organizational culture change regarding configuration management is a fundamental part of successful CM program implementation. For example, facility personnel should be able to identify appropriate change mechanisms and always use them. Training, supplemented by clear and documented expectations, and followed up with feedback and coaching, is an effective tool for promoting the culture changes that are needed."

4.3.9 Nuclear Criticality Safety Training

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 5.1

"Management shall establish a nuclear criticality safety training program that provides confidence in the continuing proficiency of personnel."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 5.2

"Supervisors shall ensure that their staffs are suitably trained."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 5.3

"Nuclear criticality safety staff shall participate in the development of the training program and should participate in its implementation and the evaluation of its effectiveness."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 6.1

"Training requirements shall be determined and documented. The content of the training program shall be tailored to job responsibilities and shall support the conduct of the job."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 6.2

"Refresher training requirements shall be determined and documented. Such training shall be provided at least every two years."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.1.3

"Health effects of criticality accidents shall be discussed."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.4.2

"An example of the reduction in the received dose as a function of distance, time, and shielding shall be given to emphasize the need for prompt evacuation."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.5.1

"The effects and applications of the following factors that are relevant to criticality safety of operations in the facility shall be explained and illustrated:

(1) mass
(2) shape
(3) interaction and separation
(4) moderation
(5) reflection
(6) concentration
(7) volume
(8) density
(9) neutron absorbers
(10) heterogeneity
(11) enrichment."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.5.2

"Single parameter limits appropriate to the facility shall be discussed."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.5.3

"The concept of nuclear criticality shall be illustrated by examples appropriate to the facility. The following are typical illustrations:

(1) the change in critical mass of small pieces of fissionable material, such as lathe turnings or low-enriched pellets, upon immersion in water or oil

(2) the influence of nonfissionable materials and of geometry on nuclear criticality

(3) factors affecting interaction among units."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.5.4

"The concept of contingencies for checking the validity of criticality safety limits shall be discussed."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.6.1

"The facility management's nuclear criticality safety policy shall be described."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.6.2

"The facility policy for the use of check lists, sign-off sheets, and documentation in the execution of procedures that are pertinent to criticality safety shall be explained."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.6.3

"Relevant procedures that pertain to criticality safety shall be discussed. Emphasis shall be given to criticality safety limits, controls, and emergency procedures."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.6.4

"The policy that relates to situations not covered by procedures and to situations in which the safety of the operation is in question shall be described."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 7.6.5

"Employees shall be informed of their right to question any operations that they believe may not be safe."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 8.1

"The criticality safety training program of an organization shall be evaluated periodically. The evaluation process should provide confidence in the adequacy of the total training program. The evaluation process and the evaluations shall be documented."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 8.2

"Satisfactory completion of training shall be based upon predetermined performance criteria. Evaluation methods should include written, oral, and operational examinations. Identified weaknesses shall be addressed by additional training. Acceptance of the adequacy of the individual's total training record shall be the responsibility of the immediate supervisor and any other organizational units designated by management."

REQUIREMENT SOURCE: DOE5480.21 Chapter III, Section 5.d

"The implementing procedures should address the personnel qualifications needed in order to perform or review a safety evaluation. This includes required educational background, years and/or types of work experience, knowledge of the facility, understanding of DOE requirements, and familiarity with the facility authorization basis. Specific responsibilities of those performing or reviewing safety evaluations should be clearly defined."

REQUIREMENT SOURCE: DOE5480.21 Chapter III, Section 8, Sentence 1

"Training. All personnel responsible for performing, reviewing, or approving USQ determinations should receive initial training on the application of the Order and of facility-specific procedures."

4.3.10 Emergency Response Organization (ERO) Training

REQUIREMENT SOURCE: 29CFR1910 Part 38(a)(5)

"Employee emergency plans and fire preventions. Emergency action plan. Training.

(i) Before implementing the emergency action plan, the employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.

(ii) The employer shall review the plan with each employee covered by the plan at the following times:

(A) Initially when the plan is developed,

(B) Whenever the employee's responsibilities or designated actions under the plan change, and

(C) Whenever the plan is changed.

(iii) The employer shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency.

The written plan shall be kept at the workplace and made available for employee review. For those employers with 10 or fewer employees the plan may be communicated orally to employees and the employer need not maintain a written plan."

REQUIREMENT SOURCE: 29CFR1910 Part 120(p)(8)(iii)(A)

"Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents. Exceptions #1: An employer need not train all employees to the degree specified if the employer divides the work force in a manner such that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first respond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are instructed in that case to summon the fully trained employees and not attempt control activities for which they are not trained.

Exception #2: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully-trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside fully trained emergency response team for assistance."

REQUIREMENT SOURCE: 29CFR1910 Part 120(p)(8)(iii)(B)

"Employee members of TSD facility emergency response organizations shall be trained to a level of competence in the recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk of safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the safe operating procedures to be used at the incident scene; in the appropriate response to over exposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from over exposures."

REQUIREMENT SOURCE: 29CFR1910 Part 120(p)(8)(iii)(C)

"The employer shall certify that each covered employee has attended and successfully completed the training required in paragraph (p)(8)(iii) of this section, or shall certify the employee's competency at least yearly. The method used to demonstrate competency for certification of training shall be recorded and maintained by the employer."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 656.5

"Training should make it clear that lifesaving has priority over radiological controls."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 6, Part 5, Article 656.6

"Records of this training should be maintained."

4.3.11 Fire Protection Training

REQUIREMENT SOURCE: 29CFR1910 Part 157(g)(1)

"Training and Education. Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting."

REQUIREMENT SOURCE: 29CFR1910 Part 157(g)(2)

"The employer shall provide the education required in paragraph (g)(1) of this section upon initial employment and at least annually thereafter."

REQUIREMENT SOURCE: 29CFR1910 Part 157(g)(3)

"The employer shall provide employees who have been designated to use fire fighting equipment as a part of an emergency action plan with training in the use of the appropriate equipment."

REQUIREMENT SOURCE: DOE5480.7A Section 9.c.(6)

"Training. Training shall be provided for the individuals within the fire protection organization, the fire department/brigade, and any other person with responsibilities for fire safety. Training programs shall reflect the criteria contained in the mandatory codes and standards listed in paragraph 5 and shall reflect site-specific considerations."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 7

"Employees must be provided annual fire prevention training. The training must be documented and include:
a. Good housekeeping practices.
b. Proper response and notification in the event of fire.
c. Instructions on the use of portable fire extinguishers. Employees, who perform fire watches, must receive hands-on portable fire extinguisher training, as required by 29 CFR 1910.
d. Recognition of potential fire hazards."

4.3.12 Security Training

REQUIREMENT SOURCE: DOE5631.1C Section 8.b

"Scheduling. Each individual shall receive the initial security briefing prior to assuming duties. Initial and comprehensive briefings may, at the discretion of the facility, be conducted simultaneously. Under such circumstances, the subject requirements shall be included as prescribed by both initial and comprehensive criteria."

REQUIREMENT SOURCE: DOE5631.1C Section 9.b

"Scheduling. Prior to being granted access to classified information or special nuclear materials, an individual shall receive a comprehensive briefing. Comprehensive briefings shall be scheduled with a frequency that ensures minimum delay in the granting of access. Additionally, all individuals possessing a security clearance who are permanently transferred to another DOE facility, shall also receive a comprehensive briefing at the new facility."

REQUIREMENT SOURCE: DOE5631.1C Section 10.b

"Scheduling. Refresher briefings are mandatory for all individuals possessing active DOE access authorizations.

(1) Annual refresher briefings shall normally be conducted each calendar year at approximately 12-month intervals.

(2) Responsible security offices shall coordinate attendance at refresher briefings with security or administrative representatives of organizational elements with the scope of their security authority."

REQUIREMENT SOURCE: DOE5631.1C Section 11.b

"Scheduling. Termination briefings shall be given either on the last day of employment, the last day the person possesses a security clearance, or when the person no longer requires access to classified matter, whichever is sooner."

4.3.13 Safeguards Training

REQUIREMENT SOURCE: DOE5633.3B Chapter II, Section 4.c

"Training and Qualification of Measurement Personnel. The objective is to assure that the individuals responsible for performing measurements have sufficient knowledge to perform the measurements in an acceptable manner.

(1) Training. Each facility shall have a documented plan for the training of measurement personnel. The plan shall be reviewed annually and updated as necessary to reflect changes in measurement technology and shall specify training, qualification, and requalification requirements for each measurement method.

(2) Qualification. Each facility shall have a documented qualification program that ensures that measurement personnel demonstrate acceptable levels of proficiency before performing measurement, and that measurement personnel are requalified according to requirements in the training plan. For destructive analysis of nuclear material, this proficiency shall be demonstrated, at a minimum, once per day for each method that the individual will use that day."

4.4 TRAINING RECORDS AND DOCUMENTATION

REQUIREMENT SOURCE: 10CFR835 Part 704(a)

Author's Note: This citation applies to PFP only for training records developed to demonstrate compliance with the facility responsibilities of the requirements of 10CFR835 Part 901(a) and 10CFR835 Part 901(b). The requirements of 10CFR835 Part 902 and 10CFR835 Part 903 are a Company level responsibility.

"Training records shall be maintained, as necessary, to demonstrate compliance with §§ 835.901, 835.902, and 835.903."

REQUIREMENT SOURCE: 29CFR1910 Part 147(c)(7)(iv)

"The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training."

REQUIREMENT SOURCE: ANSI-Z88.2-1992 Section 8.3

"Records. For each employee, records shall be maintained that give the date and type of training received, performance results (as appropriate), and the instructor's name."

REQUIREMENT SOURCE: ANSI/ANS-8.20 Section 8.3

"The employee's training record shall be documented and retained for a minimum of four years or longer as required by management."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 2, Article 725.1

"Radiological Training and Qualification Records
Records of training and qualification in radiological control shall be maintained to demonstrate that a person received appropriate information to perform the work assignment in a safe manner. Qualification standard records shall be retained for on-the-job and practical factor training as well as for formal classroom training."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 2, Article 725.2

"Formal records of training and qualification shall be readily available to first-line supervision and management of involved personnel to aid in making work assignments."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 2, Article 725.3

"Personnel training records shall be controlled and retained. At a minimum, these records shall include the following:
a. Course title;
b. Attendance sheets with instructor's name;
c. Employee's name, identification number and signature;
d. Date of training;
e. Identification of the examination or evaluation form, including sufficient data to identify which test each person completed;
f. Verification document or record confirming satisfaction of the training requirement;
g. Documentation related to exceptions for training requirements and extensions of qualification;
h. Quizzes, tests, responses and acknowledgements of training, with the date and signature of the person trained;
i. Special instructions to females, their supervisors and coworkers concerning prenatal radiation dose, acknowledged by the worker's signature."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 2, Article 725.4

"Records shall be retained for the following types of training:
a. General employee radiological training;
b. Radiological Worker training;
c. Periodic retraining;
d. Respiratory protection training;
e. Training of radiological control personnel;
f. Instructor training;

g. Qualifications for special tests or operations;
h. Orientation and training of visitors;
i. Training of emergency response personnel."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 2, Article 725.5

"The following instructional materials shall be maintained:
a. Course name, with revision and approval date;
b. Instructor's manuals, course content, or lesson plans containing topical outlines;
c. Video and audio instructional materials, including the dates and lessons for which they were used;
d. Handouts or other materials retained with the master copy of the course;
e. Job-specific training documents, such as instrument use, radiological procedures, Radiological Work Permit special training requirements, pre-job briefings and mock-up training."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 2, Article 725.6

"Documentation of training and qualification received at another DOE location need not be duplicated. Such records should be provided to the person's home office for retention."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 3, Article 731.1

"Visitors
Record Requirements
Documentation of completion of Radiological Orientation shall be maintained for visitors entering an area where radiation monitoring is required."

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter V, Section C.5

"Completion of the operator qualification program should be formally documented. Classroom requirements and written exam results should be documented by training department instructors. On-shift training and system checkouts should be documented by on-shift instructors."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 15 Introduction

"RECORD REQUIREMENTS. Contractors shall develop and implement administrative procedures that specify requirements for the maintenance of training, qualification, and certification records for operating organization personnel. The guidance in the Nuclear Information and Records Management Association Guidelines for Management of Nuclear Related Training Records, TG-17 should be used to help standardize identification, handling, and storage of training records."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 15.a

"Qualification and certification of personnel shall be documented in an easily auditable format. Individual record documentation shall include the following at a minimum:

(1) Education, experience, and employment history and most recent health evaluation summary (e.g., similar to NRC Form 396);

(2) Training programs completed and qualification/certification achieved;

(3) Latest completed checklists, graded written examinations (with answers corrected as necessary or examination keys), simulator examinations (where applicable), and operational evaluations used for certification (this requires controlling access to training records to maintain examination security). The record should include an evaluation of knowledge and performance during operational evaluations;

(4) Lists of questions asked and the examiner's overall evaluation of the responses on oral examinations;

(5) Correspondence relating to exceptions to training requirements and extensions of qualification/certification;

(6) Records of qualification for one-time-only special tests or operations; and

(7) Attendance records for required training courses or sessions."

REQUIREMENT SOURCE: DOE5480.20A Chapter I, Section 15.b

"A historical record that documents initial qualification or certification, and applicable information from the above list that verifies the most recent qualification or certification shall be retained in individual records. Superseded information should be handled in accordance with DOE 1324.2A, RECORDS DISPOSITION."

REQUIREMENT SOURCE: WAC-173-303 Section 330(3)

"Training records. Training records on current personnel must be kept until closure of the facility. Training records on former employees must be kept for at least three years from the date the employees last worked at the facility. Personnel training records may accompany personnel transferred within the same company."

REQUIREMENT SOURCE: WAC-296-155 Section 24505(4)

"Training of employees as required by this section shall be documented and shall be available on the job site."

4.5 ACCREDITATION

PFP training programs are not subject to the accreditation requirements of DOE Order 5480.18B, Nuclear Facility Training Accreditation Program, dated 8-31-94.

4.6 KEY INTERFACES

The Training and Qualification Functional Area interfaces with all other Functional Areas to ensure the provision of general PFP training programs and to support the specific training needs of other functional areas. Some general training requirements are contained within the Site Level S/RID, but most training requirements for all functional areas are included in this S/RID.

4.6.1 Management Systems

Training and Qualification programs support the consistent and effective performance of the vital information processes governed by PFP Management Systems. Generally, training

provides an established mechanism for staff selection (through minimum qualification criteria), definition of initial and continuing training content, etc. Training in each management system area transfers understanding in program processes, responsibilities, knowledge of requirements, and the importance of compliance, safety, and accountability and will be provided as identified by management.

4.6.2 Quality Assurance

Formal training for personnel assigned to Quality Assurance (QA)/Quality Control (QC)/Nondestructive Examination (NDE) tasks is provided to ensure consistent and effective accomplishment of their job functions. Training needs and requirements should be identified by the management of the QA Functional Area at the site level and at each facility and should include both education in work related principles and should contribute to the enhancement of skills and practices. Training should provide an understanding of: processes and tools being used, the extent of variability of those processes, or tools, and the degree of control available over those variables, quality standards, potential consequences of improper work, special skills, and proficiency criteria. QA/QC/NDE personnel should be provided with continuing training, including re-certification where required, to ensure professional proficiency is maintained. Training should provide both general and specialized training (i.e., inspection and audit personnel) to meet the Quality Assurance organizations' performance needs. QA related training should also be provided for personnel in specific categories of jobs, such as; operators, designers, managers, supervisors, crafts, inspectors, and others.

4.6.3 Configuration Management

Formal training in Configuration Management provides improved operations and enhanced understanding in the integrated management of technical information. The Manager of the Configuration Management Functional Area should identify training needs and requirements to address training to ensure the consistent utilization of vital site and facility information pertaining to: design, maintenance, engineering, construction, operations, safety, and information management (document control and records management).

4.6.4 Emergency Management

Formal training for Emergency Management is required as defined by the management of the Emergency Management functional area to support three distinct audiences; general employee training, the Hanford emergency response organization (ERO), and off-site response organizations. Detailed ERO (and off-site team) training should address: chain of command, E-Plan execution, procedural adherence, equipment utilization, emergency operations center, special precautions and limitations, identification and assessment of job related hazards, scheduling and execution of drills, public interface issues, radiological and hazardous material properties, emergency response skills, and emergency controls, lessons learned from previous drills, among other related topics. General employee training should include: alarm recognition and response, response actions, and other PFP specific information.

4.6.5 Safeguards and Security

Formal training for the Safeguards and Security Functional Area promotes understanding and performance in the key areas of personnel access and material protection. Training needs and requirements should be identified by the management of the Safeguards and Security Functional Area and should address: personnel security, proper badging, visitor control, site wide security education, and select security procedures such as computer security and classified automated data processing and inventory control systems.

4.6.6 Engineering Program

The technical tasks associated with engineering, design, and safety analysis require the formal training and qualification processes reflected by professional engineering standards. Formal training develops and maintains technical competence in the areas of: system, facility, and site design, facility and site assessment, design control process, field change modifications, construction, design basis development, configuration change evaluations, safety and non-safety class systems, hazards assessment, among others. Formal training establishes training criteria, proficiency requirements, and qualifications, as needed, for review and approvals of engineering documents. Engineering Management and Supervision should identify training needs and requirements, review lesson plans, monitor training effectiveness, and provide periodic evaluations to promote self improvement.

4.6.7 Construction Program

Construction Program Functional Area management identify training needs and requirements to ensure construction supervisors and staff involved in new construction and modification activities are qualified and/or certified to the job positions assigned.

4.6.8 Operations

Formal training for the Operations Functional Area consists of various formats. Effective training should include classroom training for fundamentals and general training topics. Advanced syllabus items may involve simulator, laboratory, hands on, and on-the-job field applications of classroom knowledge through the demonstration of practical factor performance and on shift experience. The management of the Operations Functional Area should identify training needs and requirements for training that should include: conduct of operations, As-Low-As-Reasonably-Achievable (ALARA), key elements as defined in DOE Order 5480.19, professional development, medical and fitness for duty requirements, procedural adherence, and continuous compliance with analyzed safety parameters.

4.6.9 Maintenance

Formal training of Maintenance personnel is determined by the PFP Maintenance Manager and includes comprehensive lesson plans and curriculum for the initial and continued training of key maintenance positions. Close teaming with the training organization in course development, training plans and schedules, qualification and certification programs, and identification of continued proficiency requirements commensurate with designated job descriptions is essential. Training syllabi should include: maintenance work practices, ALARA, personal safety techniques, tool and equipment control, decontamination, maintenance records, work package development and tracking, configuration controls, modifications, and field changes, among others.

4.6.10 Radiation Protection

Formal training provides both general and specific training curricula in the area of radiation protection. Training needs and requirements are identified by the management of the Radiation Protection functional area and should include: technician specific training and qualification, supervisor discipline training, radiological monitoring, personnel exposure control, entry and exit controls, contamination control techniques, radioactive materials handling, radiological barriers, QA records, ALARA and radiological control curriculum, radiological hazards, worker awareness, Radiation Protection certifications, examinations, normal and emergency responses to radiological situations, lessons learned from Operations,

Occurrence Reporting across the site and the DOE complex, and other related Radiation Protection topics.

4.6.11 Fire Protection

Formal training in the Fire Protection Functional Area is essential to ensure the personnel safety and high performance of any individual assigned within the fire protection organization, the fire department brigade, apparatus drivers, fire test and inspection personnel, and any other persons with responsibilities for fire safety. Training program content and needs should be identified by Fire Protection management to reflect the applicable criteria contained in the identified mandatory Fire Protection Functional Area codes and standards and should consider facility specific characteristics. Training programs should emphasize fire hazards, fire alarms and response, fire prevention, communications, general safety, and other related topics. Qualification and certification programs should be identified for facility operators, fire investigators, emergency medical personnel, fire officers, and fire service inspectors, among others.

4.6.12 Packaging and Transportation

Formal training for the Packaging and Transportation Functional Area provides appropriate personnel with a detailed understanding of hazardous materials, safety precautions, applicable Federal, State and local regulations as well as pertinent DOE Orders. Training syllabi developed in accordance with the needs and requirements identified by Packaging and Transportation management should include, among others: regulations governing the packaging, labeling, container requirements, security, and allowed forms of transportation, etc.

4.6.13 Environmental Restoration

This functional area is not applicable to PFP.

4.6.14 Decontamination and Decommissioning

This functional area is not applicable to PFP.

4.6.15 Waste Management

Formal training for the Waste Management area provides the transfer mechanism for understanding and ensuring consistent and continuous compliance to regulatory statutes regarding waste management. Key training topics as identified by the management of the Waste Management Functional Area may include: waste system operations, waste stream management, emergency response, hazardous waste safety, waste handling procedures, procedural adherence, waste minimization methods and practices, communications, and other related training topics.

4.6.16 Research and Development and Experimental Activities

There are no interfaces with this functional area.

4.6.17 Nuclear Safety

Formal training for Nuclear Safety personnel provides general and specialized training as defined by the management of the Nuclear Safety Functional Area in supporting professional development and qualification in specific job functions. Nuclear safety training is also directed towards personnel who operate, maintain, or supervise activities in nuclear facilities. Nuclear

safety training should include: risks associated with facility operations, location, design basis, and operations of pertinent safety systems, configuration change control procedures, safety analysis of technical issues, operational safety requirements, response to nuclear criticality safety alarms, criticality conditions, hazard barriers, unreviewed safety question determinations, among others. Training should promote technical competence, professional skills, and practical application of theoretical knowledge commensurate with job positions.

4.6.18 Occupational Safety and Health

Formal training in Occupational Safety and Health, as defined by the management of the functional area ensures consistent and thorough understanding of fundamentals for general employees, managers/supervisors, and ensures visitors and contractors are adequately trained prior to performing work. Essential safety topics include: health and safety issues, medical and fitness for duty requirements, among others. The Occupational Safety and Health Act (OSHA) training program also facilitates the continued professional development of the safety and health staff through training courses, seminars, conferences, laboratory experience, field studies and other learning activities.

4.6.19 Environmental Protection

Formal training in the area of Environmental Protection is defined by the management of the Environmental Protection Functional Area. Key areas should include: monitoring and surveillance systems, inspection requirements, permit management, pollution control, records and reports, pollution prevention techniques, waste minimization, quality of records, procedural adherence, safety, ALARA, emergency response, contingency planning, and other related topics.

4.7 REFERENCES

4.7.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this S/RID:

10CFR830, Code of Federal Regulations, Nuclear Safety Management, 5/5/94.

10CFR835, Occupational Radiation Protection, 12/13/93.

29CFR1910, Code of Federal Regulations, Occupational Safety and Health Standards, May 1994.

49CFR172, Hazardous Materials Table, Special Provisions, Hazardous Material Communications Requirements and Emergency Response Information Requirements 10/1/92.

WAC-173-303, Dangerous Waste Regulations, 1993.

WAC-296-155, Safety Standards: Construction Work, 1993.

DOE 4330.4B, Maintenance Management Program, 2/10/94.

DOE 5480.7A, Fire Protection, 2/17/93.

DOE 5480.10, Contractor Industrial Hygiene Program, 6/26/85.

DOE 5480.19, Conduct of Operations Requirements For DOE Facilities, Change 1, 5/18/92.

DOE 5480.20A, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities, 11/15/94.

DOE 5480.21, Unreviewed Safety Questions, 12/24/91.

DOE 5500.3A, Planning and Preparedness For Operational Emergencies, Change 1, 2/27/92.

DOE 5631.1C, Safeguards and Security Awareness Program, 5-04-94.

DOE 5633.3B, Control and Accountability of Nuclear Materials, 9/7/94.

DOE/EH0135, Performance Objectives and Criteria for Technical Safety Appraisals at Department of Energy Facilities and Sites, 06/90.

Federal Register. Vol. 54 No. 16, Thursday, January 26, 1989/Notices, Department of Labor, Occupational Safety and Health Administration, Issuance of Voluntary Guidelines.

RLID 5480.7, Fire Protection, Rev. 0, 1/17/94.

DOE/EH0256 Radiological Control Manual, 04/94.

DOE-STD-1073-93, DOE Standard Guide for Operational Configuration Management Program, Rev. 0, 1/17/94.

ANSI/ANS-8.20, Nuclear Criticality Safety Training, 1991.

ANSI-Z88.2-1992, Respiratory Protection, Rev. 3, 8/6/92.

4.7.2 **Reviewed Documents Not Used as Requirement Sources**

The following documents were reviewed as requirements sources but were not used in the development of this S/RID:

DOE 5400.1, General Environmental Protection Program, 11/9/88.

DOE 5480.1B, Environment, Safety and Health Program for Department of Energy Operations, 9/23/86.

DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards, Change 4, 1/7/93.

DOE 5480.9A, Construction Project Safety and Health Management, 4/13/94.

DOE 5480.11, Radiation Protection for Occupational Workers, Change 3, 06/17/92.

DOE 5480.18B, Nuclear Facility Accreditation Training Program, 8/31/94.

DOE 5480.23, Nuclear Safety Analysis Reports, 4/30/92.

DOE 5483.1A, Occupational Safety and Health Program For DOE Contractor Employees at Government-Owned Contractor-Operated Facilities, 6/22/83.

DOE 5700.6C, Quality Assurance, 8/21/91.

DOE 5820.2A, Radioactive Waste Management, 9/26/88.

DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual, 1/15/93.

DOE-PNL-6577, Health Physics Manual of Good Practices for Reducing Radiation Exposure to Levels that are As Low As Reasonably Achievable (ALARA), 1988.

DOE-STD-1070-94, DOE Standard For Evaluation of Nuclear Facility Training Programs, 06/01/94.

ANSI-N13.6-1966, Practice for Occupational Radiation Exposure Record System, 1966.

ASME-NQA-1-1994, Quality Assurance Program Requirements for Nuclear Facilities Applications, 7/29/94.

EEI Chapter II, Guide to Effective Drug and Alcohol/Fitness for Duty Policy Development, Rev. 0, 8/1/85.

BMP-87-006, Report on Configuration Management in the Nuclear Utility Industry, Rev. 0, 7/1/87.

BMP-90-009-1992-R1, Guidelines for the Conduct of Design Engineering, Rev. 1, 2/1/92.

NIRMA-PP02-1989, Position Paper on Configuration Management, Rev. 0, 1/1/89.

TABLE OF CONTENTS

5.0 EMERGENCY MANAGEMENT 1

5.1 MANAGEMENT AND ADMINISTRATION 3
5.2 EMERGENCY RESPONSE TRAINING 4
5.3 PLANNING DOCUMENTS 5

5.3.1 Hazards Assessment 5
5.3.2 Emergency Plan 6
5.3.3 Emergency Implementing Procedures 9

5.4 FACILITIES, EQUIPMENT AND RESOURCES 11

5.4.1 Emergency Response Facilities 11
5.4.2 Emergency Equipment and Supplies 11
5.4.3 Communications Equipment 12

5.5 CLASSIFICATION, NOTIFICATION AND REPORTING 13

5.5.1 Event Classification and Emergency Action Levels (EALs) 14
5.5.2 Notifications and Staff Augmentations 15
5.5.3 Reporting and Event Investigations 17

5.6 EVENT CONTAINMENT AND PERSONNEL PROTECTION 17

5.6.1 Event Containment and Consequence Assessment 17
5.6.2 Protective Actions 19
5.6.3 Personnel Accountability and Evacuation 19
5.6.4 Medical Response 20

5.7 RECOVERY AND REENTRY 20

5.8 PUBLIC INFORMATION 21

5.8.1 Public and Media Education 21
5.8.2 Emergency Public Information Response 21

5.9 COORDINATION WITH OFFSITE AGENCIES 21

5.9.1 Management Coordination 21
5.9.2 Response Coordination 21

5.10 DEMONSTRATING, MONITORING AND IMPROVING PERFORMANCE . . 21

5.10.1 Drill and Exercise Program 21
5.10.2 Reviews, Audits and Evaluations 22
5.10.3 Emergency Readiness Assurance Program 23
5.10.4 Deficiency Identification and Correction 23

5.11 KEY INTERFACES 23

5.11.1 Safeguards and Security 23
5.11.2 Operations 23
5.11.3 Training and Qualification 23
5.11.4 Radiation Protection 23
5.11.5 Waste Management 24
5.11.6 Occupational Safety and Health 24
5.11.7 Fire Protection 24
5.11.8 Medical 24
5.11.9 Management Systems 24
5.11.10 Nuclear Safety 24
5.11.11 Packaging and Transportation 24
5.11.12 Quality Assurance 25
5.11.13 Environmental Protection 25
5.11.14 Engineering Program 25

5.12 REFERENCES 25

5.12.1 Requirement Source Documents 25
5.12.2 Reviewed Documents Not Used as Requirement Sources 26

5.0 EMERGENCY MANAGEMENT

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Emergency Management Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Emergency Management activities, as such activities are included in the current mission of the facility.

This S/RID describes the PFP Emergency Management Program as defined through the relevant U.S. Department of Energy (DOE) Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practice. The definition of a Emergency Management Program as specified by this document is intended to address Defense Nuclear Facilities Safety Board Recommendations 90-2 and 91-1, which call for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders.

The Emergency Management Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. Sections 5.3 was changed to Planning Documents to additionally include the areas of Emergency Plan (subsection 5.3.2), and Emergency Implementing Procedures (subsection 5.3.3). Section 5.6 was renamed and expanded to include Event Containment and Consequence Assessment (subsection 5.6.1). Additional elements and subelements were added to the basic format for further clarification and definition. Element 5.5, Classification, Notification and Reporting, was further enhanced by the addition of the following subelements: Event Classification and Emergency Action Levels (EALs) (5.5.1), Notifications and Staff Augmentation (5.5.2), and Reporting and Event Investigations (5.5.3). Element 5.11, Key Interfaces, was further enhanced by the addition of the following subelements: Management Systems (5.11.9), Nuclear Safety (5.11.10), Packaging and Transportation (5.11.11), Quality Assurance (5.11.12), Environmental Protection (5.11.13), and Engineering Program (5.11.4). Element 5.12, References, was added to define applied and considered reference documents.

SCOPE OF FUNCTIONAL AREA

The Emergency Management (EM) Functional Area includes the management and administration of emergency planning, preparedness, and response functions. EM exists to ensure the safety and health of workers and the public, and to protect property and the environment in the case of an emergency.

This functional area applies to the emergency management programmatic controls, activities, personnel, and programs implemented by PFP. EM is primarily handled at the site level. The requirements cited in this S/RID are those where the PFP has a specific responsibility.

The following list identifies the programmatic elements in the EM Functional Area.

1. Management and Administration
2. Emergency Response Training
3. Planning Documents
4. Facilities, Equipment, and Resources
5. Classification, Notification, and Reporting
6. Event Containment and Personnel Protection
7. Reentry and Recovery
8. Public Information
9. Coordination With Offsite Agencies
10. Demonstrating, Monitoring, and Improving Performance
11. Key Interfaces
12. References

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage of disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

5.1 MANAGEMENT AND ADMINISTRATION

EM program policy is determined by senior management and demonstrated throughout emergency planning, preparedness and response programs. Policy is addressed at the site level on behalf of the PFP.

REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)2

"Ensure immediate mitigative and corrective emergency response actions and appropriate protective action recommendations to minimize the consequences of the emergency, protect worker and public health and safety, provide security, and ensure the continuance of such actions until the emergency is resolved;"

REQUIREMENT SOURCE: DOE5500.2B Section 10.c(5)(d)

"Directs and takes appropriate emergency response actions within the site boundary under its control and at the scene of the emergency."

REQUIREMENT SOURCE: DOE5500.3A Section 11.a

Author's Note: The following statements in this requirement are not applicable at the facility level: Offsite Response Interfaces, Medical Support, Public Information, and Exercises. (Offsite Response Interfaces and Public Information are RL requirements. Medical Support is a Hanford Fire Department requirement. Exercises are a WHC Site Emergency Management requirement.)

"As part of the EMS, DOE elements and DOE contractors shall establish and maintain emergency management programs consisting of plans and procedures for response to Operational Emergencies involving or affecting DOE facilities, including DOE transportation activities. These emergency management programs must be commensurate with the assessment of potential hazards and targets and must include the following elements:Emergency Response Organization, Offsite Response Interfaces, Operational Emergency Event Classes, Notification, Consequence Assessment, Protective Actions, Medical Support, Recovery and Reentry, Public Information, Emergency Facilities and Equipment, Training, Drills and Exercises, and Program Administration."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(1)

Author's Note: Only items (a), (b), and (c) apply to this subelement.

"Emergency Response Organization. An element with clearly specified authorities and responsibilities for emergency response and mitigation have overall responsibility for the initial and ongoing response to, and mitigation of, an emergency, and must:

(a) Perform, but not be limited to, the following functions: event categorization, determination of the emergency class, notification, provision of protective action recommendations, management and decision making, control of onsite emergency activities, consequence assessment, protective actions, medical support, public information, activation and coordination of onsite response resources, security, communications, administrative support, and coordination and liaison with offsite support and response organizations;

(b) Consist of an adequate number of experienced and trained personnel, including designated alternates, for timely performance of the functions identified above;

(c) Assign emergency response responsibilities and tasks to specific individuals identified by name, title, or position; and

(d) Integrate local agencies and organizations which would be relied upon to provide onsite response services and include those contractor and private organizations that may be relied upon to provide specialized expertise and assistance to all emergency planning, preparedness, and readiness assurance activities."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(13)(a)

"Program Administration. Provisions must be in place for the continued administration of the emergency management program as follows:

Each PSO, each Head of Field Element, and each contractor facility subject to this Order shall designate an individual to administer the emergency management program for their program, Field Element, or facility. This individual's responsibilities shall include development and maintenance of the emergency plan, development of the Emergency Readiness Assurance Plan (ERAP) and annual updates, development and conduct of training and exercise programs, coordination of assessment activities, development of related documentation, and coordination of emergency resources."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 360(1)

"Emergency coordinator. At all times, there must be at least one employee either on the facility premises or on call with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, required by WAC 173-303-350 (2), all operations and activities at the facility, the location and properties of all wastes handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan."

5.2 EMERGENCY RESPONSE TRAINING

REQUIREMENT SOURCE: 29CFR1910 Part 120(p)(8)(iii)(A)

"Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents.

Exceptions #1: An employer need not train all employees to the degree specified if the employer divides the work force in a manner such that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first respond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are instructed in that case to summon the fully trained employees and not attempt control activities for which they are not trained.

Exception #2: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully-trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside fully trained emergency response team for assistance."

REQUIREMENT SOURCE: 29CFR1910 Part 120(p)(8)(iii)(B)

"Employee members of TSD facility emergency response organizations shall be trained to a level of competence in the recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk of safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the safe operating procedures to be used at the incident scene; in the appropriate response to over exposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from over exposures."

REQUIREMENT SOURCE: 29CFR1910 Part 120(p)(8)(iii)(C)

"The employer shall certify that each covered employee has attended and successfully completed the training required in paragraph (p)(8)(iii) of this section, or shall certify the employee's competency at least yearly. The method used to demonstrate competency for certification of training shall be recorded and maintained by the employer."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(11)(b) Introduction

"A formal training program must be in place for the instruction and qualification of all personnel (i.e., primary and alternate) comprising the facility emergency response organization to include initial training and annual retraining for both onsite and offsite incidents, including transportation incidents."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(11)(b)(1)

"All training must be systematic and performance based, i.e., based on an analysis of tasks to be performed during an emergency, and developed with performance objectives, emphasis on team training, and facility-specific emergency response scenarios."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(11)(b)(2)

"Annual retraining shall include training on weaknesses detected during drills and exercises, changes to plans, procedures, and lessons learned from emergencies at DOE and other industrial facilities."

5.3 PLANNING DOCUMENTS

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(13)(b)

"Program Administration. Provisions must be in place for the continued administration of the emergency management program as follows:

The emergency plan and implementing procedures shall be controlled distribution documents and shall be annually reviewed and updated."

5.3.1 Hazards Assessment

REQUIREMENT SOURCE: DOE5500.3A Section 11.b.(1)

"Hazards Assessment.
A hazards assessment shall be prepared and maintained for each facility and shall be used for emergency planning purposes. This hazards assessment provides the technical basis for the

emergency management program and shall include information sufficient to determine the scope and extent of the program elements comprising the emergency management program for the respective facility. This hazards assessment shall be derived from information provided by the assessment of the potential DOE requirements. The use of vulnerability and target analyses may include sensitive or classified information which will need special handling."

5.3.2 Emergency Plan

REQUIREMENT SOURCE: 29CFR1910 Part 38(a)(1)

"Employee emergency plans and fire preventions. Emergency action plan -- Scope and application. This paragraph (a) applies to all emergency action plans required by a particular OSHA standard. The emergency action plan shall be in writing (except as provided in the last sentence of paragraph (a)(5)(iii) of this section) and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies."

REQUIREMENT SOURCE: 29CFR1910 Part 38(a)(4)

"Employee emergency plans and fire preventions. Emergency action plan. Evacuation. The employer shall establish in the emergency action plan the types of evacuation to be used in emergency circumstances."

REQUIREMENT SOURCE: DOE5500.3A Section 11.d.(1)

Author's Note: The facility meets subsection (c) by meeting the requirements of WHC emergency plan contents and format. WHC Emergency Management is responsible for ensuring their contents and format requirements are compatible with applicable with applicable DOE, Federal, state, tribal, and local emergency plans. Copies are required to be maintained at the facility.

"Documentation. PSOs, Heads of Field Elements, and all managers/administrators of a DOE- or contractor-operated facility shall develop and maintain an emergency plan and associated procedures to document their emergency management program. These documents must be controlled distribution documents. The documentation shall include:

An emergency plan which describes the provisions for response to an operational emergency.

(a) The plan must contain information to describe each element of the emergency management program, describe the overall picture of emergency response capabilities, and include material necessary for the understanding of the plans (e.g., diagrams, illustrations, maps, and transportation routes). The emergency plan must reference procedures and supporting material (i.e., PRAs, MSSAs, EAs, EISs, etc.) which may be used by emergency response personnel.

(b) The emergency plan must describe the EPZs applicable to the facility to include topographical features, demographic information, transportation routes, land use, major industrial facilities, public facilities, and jurisdictional boundaries.

(c) The emergency plan must be consistent with other plans for similar DOE facilities and coordinated and compatible with other applicable DOE, Federal, state, tribal, and local emergency plans. The emergency plan must integrate the response plans for specific incidents (e.g., fire medical, security, and natural phenomena)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 350(2)

"Contingency plan. Each owner or operator must have a contingency plan at his facility for use in emergencies or sudden or nonsudden releases which threaten the public health and the environment. If the owner or operator has already prepared a spill prevention control and countermeasures (SPCC) plan in accordance with Part 112 of Title 40 CFR or Part 1510 of chapter V, or some other emergency or contingency plan, he need only amend that plan to incorporate dangerous waste management provisions that are sufficient to comply with the requirements of this section and WAC 173-303-360."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 350(3)

Author's Note: Item (b) does not apply to PFP.

"The contingency plan must contain the following:

(a) A description of the actions which facility personnel must take to comply with this section and WAC 173-303-360 ;

(b) A description of the actions which shall be taken in the event that a dangerous waste shipment, which is damaged or otherwise presents a hazard to the public health and the environment, arrives at the facility, and is not acceptable to the owner or operator, but cannot be transported, pursuant to the requirements of WAC 173-303-370 (5), Manifest system, reasons for not accepting dangerous waste shipments;

(c) A description of the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services as required in WAC 173-303-340 (4);

(d) A current list of names, addresses, and phone numbers (office and home) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360 (1). Where more than one person is listed, one must be named as primary emergency coordinator, and others must be listed in the order in which they will assume responsibility as alternates. For new facilities only, this list may be provided to the department at the time of facility certification (as required by WAC 173-303-810(14)(a)(i)), rather than as part of the permit application;

(e) A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities; and

(f) An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 350(4)

Author's Note: Item (b) does not apply to PFP.

"Copies of contingency plan. A copy of the contingency plan and all revisions to the plan shall be:

(a) Maintained at the facility; and

(b) Submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services."

RELATED REFERENCES

1. 40CFR265 Part 53(a)

REQUIREMENT SOURCE: WAC-173-303(940523) Section 350(5)

"Amendments. The owner or operator shall review and immediately amend the contingency plan, if necessary, whenever:

(a) Applicable regulations or the facility permit are revised;

(b) The plan fails in an emergency;

(c) The facility changes (in its design, construction, operation, maintenance, or other circumstances) in a way that materially increases the potential for fires, explosions, or releases of dangerous waste or dangerous waste constituents, or in a way that changes the response necessary in an emergency;

(d) The list of emergency coordinators changes; or

(e) The list of emergency equipment changes."

REQUIREMENT SOURCE: WAC-296-62 Section 3140(8)(a)(b)

"Emergency response program.
(a) Emergency response plan. An emergency response plan shall be developed and implemented by all employers. Such plans need not duplicate any of the subjects fully addressed in the employer's contingency planning required by permits, such as those issued by the United States Environmental Protection Agency, provided that the contingency plan is made part of the emergency response plan. The emergency response plan shall be a written portion of the employer's safety and health program required in this section. Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of WAC 296-62-3140(8) if they provide an emergency action plan complying with WAC 296-24-567.

(b) Elements of an emergency response plan. The employer shall develop an emergency response plan for emergencies which shall address, as a minimum, the following areas to the extent that they are not addressed in any specific program required in this section:

(i) Preemergency planning and coordination with outside parties.

(ii) Personnel roles, lines of authority, and communication.

(iii) Emergency recognition and prevention.

(iv) Safe distances and places of refuge.

(v) Site security and control.

(vi) Evacuation routes and procedures.

(vii) Decontamination procedures.

(viii) Emergency medical treatment and first aid.

(ix) Emergency alerting and response procedures.

(x) Critique of response and follow-up.

(xi) PE and emergency equipment."

RELATED REFERENCES

1. 29CFR1910 Part 38(a)(2)
2. 29CFR1910 Part 120(p)(8)(i)
3. 29CFR1910 Part 120(p)(8)(ii)
4. 29CFR1910 Part 120(q)(2)

5.3.3 Emergency Implementing Procedures

REQUIREMENT SOURCE: DOE5480.10 Section 9.c(4)(f)

"Procedures shall be established for emergency actions involving chemical carcinogens (e.g., cleanup of spills or accidental releases). Occurrences which could result in exposure of personnel or release to the environment shall be investigated and, if appropriate, reported (refer to DOE 5484.1)."

REQUIREMENT SOURCE: DOE5500.3A Section 11.d.(2)(a)

"Procedures must consist of special emergency plan implementing procedures (e.g, EALs, event categorization, notification, EOC operation) as well as other procedures currently in use (e.g., equipment operation, chemistry controls, radiological monitoring, and maintenance) which would be utilized in, or associated with, emergency response activities."

REQUIREMENT SOURCE: DOE5500.3A Section 11.d.(2)(b)

"Documentation. PSOs, Heads of Field Elements, and all managers/administrators of a DOE- or contractor-operated facility shall develop and maintain an emergency plan and associated procedures to document their emergency management program. These documents must be controlled distribution documents. The documentation shall include:

Procedures which describe how the emergency plan shall be implemented.
Procedures must be consistent and compatible with the emergency plan. Emergency procedures must contain the detailed information and the specific instructions needed to carry out the emergency plan during a drill, exercise, or actual emergency. Procedures must clearly and concisely identify the individual(s) responsible for performance of response activities and delineate the specific actions/steps to be performed. Procedures must identify the relevant prerequisites (i.e., conditions which must exist prior to specific actions being performed) and precautions (regarding personnel safety and equipment operation) associated with the response actions."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 360(2) & (2)(a)

"(2) Emergency procedures. The following procedures shall be implemented in the event of an emergency.

(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

(i) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

(ii) Notify appropriate state or local agencies with designated response roles if their help is needed."

RELATED REFERENCES

1. 40CFR265 Part 56(a)

REQUIREMENT SOURCE: WAC-173-303(940523) Section 360(2)(b) & (c)

"(b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials.

(c) Concurrently, the emergency coordinator shall assess possible hazards to human health and the environment (considering direct, indirect, immediate, and long-term effects) that may result from the release, fire, or explosion."

RELATED REFERENCES

1. 40CFR265 Part 56(b)
2. 40CFR265 Part 56(c)

REQUIREMENT SOURCE: WAC-173-303(940523) Section 360(2)(f)

"During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers."

RELATED REFERENCES

1. 40CFR265 Part 56(e)

REQUIREMENT SOURCE: WAC-173-303(940523) Section 360(2)(g)

"If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate."

RELATED REFERENCES

1. 40CFR265 Part 56(f)

REQUIREMENT SOURCE: WAC-296-62 Section 3140(8)(d)

Author's Note: Subsection (B) is not applicable at the facility level. The facility reports incidents to the Occurrence Notifications Center (ONC).

Subsection (B)(ii). Facility emergency plans (i.e., building emergency plans) are compatible with the site emergency plan. RL emergency management is responsible for ensuring that the site emergency plan format and contents are compatible with local, state, and federal agencies.

Subsection (iv). This site emergency plan is the responsibility of the RL emergency management organization.

Subsection (vi) is applicable, but the facility implements their emergency plans (building emergency plans) for the facility, not the site emergency plan.

In this requirement, site is interpreted as facility.

"Procedures for handling emergency incidents.

(i) In addition to the elements for the emergency response plan required in (b) of this subsection, the following elements shall be included for emergency response plans to the extent that they do not repeat any information already contained in the emergency response plan:

(A) Site topography, layout, and prevailing weather conditions.

(B) Procedures for reporting incidents to local, state, and federal governmental agencies.

(ii) The emergency response plan shall be compatible and integrated with the disaster, fire, and/or emergency response plans of local, state, and federal agencies.

(iii) The emergency response plan shall be rehearsed regularly as part of the overall training program for site operations.

(iv) The site emergency response plan shall be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.

(v) An employee alarm system shall be installed in accordance with WAC 296-24-631 to notify employees of an emergency situation; to stop work activities if necessary; to lower background noise in order to speed communication; and to begin emergency procedures.

(vi) Based upon the information available at time of the emergency, the employer shall evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the site emergency response plan."

RELATED REFERENCES

1. 29CFR1910 Part 120(p)(8)(iv)

5.4 FACILITIES, EQUIPMENT AND RESOURCES

5.4.1 Emergency Response Facilities

Author's Note: Requirements for the subelement are included in the WHC S/RID.

5.4.2 Emergency Equipment and Supplies

Requirements 29 CFR 1910 Part 134(d)(7), Last Sentence and 29 CFR 1910 Part 134(f)(2)(iv), as located in subelement 19.3.2 of the Occupational Safety and Health functional area document are also applicable to this subelement.

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(10)(d)

"Adequate equipment and supplies must be available and operable for emergency response personnel to carry out their respective duties and responsibilities."

5.4.3 Communications Equipment

REQUIREMENT SOURCE: 29CFR1910 Part 38(a)(3)

"Employee emergency plans and fire preventions. Emergency action plan. Alarm System.

(i) The employer shall establish an employee alarm system which complies with 1910.165.

(ii) If the employee alarm system is used for alerting fire brigade members, or for other purposes, a distinctive signal for each purpose shall be used."

REQUIREMENT SOURCE: 29CFR1910 Part 165(b)(1)

"Employee alarm systems. General requirements. The employee alarm system shall provide warning for necessary emergency action as called for in the emergency action plan, or for reaction time for safe escape of employees from the workplace or the immediate work area, or both."

REQUIREMENT SOURCE: 29CFR1910 Part 165(b)(2)

"The employee alarm shall be capable of being perceived above ambient noise or light levels by all employees in the affected portions of the workplace. Tactile devices may be used to alert those employees who would not otherwise be able to recognize the audibile[SIC] or visual alarm."

REQUIREMENT SOURCE: 29CFR1910 Part 165(b)(3)

"Employee Alarm systems. General requirements. The employee alarm shall be distinctive and recognizable as a signal to evacuate the work area or to perform actions designated under the emergency action plan."

REQUIREMENT SOURCE: 29CFR1910 Part 165(b)(4)

"Employee Alarm systems. General requirements. The employer shall explain to each employee the preferred means of reporting emergencies, such as manual pull box alarms, public address systems, radio or telephones. The employer shall post emergency telephone numbers near telephones, or employee notice boards, and other conspicuous locations when telephones serve as a means of reporting emergencies. Where a communication system also serves as the employee alarm system, all emergency messages shall have priority over all non-emergency messages."

REQUIREMENT SOURCE: 29CFR1910 Part 165(b)(5)

"Employee Alarm systems. General requirements. The employer shall establish procedures for sounding emergency alarms in the workplace. For those employers with 10 or fewer employees in a particular workplace, direct voice communication is an acceptable procedure for sounding the alarm provided all employees can hear the alarm. Such workplaces need not have a back-up system."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 340(1)

Author's Note: The subsection (b) statement pertaining to summoning local police departments pertains to the Hanford Patrol at the facility level. The subsection (b) statement concerning summoning emergency assistance from state or local emergency response teams is not applicable at the facility level. the facilities do not request offsite assistance.

The subsection (d) statement pertaining to "Water a adequate volume and pressure supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems" is a responsibility at the facility level. These requirements are Fire Protection and/or the Hanford Fire Department.

"Required equipment. All facilities must be equipped with the following, unless it can be demonstrated to the department that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

(a) An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel;

(b) A device, such as a telephone or a hand-held, two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or state or local emergency response teams;

(c) Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems. All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 340(2)

"Access to communications or alarms. Personnel must have immediate access to the signalling devices described in the situations below:

(a) Whenever dangerous waste is being poured, mixed, spread, or otherwise handled, all personnel involved must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required in subsection (1) of this section;

(b) If there is ever just one employee on the premises while the facility is operating, he must have immediate access to a device, such as a telephone or a hand-held, two-way radio, capable of summoning external emergency assistance, unless such a device is not required in subsection (1) of this section."

5.5 CLASSIFICATION, NOTIFICATION AND REPORTING

REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)1

"Ensure the proper identification, categorization, and notification of emergencies or other reportable occurrences to line management and the HQ EOC, in accordance with applicable DOE policies and requirements;"

5.5.1 Event Classification and Emergency Action Levels (EALs)

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(a)4b

Author's Note: Special Nuclear Material may not be applicable to all facilities.

"Non-reactor Facilities. An Alert shall be declared when events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the facility. Any release of hazardous materials (radiological or non-radiological) is expected to be limited to small fractions of the appropriate PAG or ERPG exposure limits."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(a)4d

Author's Note: Occurrence Reporting requirements are located in the PFP Management Systems Functional Area.

"Safeguards and Security. An Alert shall be declared when events are in progress, have occurred, or are anticipated which could involve an actual or potential substantial degradation in the level of protection of the facility or the loss or possible loss of Special Nuclear Material (SNM). Pre-emergency conditions which warrant increased safeguards and security measures shall be reported in accordance with DOE 5000.3A, Attachment 2 Group 5, procedures for non-emergency occurrences."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(a)4e

"Transportation. An Alert shall be declared when events are in progress or have occurred which involve an actual or potential substantial degradation of the safety of the shipment. Any release of hazardous materials (radiological or non-radiological) is expected to be limited to small fractions of the appropriate PAG or ERPG exposure levels."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)7.b

"Non-reactor Facilities. A Site Area Emergency shall be declared when events are in progress or have occurred which involve actual or likely major failures of facility functions needed for protection of workers and the public. Any release of hazardous materials (radiological or non-radiological) is expected to exceed appropriate PAG or ERPG exposure levels onsite but is not expected to exceed the appropriate PAGs or ERPGs offsite."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)7.d

"Safeguards and Security. A Site Area Emergency shall be declared when events are in progress or have occurred which involve actual malevolent acts resulting in major failures of protective systems."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)7.e

"Transportation. A Site Area Emergency shall be declared when events are in progress or have occurred which involve an actual or potential major reduction in the safety of the shipment. Any release of hazardous materials (radiological or non-radiological) is expected to exceed appropriate PAG or ERPG exposure levels in the immediate vicinity of the accident or incident but is not expected to exceed the appropriate PAGs or ERPGs in a general public area."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)7.b

"Non-reactor Facilities. A General Emergency shall be declared when events are in progress or have occurred which involve actual or imminent catastrophic reduction of facility safety systems with potential for loss of containment or confinement integrity, (e.g., release of large quantities of hazardous materials to the environs) and/or release of hazardous materials (radiological or non-radiological) that can reasonably be expected to exceed appropriate PAG or ERPG exposure levels offsite."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)7.d

"Safeguards and Security. A General Emergency shall be declared when events are in progress or have occurred which involve malevolent action resulting in catastrophic degradation of protection systems that could lead to substantial offsite impacts."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)7.e

"Transportation. A General Emergency shall be declared when events have occurred which involve an actual or imminent catastrophic reduction in the safety of the shipment. Any release of hazardous materials (radiological or non-radiological) is expected to exceed appropriate PAG or ERPG exposure levels in a general public area. If the event has occurred on a DOE site, the release is expected to exceed appropriate PAG or ERPG exposure levels offsite"

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(3)

Author's Note: Last sentence is not a facility requirement.

"Operational Emergency Event Classes. Operational Emergencies involving or affecting DOE facilities must be characterized as one of the Operational Emergency classes (e.g., Alert, Site Area Emergency, or General Emergency) in accordance with DOE 5500.2B. EALs, the specific criteria used to recognize and categorize events, must be developed for the spectrum of potential Operational Emergencies identified by the hazards assessment. EALs form the basis for notification and participation of offsite organizations and for determining what and when protective measures will be implemented. EAL initiating conditions (i.e., individual instrument readings, equipment status, valve positions, parameter values, onsite and/or offsite monitor readings, etc.) must be specifically identified in procedures and must be observable and recognizable in a timely manner by responsible personnel. The EALs and related information must be consistent and integrated with the emergency plans and procedures of offsite Federal, state, tribal, and local organizations, and should be reviewed annually, as appropriate, by all parties involved in response activities."

5.5.2 Notifications and Staff Augmentations

Requirement 40 CFR 302 Part 6(a), as located in subelement 20.6.1 of the Environmental Protection functional area document, is also applicable to this subelement.

REQUIREMENT SOURCE: 40CFR355 Part 40(b)(2)

"Emergency release notification. Notice requirements. The notice required under this section shall include the following to the extent known at the time of notice and so long as no delay in notice or emergency response results:

(i) The chemical name or identity of any substance involved in the release.

(ii) An indication of whether the substance is an extremely hazardous substance.

(iii) An estimate of the quantity of any such substance that was released into the environment.

(iv) The time and duration of the release.

(v) The medium or media into which the release occurred.

(vi) Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals.

(vii) Proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordination pursuant to the emergency plan).

(viii) The names and telephone number of the person or persons to be contacted for further information."

REQUIREMENT SOURCE: 40CFR355 Part 40(b)(3)

"As soon as practicable after a release which requires notice under (b)(1) of this section, such owner or operator shall provide a written follow-up emergency notice setting forth and updating the information required under paragraph (b)(2) of this section, and including additional information with respect to:

(i) Actions taken to respond to and contain the release,

(ii) Any known or anticipated acute or chronic health risks associated with the release, and,

(iii) Where appropriate, advice regarding medical attention necessary for exposed individuals."

REQUIREMENT SOURCE: DOE5500.2B Section 12.b(2)(a)

Author's Note: The PFP provides timely notification through the ONC.

"The Manager/Administrator of each DOE- or contractor-operated facility shall:

Concurrently notify the HQ EOC and the Field Element of the emergency as soon as crucial information is available but no later than 15 minutes after categorization of the event as an Emergency;"

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(4)

Author's Note: Occurrence Reporting requirements are located in the Management Systems Functional Area.

"Notification. Notification and communication of emergency information must be consistent with the requirements of DOE 5000.3A and 5500.2B. Provisions must be in place for prompt initial notification of appropriate DOE elements and other Federal, state, tribal, and local organizations, and for continuing effective communication among the response organizations throughout an emergency. The content and format of the initial notification and follow-up messages must be prearranged and standardized in the emergency plan. The handling of classified and/or controlled information during an emergency must be in accordance with established procedures and DOE requirements."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 360(2)(d) & (e)

Author's Note: The facility is responsible for notifying the Occurrence Notification Center who then is responsible for notifying the National Response Center.

"(d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health or the environment, he must report his findings as follows:

(i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(ii) He must immediately notify the department and either the government official designated as the on-scene coordinator, or the National Response Center (using their 24-hour toll free number (800) 424-8802).

(e) His assessment report must include:

(i) Name and telephone number of reporter;

(ii) Name and address of facility;

(iii) Time and type of incident (e.g., release, fire);

(iv) Name and quantity of material(s) involved, to the extent known;

(v) The extent of injuries, if any; and

(vi) The possible hazards to human health or the environment outside the facility."

5.5.3 Reporting and Event Investigations

REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)5

"Provide for investigation of root cause(s) and corrective actions to prevent recurrence;"

5.6 EVENT CONTAINMENT AND PERSONNEL PROTECTION

5.6.1 Event Containment and Consequence Assessment

REQUIREMENT SOURCE: 29CFR1910 Part 120(q)(3)(ii)

Author's Note: Identification of radiological hazardous substances is applicable to the facility. The facility assists the Hanford Fire Department HAZMAT organization in identification on non-radiological hazardous substances by providing inventories, etc., as applicable.

"Emergency response to hazardous substance release. Procedures for handling emergency response. The individual in charge of the ICS shall identify, to the extent possible, all hazardous substances or conditions present and shall address as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance handling procedures, and use of any new technologies."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a(2)(a)

"Alert. Declaration of an Operational Alert requires the availability of personnel and resources to:

1 Provide continuous assessment of pertinent information for DOE decision makers, offsite authorities, the public, and other appropriate entities;

2 Conduct appropriate assessments, investigations, or preliminary or confirmatory sampling and monitoring;

3 Mitigate the severity of the occurrence or its consequences; and

4 Prepare for other response actions should the situation become more serious, requiring emergency response organizations to mobilize or activate resources."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)

Author's Note: Items 2 and 3 below are performed at the site level and do not apply to the facility.

"Site Area Emergency. Declaration of an Operational Site Area Emergency requires initiation of predetermined protective actions for onsite personnel and the notification and assembly of emergency response personnel and equipment to activate response centers to provide:

1 Continuous assessment of pertinent information for DOE decision makers, offsite authorities, and other appropriate entities;

2 Establish communications, consultation, and liaison with offsite authorities;

3 Provide information to the public through offsite authorities and the media;

4 Conduct or assist in any evacuations and sheltering;

5 Conduct appropriate assessments, investigations, or sampling and monitoring;

6 Mitigate the severity of the actual or potential consequences; and

7 Mobilize appropriate emergency response groups or security forces for immediate dispatch should the situation become more serious."

REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)

Author's Note: Items 2 and 3 below are performed at the site level and do not apply to the facility.

"General Emergency. Declaration of an Operational General Emergency requires the notification, mobilization, and dispatch of all appropriate emergency response personnel and equipment including appropriate DOE national response assets to:

1 Activate the response centers and other emergency assets to provide continuous assessment of information;

2 Establish communications, consultation, and liaison with offsite authorities and recommend predetermined protective actions for the public;

3 Provide information to the public through offsite authorities and the media;

4 Conduct or assist in any evacuations;

5 Conduct appropriate assessments, investigations, or sampling and monitoring;

6 Mitigate the severity of the actual or potential consequences; and

7 Mobilize and dispatch appropriate emergency response groups or security forces."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(5)

Author's Note: Item (d) is performed at the site level and does not apply to the facility.

"Consequence Assessment. Provisions must be in place to adequately assess the actual or potential onsite and offsite consequences of an emergency and must include:

(a) Timely initial assessment of the actual or potential consequences of an emergency and continuous, in-depth assessment of events throughout an emergency;

(b) Integration of the consequence assessment process with the process for categorization of an event as an emergency, determination of the appropriate emergency class, and protective action decision making, including projections of onsite and offsite consequences;

(c) Monitoring and evaluation of the specific indicators necessary to continually assess the consequences of emergency events and to monitor safety, health, environmental, and security conditions which may affect or exacerbate the emergency; and

(d) Coordinate with Federal, state, tribal, and local organizations to locate and track hazardous materials released to the environment; estimate the integrated impact of such release on the public and the environment; and locate and recover materials, especially those with national security implications."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(6)(e)

"Determination of the area surrounding the specific facility actually affected by an Operation Emergency, and"

5.6.2 Protective Actions

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(6)(b)

"Control, monitoring, and maintenance of records of onsite personnel exposures to hazardous materials;"

5.6.3 Personnel Accountability and Evacuation

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(6)(c)

"Accountability for all facility personnel, within 30 minutes (not to exceed 45 minutes) of emergency determination, and timely sheltering and/or evacuation of workers, to include predetermined criteria, procedures, assembly areas, transportation methods, and routes;"

5.6.4 Medical Response

REQUIREMENT SOURCE: 29CFR1910 Part 120(q)(9)(ii)

"Any emergency response employees who exhibits signs or symptoms which may have resulted from exposure to hazardous substances during the course of an emergency incident, either immediately or subsequently, shall be provided with medical consultation as required in paragraph (f)(3)(ii) of this section."

5.7 RECOVERY AND REENTRY

REQUIREMENT SOURCE: 10CFR835 Part 1302(d)

"The dose limits (Whole Body) for individuals performing these operations are as follows:

5 rems-All Activities

10 rems-Protecting major property (Where lower dose limit not practicable)

25 rems-Lifesaving or protection of large populations (Where lower dose limit not practicable)

>25 rems-Lifesaving or protection of large populations (Only on a voluntary basis to personnel fully aware of the risks involved)

NOTE: The lens of the eye dose limit is three times the listed values. The shallow dose limit to the skin of the whole body and the extremities is ten times the listed values. These doses are in addition to and accounted for separately from the doses received under the limits in §§ 835.202 and 835.205."

REQUIREMENT SOURCE: 10CFR835 Part 1302(e)

"Each individual selected shall be trained in accordance with § 835.902 and briefed beforehand of the known or anticipated hazards to which the individual will be subjected."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(8)

While the majority of this activity is performed at the site level, participation is required on the part of PFP.

"Recovery and Reentry. Provisions must be made for recovery from an Operational Emergency and reentry into the affected facility.

(a) The approach and general procedures for recovery include: decision making and communications associated with termination of an emergency; dissemination of information to Federal, state, tribal, and local organizations regarding the emergency and relaxation of public protective actions; establishment of a recovery organization; and establishment of general criteria for resumption of normal operations.

(b) The means must exist for estimating dosage and for protecting workers and the general public from hazardous exposure during recovery and reentry activities."

REQUIREMENT SOURCE: WAC-173-303 Section 360(2)(h)

"Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility."

REQUIREMENT SOURCE: WAC-173-303 Section 360(2)(i)

"The emergency coordinator must ensure that, in the affected area(s) of the facility:

(i) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(ii) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed."

REQUIREMENT SOURCE: WAC-173-303 Section 360(2)(j)

"The owner or operator must notify the department, and appropriate local authorities, that the facility is in compliance with 360 (2) (i) of this subsection before operations are resumed in the affected area(s) of the facility."

5.8 PUBLIC INFORMATION

5.8.1 Public and Media Education

These requirements are performed by DOE-RL.

5.8.2 Emergency Public Information Response

These requirements are performed by DOE-RL.

5.9 COORDINATION WITH OFFSITE AGENCIES

These requirements are performed by DOE-RL.

5.9.1 Management Coordination

These requirements are performed by DOE-RL.

5.9.2 Response Coordination

These requirements are performed by DOE-RL.

5.10 DEMONSTRATING, MONITORING AND IMPROVING PERFORMANCE

5.10.1 Drill and Exercise Program

Author's Note: Only training and drills pertaining to facility personnel are applicable at the facility level.

REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)3

Author's Note: The facility is not responsible for providing participation with state, tribal, and local authorities. WHC Site Emergency Management fulfills this requirement through the exercise program.

"Ensure a continuing program of training, drills, and exercises for facility personnel, and provide for participation by state, tribal, and local authorities;"

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(12)(a)

Author's Note: The last sentence is not applicable to PFP.

"Drills must be used to develop and maintain personnel skills, expertise, and response capability. Drills must be of sufficient scope and frequency to ensure adequate response capability in all applicable areas. Drills must include emergency response activities such as notification, emergency communication, fire, medical emergencies, hazardous material detection and monitoring, environmental sampling and analyses, security, personnel accountability, evacuation, emergency categorization, weapons handling, decontamination, facility activation, public information, and health physics. There must be at least one drill per year to train in notification and emergency communications with regional Federal, state, tribal, and local authorities and DOE HQ."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(12)(c)

"Drills and Exercises. A coordinated program of drills and exercises must be an integral part of the emergency management program as follows:

Drills and exercises must be conducted in a manner which emphasizes facility-specific emergency events and response activities and which minimizes the use of generic, nonspecific simulations."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(12)(d)

"Drills and Exercises. A coordinated program of drills and exercises must be an integral part of the emergency management program as follows:

Each member of the emergency response organization shall participate in a drill or exercise at least annually to demonstrate proficiency in assigned response duties and responsibilities."

REQUIREMENT SOURCE: DOE5500.3A Section 11.c.(12)(e)

"Drills and Exercises. A coordinated program of drills and exercises must be an integral part of the emergency management program as follows:

Emergency management improvements and corrective actions identified during actual emergencies or during drills and exercises must be incorporated into the emergency management program."

5.10.2 Reviews, Audits and Evaluations

Requirements for this subelement are included in the WHC Company Emergency Management Functional Area.

5.10.3 Emergency Readiness Assurance Program

Emergency Readiness Assurance Program requirements are met at the site level on behalf of PFP.

5.10.4 Deficiency Identification and Correction

REQUIREMENT SOURCE: DOE5482.1B Section 9.a(5)

"The appraised organization shall respond to appraisal reports within 30 days of receipt and indicate what corrective action will be taken."

REQUIREMENT SOURCE: DOE5482.1B Section 9.a(7)

"Follow up visits by a management representative may be required for the purpose of discussing the adequacy of corrective action and whether additional action is necessary. These discussions shall be confirmed in writing and, where no additional action is necessary, shall constitute formal closeout of the appraisal."

5.11 KEY INTERFACES

These interfaces are primarily in place at the site level.

5.11.1 Safeguards and Security

EM interfaces with Safeguards and Security to develop security scenarios for emergency drills; to coordinate with local/state law enforcement organizations regarding emergency response support; to arrange access for designated offsite support groups during emergency situations (ambulance, fire, etc.); and to coordinate accountability and lockdown provisions for emergencies.

5.11.2 Operations

EM interfaces with Operations to develop credible operational scenarios for emergency drills/exercises; to ensure coordination between emergency operating procedures and emergency plan implementing procedures; and to coordinate plans for on-scene incident command during emergencies.

5.11.3 Training and Qualification

EM interfaces with Training and Qualification to ensure inclusion of appropriate emergency plan/response information in GET programs; and to ensure that ERO and offsite responder training is conducted to performance based training standards as generated by Training and Qualification.

5.11.4 Radiation Protection

EM interfaces with Radiation Protection for technical support to help ensure quality offsite monitoring and radiological dose assessment programs; for input for scenario development; and for personnel protection procedure development.

5.11.5 Waste Management

EM interfaces with Waste Management to ensure coordination between the Resource Conservation and Recovery Act (RCRA) Contingency Plan and the Site/Facility Emergency Plan; and coordination between Emergency Planning and Community Right-to-Know Act and Site/Facility Emergency Plan offsite interface programs.

5.11.6 Occupational Safety and Health

EM interfaces with Occupational Safety and Health to coordinate compliance with OSH requirements for hazardous materials emergency response; for Industrial Hygiene input for scenario development; personnel protection procedure development; and to ensure sufficient respiratory equipment and supplies are available for emergency response.

5.11.7 Fire Protection

EM interfaces with Fire Protection concerning mutual aid agreements with offsite fire response groups; and to ensure fire response plans, training, drills, and exercises are appropriately referenced and integrated into site/facility emergency plan and procedures, training and drill/exercise programs.

5.11.8 Medical

EM interfaces with the site medical organization to ensure immediate medical response capability; and concerning agreements with offsite ambulance services and hospitals and for medical scenario development and control.

5.11.9 Management Systems

EM interfaces with Management Systems to ensure that Management and Administration, Document Control and Records Management, Policy and Procedure Systems, Compliance Management, Corrective Action, Lessons Learned, and Self-Assessment activities correctly integrate site standards. Particularly close coordination with Occurrence Reporting is crucial to a successful EM effort.

5.11.10 Nuclear Safety

EM interfaces with Nuclear Safety to access technical information necessary for the development of response plans and procedures. Nuclear Safety keeps EM alert to changing design conditions.

5.11.11 Packaging and Transportation

EM interfaces with Packaging and Transportation to provide appropriate emergency response information and carrier instructions, including organizations and authorities to be notified in the event of release of materials. Coordination between the Transportation Program and EM ensures that commonly handled hazardous materials are known and included in emergency plans for the facility, and that special equipment or vehicles for transportation are known and available for emergency situations.

5.11.12 Quality Assurance

EM interfaces with Quality Assurance (QA) to ensure that independent assessments, audits, and corrective action programs meet site QA standards. QA may perform independent assessments of the EM program.

5.11.13 Environmental Protection

EM interfaces with Environmental Protection to ensure hazardous material accident response and spill control, be it small or large, is effectively addressed. The interface with Environmental Protection is enhanced by the coauthorship of the Hanford Facility Contingency Plan.

5.11.14 Engineering Program

The Emergency Management Functional Area specifies requirements to the Engineering Program to assure adequate design features are incorporated to safely address emergency situations (e.g., explosions, earthquakes, effluent releases). The Engineering Program incorporates design features to assure safety-related functions can be performed under emergency conditions.

5.12 REFERENCES

5.12.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this EM Functional Area Document.

10 CFR 835, Occupational Radiation Protection, 12/14/93

29 CFR 1910, Occupational Safety and Health Standards; OSHA/Labor, 07/01/93 Edition

40 CFR 355, Emergency Planning and Notification; EPA/Superfund, Emergency Planning, and Community Right-to-Know Programs, 07/01/93 Edition

WAC-173-303, Dangerous Waste Regulations; Washington State Department of Ecology, 1992 Edition

WAC-296-62, Occupational Health Standards - Safety Standards for Carcinogens; Washington Department of Labor and Industries, 1990 Edition

DOE 5480.10, Contractor Industrial Hygiene Program, 06/26/85

DOE 5482.1B, Environment, Safety, and Health Appraisal Program, 09/23/86, Change 1, 11/18/91

DOE 5500.1B, Emergency Management System, 04/30/91, Page Change 1: 02/27/92

DOE 5500.2B, Emergency Categories, Classes, and Notification and Reporting Requirements, 04/30/91, Page Change 1: 02/27/92

DOE 5500.3A, Planning and Preparedness for Operational Emergencies, 04/30/91, Page Change 1: 02/27/92

5.12.2 **Reviewed Documents Not Used as Requirement Sources**

The following documents were reviewed as requirement sources but were not used in the development of this EM Functional Area document. These documents were not used because the requirements contained in the above list were more prescriptive.

40 CFR 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; EPA/Solid Wastes, 07/01/92 Edition

40 CFR 302, Designation Reportable Quantities, and Notification; EPA/Superfund, Emergency Planning, and Community Right-to-Know Programs, 07/01/93 Edition

DOE 5480.19, Conduct of Operations Requirements for DOE Facilities, 07/09/90, Change 1: 05/18/92

DOE 5500.4, Public Affairs Policy and Planning Requirements for Emergencies, 06/08/92

DOE 5500.10, Emergency Readiness Assurance Program, 04/30/91, Page Change 1: 02/27/92

DOE 5632.8, Protection Program Operations: System Performance Tests, 02/04/88.

DOE EMG-ADM, Program Administration, 12/11/91

DOE EMG-CA, Guidance for Consequence Assessment, 07/28/92

DOE EMG-EC, Guidance for Event Classification and Emergency Action Levels, 06/26/92

DOE EMG-EMS, Interim Guidance for Emergency Medical Support, 06/26/92

DOE EMG-ERO, Interim Guidance for Emergency Response Organization, 07/30/93

DOE EMG-FAC/EQ, Interim Guidance for Emergency Facilities and Equipment, 07/30/93

DOE EMG-HAZ, Guidance for Hazards Assessment, 06/26/92

DOE EMG-N, Interim Guidance for Notification, 07/28/92

DOE EMG-PA, Interim Guidance for Protective Actions, 06/01/93

DOE EMG-R/R, Interim Guidance for Reentry and Recovery, 06/01/93

DOE EMG-TRNG, Interim Guidance for Emergency Management Training, 07/28/92

DOE/RL-91-28, Hanford Facility Dangerous Waste Permit Application, General Information, Rev 1, May 1993

DOE/RL-91-28, Hanford Facility Contingency Plan, 05/28/93 Appendix 7A

BMP 85-014, Generic Guidance for Emergency Preparedness Program Review, Rev 1, April 1991

BMP 87-019, Maintaining Emergency Preparedness Manual, Rev 0, November 1987

BMP 90-015, Performance Objectives and Criteria for Operating and Near-term Operating License Plants, August 1990

BMP 90-020, Performance Objectives and Criteria for Corporate Evaluations, November 1990

TABLE OF CONTENTS

6.0 SAFEGUARDS AND SECURITY 1

6.1 MANAGEMENT AND ADMINISTRATION 3

6.2 PERSONNEL SECURITY 3

6.3 PROTECTION PROGRAM OPERATIONS 5

6.3.1 Physical Security 6
6.3.2 Security Systems 10
6.3.3 Protective Forces 10
6.3.4 Security Identification Badges and Passes 10
6.3.5 Incident Response and Management 11
6.3.6 Transportation Security 11

6.4 MATERIAL CONTROL AND ACCOUNTABILITY FOR SPECIAL NUCLEAR 11

6.4.1 Material Control and Accountability Plan 11
6.4.2 Special Nuclear Material Accountability System 13
6.4.3 Material Control System 16

6.5 FACILITY APPROVALS, SECURITY AND NUCLEAR MATERIAL SURVEYS 19

6.6 INFORMATION SECURITY PROGRAM 20

6.6.1 Classified Matter Protection and Control (CMPC) 21
6.6.2 Technical Surveillance and Countermeasures (TSCM) 24
6.6.3 Automated Information Systems Security Program (Classified Computer Security) 24
6.6.4 Unclassified Computer and Sensitive Automated Data Processing Systems 24
6.6.5 Communications Security 24

6.7 OPERATIONS SECURITY (OPSEC) 24

6.8 FOREIGN OWNERSHIP, CONTROL OR INFLUENCE (FOCI) 24

6.9 EVALUATION OF RADIOLOGICAL AND TOXICOLOGICAL AND 24

6.10 KEY INTERFACES 25

6.10.1 Emergency Management 25
6.10.2 Packaging and Transportation 25

6.11 REFERENCES 25

6.11.1 Requirement Source Documents 25
6.11.2 Reviewed Documents Not Used as Requirement Sources 26

6.0 SAFEGUARDS AND SECURITY

INTRODUCTION

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

The Plutonium Finishing Plant (PFP) S/RID contains standards/requirements that are necessary for safe operation of the PFP and its associated facilities, and that are the direct responsibility of the specific facility manager. The Safeguards and Security (SAS) Program defined in this document is described in general accordance with the Environmental, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to the PFP, but are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words "shall" and "should" in requirements statements both indicate mandatory compliance. The Key Interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements. Additionally, some of the requirements cited in this document are intentionally duplicated in the corresponding Company Level S/RID. This was necessary to address required implementation responsibilities occurring at both the company and facility levels.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

6.1 MANAGEMENT AND ADMINISTRATION

REQUIREMENT SOURCE: DOE5630.13A Section 5.b

Author's Note: The company level Safeguards and Security organization prepares the Master Safeguard and Security Agreement (MSSA) with facility participation. The PFP organization is responsible for identifying facility personnel to participate, providing the project funding, and implementing the identified protection strategies.

"The levels of protection identified in approved facility MSSA's shall be the basis for facility planning, executing, and evaluating the protection program."

REQUIREMENT SOURCE: RLID5632.1B Section 6.c

"Asset owners or designee shall appoint security focal point(s) who will be responsible for coordinating all security concerns, relative to the facility, with their Security Organization. Additional responsibilities shall include:

(1) Ensuring adequate access control measures are instituted and maintained

(2) Posting required signs

(3) Managing facility lock and key program

(4) Ensuring all security requirements/procedures are met as outlined in their contractor Security Manual

(5) Ensure that all facility occupants are knowledgeable of their security responsibilities

(6) Maintaining necessary security reference materials

(7) Providing adequate visitor control measures

(8) Complete an Asset Protection Review with the assistance of their Security Organization."

6.2 PERSONNEL SECURITY

Author's Note: Most of the requirements associated with Personnel Security, such as the Personnel Security Assurance Program (PSAP) and the Security Education and Awareness Program, are implemented primarily through company level programs and therefore not included in this Facility S/RID. Funding is provided by the PFP for the company level support necessary to maintain compliance with the Personnel Security requirements relative to its operations. The requirements cited below are those which involve Facility level responsibility.

REQUIREMENT SOURCE: DOE5631.2C Chapter I, Section 1

"GENERAL. Requests for investigation shall be submitted only after a determination has been made that the duties of a position require access to classified information or special nuclear material in quantities defined in the DOE 5632 Order series, or access to an Exclusion Area. Security clearances are not to be requested to alleviate individual or management responsibilities for properly safeguarding classified information or controlling dissemination of such classified information on a need-to-know basis, or to preclude the use of access controls

or physical barriers to distinguish between classified and unclassified areas or facilities, or to determine suit ability for Government employment. It is Departmental policy that clearances shall be granted only when absolutely required and at the level of access required to avoid the unnecessary expenditure of and resources or the unwarranted invasion of an individual's right to privacy."

REQUIREMENT SOURCE: DOE5631.2C Chapter II, Section 2

"PREPARING THE REQUEST.

a. Before a request for investigation or access authorization is submitted, to following determinations should be made:

(1) The access authorization required (guidelines contained in Chapter I).

(2) Whether the individual has previously been granted access authorization that can be reinstated, transferred, or extended.

(3) Whether the individual has been granted a security clearance by another Government agency and, if so, all available information relating to such clearance (date, place, level, whether active or terminated, and so forth).

(4) Whether the individual is a foreign national or dual citizen requiring Secretarial Officer approval prior to processing for investigation (see Chapter VI).

b. Types of access authorizations and forms required to process each are indicated on Attachment II-1."

REQUIREMENT SOURCE: DOE5631.6A Preamble, Section 7.n

"Supervisors and Selecting Officials.
(1) Conduct supervisory reviews in accordance with the provisions of this Order.
(2) Ensure that a thorough preemployment check has been completed for an applicant who is being considered for a PSAP position.
(3) Ensure that an individual seeking or occupying a PSAP position is informed of his or her responsibilities under the program and has executed the appropriate PSAP releases, acknowledgement, and waivers. The purpose of these consent forms is to facilitate the collection and dissemination of information and the performance of drug testing and medical examinations.
(4) Notify immediately the appropriate management official of a security concern relating to a PSAP-designated employee.
(5) Refer PSAP-designated employees exhibiting unusual conduct to the Site Occupational Medical Director for review and appropriate action.
(6) Approve the return to work of a PSAP-designated employee who has been on sick leave for five or more consecutive workdays upon receipt of a written recommendation to return to work from the Site Occupational Medical Director.
(7) Determine, in consultation with the Site Occupational Medical Director, appropriate actions to be taken concerning a PSAP-designated employee who has been temporarily reassigned to non-PSAP duties.
(8) Notify the applicant of a decision to reject the application on the basis of a confirmed positive drug test."

REQUIREMENT SOURCE: DOE5631.6A Preamble, Section 7.o

"Employee Holding a PSAP-Designated Position.

(1) Complies with the requirements of the PSAP.
(2) Executes appropriate PSAP releases, acknowledgments, and waivers. The purpose of these consent forms is to facilitate the collection and dissemination of information and the performance of drug testing and medical examinations.
(3) Notifies immediately the Site Occupational Medical Director of a physical or mental condition requiring prescribed medication or treatment.
(4) Notifies immediately his or her immediate supervisor of circumstances which may require permanent or temporary reassignment to non-PSAP duties.
(5) Reports security concerns and unusual conduct of PSAP-designated employees to an appropriate management official.

(6) Reports in person, prior to returning to work, to the Site Occupational Medical Director following periods of sick leave of five or more consecutive workdays."

6.3 PROTECTION PROGRAM OPERATIONS

REQUIREMENT SOURCE: DOE5632.1C Preamble, Section 7.d.(2)

"Contingency/Emergency Planning. Plans that address protection measures shall be developed and in place for events such as a threat guidance event, natural disasters, civil emergencies, personnel shortfalls (e.g., work force shortfalls, work force disruptions, walkouts, disputes), call-out of off-duty employees, and other credible situations."

REQUIREMENT SOURCE: RLID5632.1B Section 7.1.c

"To Arrive at an asset protection strategy, the asset owner, in conjunction with his/her Security Organization, shall perform an Asset Protection Review using Attachments 8.1 and 8.2. The review (as documented on the Asset Protection Agreement, Attachment 8.2) shall identify threat(s) to the asset, asset value, strategic business impact(s), any unacceptable risks involved with the protection strategy, concurrence of the appropriate Security Organization, and signature of the person responsible for the Asset Protection Strategy (asset owner)."

REQUIREMENT SOURCE: RLID5632.1B Section 7.1.d

"If it is determined after completion of the asset protection review, that administrative controls are adequate for access control, the asset owner shall consider protection of certain assets by locking internal office doors, use of PC lockdown devices, storing assets in a storage container, etc. Administrative controls may only apply during the day shift, Monday through Friday. Day shift is defined as the working hours of the majority of the facility occupants. All facilities shall be locked between 6:00 p.m. and 6:00 a.m., unless pre-approved by asset owners in conjunction with the affected contractor security organization, or in consideration of special operational requirements (24-hour manned facility) as documented in an approved Asset Protection Agreement. All unoccupied facilities shall be locked.

(1) Specific Facility check procedures shall be established (e.g., end of shift lock up).

(2) A sign shall be installed at the main entrance indicating entry/access requirements and/or instructions. The asset owner should consider installing a telephone at the main entrance so visitors can call the person they are visiting, if necessary.

(3) When administrative controls are used as an access control measure, certain types of low-level assets (Category IV D SNM, precious metals, explosives, drugs) shall be secured as required in applicable directives. Examples are precious metals as required by Property Management directives and Category IV D, as required by DOE Order 5632.2A."

REQUIREMENT SOURCE: RLID5632.1B Section 7.1.g

"The completed "Asset Protection Agreement," Attachment 8.2 to this directive, shall be used as the approved security plan for those facilities meeting the Asset Protection Requirements. For those facilities which do not meet the minimum protection requirements identified in the Asset Protection Template (Attachment 8.1), the Asset Protection Agreement (Attachment 8.2) must be approved by RL SAS with the concurrence of the appropriate RL Program Office. Unresolvable disagreements between the asset owner and Contractor Security Organization as to the appropriate protection strategy to apply, shall be resolved by RL SAS and the appropriate RL Program Office. Additionally, appropriate justification shall be completed and approved by the funding source in those situations where management or the client chooses to exceed the minimum protection criteria. This justification shall include the incremental cost of the added protection and which program/funding source will bear the cost."

6.3.1 **Physical Security**

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter IX, Section 2.c

"Emergency Procedures. Procedures shall be developed for safeguarding classified matter in emergency situations.

(1) If feasible, classified matter shall be secured in security containers and the intrusion detection system activated.

(2) If the emergency is life threatening, the health and safety of personnel shall take precedence over the need to secure classified matter. Security containers, vaults, and vault-type rooms shall be inspected on return to the facility to determine whether classified information has been compromised or if any classified matter is missing."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter IX, Section 2.d, Sentence 1

"Protection of Security Containers and Combinations. Combinations shall be protected at the classification level and category of the matter being protected."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter IX, Section 2.e, Introduction, Sentence 1

"Changing Combinations. Combinations shall be changed by an appropriately cleared authorized individual."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter IX, Section 2.h

"Damage and Repair of General Services Administration-Approved Security Containers. Neutralization of lockouts or repair of any damage that affects the integrity of a security container approved for the storage of classified information shall be accomplished only by appropriately cleared locksmiths."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 1.f

"Means shall be provided to deter and detect unauthorized intrusion into Security Areas. Means include use of intrusion detection sensors and alarm systems, random patrols, and/or visual observation. The protection program shall include suitable means to assess alarms."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 1.h

"Clearly defined physical barriers, such as fences, walls, and doors, shall be used to define the boundary of a Security Area. Barriers shall meet the following requirements, as well as supplementary requirements at paragraph 1, page VII-1:

(1) Barriers shall direct the flow of personnel and vehicles through designated entry control portals.

(2) Barriers and entry control portals, supplemented by other systems such as patrols or surveillance, shall be used to deter and detect introduction of prohibited articles or removal of safeguards and security interests.

(3) Barriers shall be used to deter and/or prevent penetration by motorized vehicles where vehicular access could significantly enhance the likelihood of a successful malevolent act.

(4) Barriers shall be capable of controlling, impeding, or denying access to a Security Area."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 5.a(1) and (2) Introduction

"Inspections. Inspections for a Protected Area shall be as follows:

(1) Entrance inspections of personnel, vehicles, and hand-carried items shall be conducted to deter and detect the unauthorized introduction of prohibited articles. Specific inspection procedures and special nuclear material/metal detection levels and limitations shall be established and documented.

(2) Exit inspections of personnel, vehicles, and hand-carried items shall be conducted to deter and detect the unauthorized removal of special nuclear material. Specific inspection procedures and special nuclear material/metal detection levels and limitations shall be established and documented. When the Protected Area encompasses a Material Access Area, the exit inspections at the Protected Area boundary may be performed on a random basis with the extent and frequency determined by the cognizant local DOE authority for safeguards and security."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 5.b

"Personnel and Vehicle Access Control. Validation of the identity and access authorization of persons authorized access shall be administered by armed protective force personnel and/or an automated access control system as determined by local safeguards and security authorities. Access control requirements shall be as follows:

(1) Private vehicles shall be prohibited from a Protected Area.

(2) Government-owned or Government-leased vehicles shall be admitted only when on official business and when operated by properly cleared and authorized drivers, or when escorted by properly cleared, authorized personnel. Service and delivery vehicles shall be admitted only when on authorized business and when driven or when escorted by properly cleared, authorized personnel. Entry of service and delivery vehicles shall be kept to an operational minimum."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 7.a(1) and (2) Introduction

"Requirements. Inspections shall provide reasonable assurance against the unauthorized introduction of prohibited articles or removal of special nuclear material by force, stealth, or deceit.

(1) Entrance inspections of personnel, vehicles, and hand-carried items shall be conducted to deter and detect the unauthorized introduction of prohibited articles.

(2) Exit inspections of personnel, vehicles, and hand-carried items shall be conducted to deter and detect the unauthorized removal of special nuclear material. Specific inspection procedures and special nuclear material/metal detection levels and limitations shall be established and documented."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 7.b Introduction

"Personnel and Vehicle Access Control. Access control shall be administered by armed protective force personnel and/or automated access control systems as determined by local safeguard and security authorities."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 7.b(1)

"Validation of the identity, access authorization, and authority to enter for persons allowed access shall be accomplished at Material Access Area entrances."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 8.b

"Central Alarm Station. A Central Alarm Station shall be used in protection of Category I and Category II quantities of special nuclear material. A Central Alarm Station shall meet the requirements of a hardened post and shall be located, as a minimum, within a Limited Area. Requirements are as follows:

(1) An access control system shall be used to restrict admittance to persons who require access in the performance of official duties.

(2) A Central Alarm Station shall be attended constantly by personnel who possess access authorizations that are commensurate with the most sensitive asset that is under the protection of the Central Alarm Station.

(3) A Central Alarm Station protecting classified matter shall be of sound construction meeting local building codes."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter V, Section 8.c

"Secondary Alarm Stations. Facilities with Category I or II quantities of special nuclear material shall have a Secondary Alarm Station. Used as an alternative alarm annunciation point to the Central Alarm Station, the Secondary Alarm Station shall be maintained at a location continuously manned, such that a response can be initiated in the event a Central Alarm Station is unable to perform its intended function. Secondary Alarm Stations shall meet the operational requirements of Central Alarm Stations with the exception of hardening and location within a Limited Area. The Secondary Alarm Station need not be fully redundant to

the Central Alarm Station, but shall be capable of providing effective control response to safeguards and security incidents."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter VIII, Section 2.b, Sentences 1 and 2

"Key Management. Security keys shall be protected at the same level as the asset under protection. An inventory and accountability system shall be implemented."

REQUIREMENT SOURCE: RLID5632.1B Section 7.3.b

"Access control shall be provided according to the Asset Protection Template (Attachment 8.1). The number of frequently used entrances to a facility shall be limited. It is the host's responsibility to assist visitors requiring entry into the facility."

REQUIREMENT SOURCE: RLID5632.1B Section 7.4.a

"The designated security focal point shall ensure the minimum physical security requirements are met for each facility. Minimum requirements will be established, per the Asset Protection Template (Attachment 8.1) and applicable DOE Orders/Directives. Generic requirements for all levels of physical protection include:

(1) Signs shall be posted around the perimeter and at the main entrances to each facility, as stated in the Asset Protection Agreement, which prohibit trespassing, list prohibited articles, and advise personnel that vehicles and their hand carried items are subject to search. At government-owned facilities, the standard DOE "Atomic Energy Act, No Trespassing" sign will be used. At government-leased facilities, contractor security organizations shall consult with their Office of Legal Counsel for the posting of locally developed "No Trespassing" signs. These signs will contain language which complies with the required DOE wording. When access points and the perimeter of fenced areas are sufficiently posted with signs, then facilities within the area do not require signs unless the access requirements are more restrictive than the area itself.

In addition to the signs above, Prohibited Article signs shall be posted in accordance with RLID 5632.PA, PROHIBITED ARTICLE POLICY.

(2) Unoccupied/abandoned facilities shall be locked.

(3) There is no requirement to install door locks on interior offices requiring only low-level security protection. However, at the discretion of facility management, in conjunction with their Security Organization, interior locks may be installed. If interior locks are installed, issuance and records management of the keys/combinations will be the responsibility of facility management."

REQUIREMENT SOURCE: RLID5632.1B Section 7.4.b

"When determining the physical security requirements of assets the following shall be considered:

(1) Value of the asset(s)
(2) Portability
(3) Attractiveness
(4) The applicable/credible threat (against the matter located in the area)
(5) A review of any property losses and/or adverse security trends associated with the assets."

6.3.2 Security Systems

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter I, Section 3.e

"Safeguards and security systems and critical systems elements shall be performance tested to ascertain their effectiveness in providing countermeasures to address design basis threats."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter II, Section 1.g

"Intrusion detection shall be accomplished through a combination of intrusion sensors and tamper-indicating devices, materials surveillance procedures, material accounting and tracking, and/or specialized nuclear measurement techniques."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter VI, Section 1, Introduction

"GENERAL. Intrusion detection systems shall be installed to provide reasonable assurance that breaches of security boundaries are detected and that assessment information is provided to protective personnel. Intrusion detection systems shall be provided for Protected Areas as required at page V-5, paragraph 5, Vital Areas as required at page V-6, paragraph 6, and for Material Access Areas and special nuclear material as discussed in paragraphs 2b, 3, and 4 below. Intrusion detection systems shall be provided for protection of classified matter as described at page III-1, paragraph 3. Intrusion detection systems shall also be provided for vaults, vault-type rooms, Sensitive Compartmented Information Facilities, Classified Automated Information System facilities, and Secure Communications Centers. For other applications, the impact of loss or destruction of property and facilities shall be considered when assessing the need for intrusion detection systems."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter VI, Section 2.c

"Compensatory measures shall be provided during times when the intrusion detection system is not in operation or at temporary locations where a permanent intrusion detection system is not practical or cost effective.

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter VI, Section 3.f

"Systems shall be functionally tested in accordance with established procedures at a frequency that is documented."

6.3.3 Protective Forces

Author's Note: Requirements associated with Protective Forces are applicable to the PFP, but are not cited in the Facility S/RID as implementation occurs through a company level program by Hanford Patrol.

Funding is provided by the PFP to acquire the Protective Forces support required for its operations.

6.3.4 Security Identification Badges and Passes

Author's Note: Requirements associated with Security Identification Badges and Passes are applicable to the PFP, but are not cited in the Facility S/RID as implementation occurs through Site level programs. Funding is provided by the PFP for the company level support necessary

to maintain compliance with requirements relative to security badges, background investigations, etc.

6.3.5 Incident Response and Management

Author's Note: Reporting requirements of DOE 5000.3B are cited in the PFP Management Systems Functional Area.

6.3.6 Transportation Security

REQUIREMENT SOURCE: DOE5633.3B Chapter II, Section 5, Introduction

"MATERIAL TRANSFERS. Each facility shall have a program to control and account for internal and external facility transfers of nuclear materials. This program shall include documented procedures that specify requirements for authorization, documentation, tracking, verification, and response to abnormal situations that may occur during transfer of nuclear materials. For additional details, see page II-19, paragraph 7. Page II-19, paragraph 7, provides specific directions for preparing and submitting DOE/NRC F 741, "Nuclear Material Transaction Report," and DOE forms required for documenting external transfers for materials accounting purposes."

REQUIREMENT SOURCE: DOE5633.3B Chapter II, Section 5.a.(3)

"Immediately after receipt, shipments shall be subjected to a transfer check. Transfer checks shall consist of confirmation of shipping container or item count, validation of tamper-indicating devices integrity and identification, and comparison with shipping documentation to provide assurance that the shipment was received intact. For purposes of transfer checks, receipt occurs whenever the transfer vehicle is unloaded or the transfer vehicle's integrity Is breached (tamper-indicating devices removed or broken) at the receiving facility. Documented procedures shall specify actions to be taken in the event discrepancies are detected. Records of transfer checks shall be maintained and subjected to audit and shall be retained at least until the next annual DOE safeguards survey. (For accountability purposes, material in transit at the end of a reporting period shall be included in the receiver's reported inventory, even though physical receipt of the material has not yet occurred.)"

6.4 MATERIAL CONTROL AND ACCOUNTABILITY FOR SPECIAL NUCLEAR MATERIAL

Author's Note: Many of the requirements associated with Material Control and Accountability for Special Nuclear Material, while applicable to the PFP, are implemented through company level programs and are not the direct responsibility of the Facility. Therefore, these requirements are not included in this S/RID. The PFP provides funding to various support organizations to maintain compliance with many of the requirements specific to its operations. The requirements that are cited in the Subelements below are included due to some level of Facility responsibility/input required.

6.4.1 Material Control and Accountability Plan

Author's Note: The company level Safeguards and Security organization prepares and maintains the Material Control and Accountability Plan.

REQUIREMENT SOURCE: DOE5633.3B Chapter I, Section 1.h

NOTE: The requirements of DOE 5000.3B are cited in the Management Systems Functional Area.

"Reportable occurrences shall be reported in accordance with the notification and reporting requirements contained in DOE 5000.3B, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION."

REQUIREMENT SOURCE: DOE5633.3B Chapter I, Section 1.i

NOTE: The requirements of DOE 5500.1B are cited in the Emergency Management Functional Area.

"Facility emergency plans shall address conditions that indicate possible loss of control of special nuclear material. The emergency plan shall be consistent with safeguards and security directives, and shall specify materials control and accountability measures to be taken prior to resumption of operations following emergency operations. Other requirements for facility emergency plans are specified in DOE 5500.1B, EMERGENCY MANAGEMENT SYSTEM."

REQUIREMENT SOURCE: DOE5633.3B Chapter I, Section 4.a

Author's Note: The company level Safeguards and Security organization performs the vulnerability assessment with facility participation. The PFP organization is responsible for identifying facility personnel to participate, providing the project funding, and implementing the identified protection strategies.

"Vulnerability Assessment. Detailed vulnerability assessments identifying and evaluating the capability for detection of a loss of a Category I quantity of special nuclear material shall be developed by each Category I facility and approved by the head of the Operations Office materials control and accountability organization. Requirements for preparation of the Site Safeguards and Security Plan documents shall be used as the basis for these assessments. Vulnerability assessments shall cover the full threat spectrum specified in Office of Safeguards and Security guidance. Potential targets shall include all Category I areas and any Category II or III areas for which a credible scenario for unauthorized accumulation of a Category I quantity has been identified. Performance testing programs shall be developed to support and verify vulnerability assessments. Vulnerability assessments shall be reviewed annually and updated when system changes or new information indicate a potentially significant change in the risk of unauthorized removal of Category I quantities of special nuclear material. Results of reviews including changes in vulnerability assessments shall be documented and classified in accordance with CG-SS-3."

REQUIREMENT SOURCE: DOE5633.3B Chapter I, Section 6.a

"Facility materials control and accountability procedures shall be reviewed and approved (prior to implementation) by facility operations management at a level of authority sufficient to ensure compliance by operations personnel. Procedures shall be consistent with the approved facility Materials Control and Accountability Plan, and procedures shall be distributed to all applicable organizations and individuals in the facility having materials control and accountability responsibilities."

REQUIREMENT SOURCE: DOE5633.3B Chapter I, Section 6.b

"For each facility, management shall establish procedures for emergency conditions and periods when material control and accountability system components are inoperative. These procedures shall be designed to assure that access to or removal of special nuclear material would be detected during these periods."

REQUIREMENT SOURCE: DOE5633.3B Chapter I, Section 6.c

"For each facility, management shall establish controls that limit access to the accounting system and nuclear materials accounting data. For automated systems, controls shall be designed to deter and detect unauthorized access to the data bases and data processing systems that, through tampering, modification, or alteration could lead to defeat of the accounting system. Nuclear materials accounting data shall be protected in accordance with applicable classification, automated data processing, and computer security regulations."

6.4.2 Special Nuclear Material Accountability System

Note: Currently, deviations to inventory, and inventory frequency requirements are in place at the PFP.

REQUIREMENT SOURCE: DOE5633.3B Chapter I, Section 6.e

"For each facility possessing nuclear materials, facility management shall establish a program to periodically review and assess the integrity and quality of the materials control and accountability system. The assessment program shall address normal operations and emergency conditions. The frequency of these assessments shall be on a graded basis, consistent with requirements of DOE 5634.1B, and approved by the Manager, Operations Office. The results of all assessments shall be classified if appropriate, reported to facility management, and each noted deficiency shall be addressed and corrected. The assessment shall be performed by personnel who are knowledgeable in materials control and accountability. Assessments shall be on a graded safeguards basis; at a minimum, the assessment program shall address the following:

(1) Identification of abnormal situations.

(2) Loss mechanisms, loss detection capabilities, and the localization of inventory differences.

(3) Selection, maintenance, calibration, and testing functions to assure proper equipment and system performance.

(4) Material control and accountability system checks and balances, including separation of duties and responsibilities, that are used to identify irregularities and detect tampering with materials or materials control and accountability system components.

(5) Change controls, including authorization requirements, to detect unauthorized or inappropriate modification of system components, procedures, or data. The change control system shall address requirements for review, authorization, documentation, notification, and controls on equipment selection, procurement, and maintenance.

(6) Procedures and/or checks to assure the reliability and accuracy of materials control and accountability data and information.

(7) Performance testing conducted by the facility. This portion of the assessment should address the design of performance tests and the results obtained by the testing program since the last assessment.

(8) Procedures for emergency conditions and for periods when materials control and accountability system components are inoperative.

(9) Material control, material access, and material surveillance procedures.

(10) The physical inventory program and reconciliation practices.

(11) Accounting system procedures, capabilities and sensitivities.

(12) Identification of personnel with materials control and accountability responsibilities who should be included in the facility personnel security assurance program, consistent with national security requirements and DOE 5631.6A, PERSONNEL SECURITY ASSURANCE PROGRAM.

(13) Measurement control program.

(14) Tamper-indicating programs."

REQUIREMENT SOURCE: DOE5633.3B Chapter II, Section 2.b

"Account Structure.

(1) A facility shall consist of one or more Materials Balance Areas established to identify the location and quantity of nuclear materials in the facility. For each facility, readily retrievable accountability data shall be maintained by Material Balance Area that reflects quantities of nuclear materials on inventory, quantities of nuclear material received and shipped, and other adjustments to inventory.

(2) The Materials Balance Area account structure shall provide the capability to localize inventory differences and provide a system of checks and balances for verifying the accuracy of the accountability data and records.

(3) One individual in each Materials Balance Area shall be designated by management to be responsible for ensuring that materials control and accountability policies are implemented in that Materials Balance Area.

(4) Material types, processes, and functions shall be considered in establishment of Materials Balance Areas. The number of Materials Balance Areas shall be sufficient to identify and localize inventory differences and their causes.

(5) A Materials Balance Area boundary shall not cross a Materials Access Area boundary. Each Materials Balance Area should conform to the single geographical are concept and be an integral operation. If more than one geographical area is included in one Materials Balance Area, all of these areas must be under the administrative control of the same individual, and the activities in these areas must be associated with an integral operation."

REQUIREMENT SOURCE: DOE5633.3B Chapter II, Section 2.c

"Records and Reports.

(1) For each facility, management shall maintain records, submit data, and issue reports as required by page II-19, paragraph 7 and facility procedures. These reports shall accurately describe all nuclear material transactions and inventories. Inventory adjustments shall be identified by Materials Balance Area and shall be reported consistent with requirements of this Order, page II-19, paragraph 7.

(2) Nuclear materials records shall be updated only by authorized personnel, and the records system shall provide an audit trail for all transactions affecting the nuclear materials database.

(3) The Materials Balance Area records system shall be capable of being updated daily or upon demand for all nuclear materials transactions. (This requirement is for the updating of records based on reports or information; it is not a requirement on how quickly a facility must be able to complete measurements.) In addition, the records system shall be capable of generating book inventory listings for all special nuclear material within 3 hours. For all other nuclear material, the timing for generation of book inventories shall be within 24 hours. Validating the accuracy of the accounting record system shall be conducted according to testing methodology, testing frequency, and record maintenance requirements contained in DOE 5630.16A and applicable Department guidance. Performance requirements for accounting record system accuracy are contained page I-10, paragraph 4."

REQUIREMENT SOURCE: DOE5633.3B Chapter II, Section 3.a

"Periodic Physical Inventories.

(1) Physical Inventories. Inventories shall be based on measured values and, where feasible, measurements or technically justifiable estimates of holdup shall be made so that holdup quantities can be used in determining inventory values or explaining the inventory difference. Process monitoring techniques may be used for material which is undergoing processing and recovery operation but inaccessible for measurements by sampling. Process monitoring, in addition to material control procedures and specific action criteria, subject to the approval of the Manager, Operations Office, should be used routinely to track materials in process until operations permit an accountability measurement.

(2) Conduct of Inventories. For each facility, there shall be documented plans and procedures defining responsibilities for performing inventories and specifying criteria for conducting, verifying, and reconciling inventories of nuclear material. Verification of the presence of items during inventories may be performed on a statistical sampling basis. Sampling plans shall be consistent with the graded safeguards concept. Parameters for statistical sampling plans and inventory stratifications used with statistical sampling plans shall be defined by the facility management and approved by the Manager, Operations Office.

(3) Holdup Inventory. Holdup inventory shall be measured, where feasible, or estimated on the basis of throughput, process data, modeling, engineering estimates, or other technically defensible factors as a regular part of inventory for facilities with Category I, II, and III quantities of special nuclear material and for facilities with Category IV quantities of special nuclear material that have more than 5 kilograms of special nuclear material as holdup on a regular basis. The method, justification, and supporting documentation should be included in the Materials Control and Accountability Plan.

(4) Physical Inventory Frequencies. For each facility, physical inventories shall be performed for Category I and II Materials Balance Areas involving activities other that processing at a frequency determined by the Manager, Operations Office, but at least semiannually. For Category I and II Materials Balance Areas where processing occurs, physical inventories shall be preformed at a frequency determined by the Manager, Operations Office, but at least bimonthly. Factors to be taken into consideration for frequency determination include personnel radiation exposure, the operational mode of the facility, and credible protracted diversion scenarios.

Category IV source and/or other nuclear material in Category I and II Materials Balance Areas shall be inventories on a schedule defined by the Manager, Operations Office, but at least

annually, except when the source and/or other nuclear material is a credible substitution material. In situations where substitution materials are collocated with special nuclear material, facilities shall inventory substitution materials with the same frequency as the special nuclear material and implement the use of inventory measurement methods that can distinguish between special nuclear material and source and other nuclear material.

In addition to the above requirements, inventory checks for Category IA items not in storage shall be performed weekly for physical count verification, and monthly for serial number verification. Inventory checks for stored Category IA items shall consist of a physical count whenever the storage area is accessed and a serial number verification on a monthly basis.

For each facility, physical inventories shall be performed for Category III and IV Materials Balance Areas at a frequency to be determined by the Manager, Operations Office, but at least biennially.

For facilities having multiple Materials Balance Areas with varied inventory frequencies,a simultaneous inventory of the complete facility shall be performed at least once biennially.

(5) Deviations to Inventory Frequencies. Deviations to inventory frequency requirements described in subparagraph (4) above may be approved in accordance with DOE 5630.11B, for situations where alternative control mechanisms provide assurance that unreported changes in inventories would be detected. Inventory values shall be determined in time to provide for computation and reconciliation of inventories and determination of inventory differences, consistent with DOE reporting requirements stated on page II-19, paragraph 7, and approved inventory frequencies. See "Guide for Implementation of DOE 5633.3A."

(6) Physical Inventory Reconciliation Program. For each facility, management shall implement a physical inventory reconciliation program designed to provide assurance that all nuclear material has been accounted for and that the facility's record system reflects the physical inventory. Upon completion of the physical inventory, the book inventory for each Materials Balance Area shall be compared with and, if necessary, adjusted to the physical inventory."

REQUIREMENT SOURCE: DOE5633.3B Chapter II, Section 3.b

"Special Inventories. At each facility, management shall establish and implement procedures for conducting special inventories as a result of routine disassembly of critical assemblies, changes in custodial responsibilities, missing items, inventory differences exceeding established control limits, abnormal occurrences, or at the request of authorized facility personnel or the cognizant Operations Office."

6.4.3 Material Control System

Note: Requirement DOE 5633.3B Chapter 1, Section 6.c, as located in subelement 6.4.1, is also applicable to this subelement.

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 2.a

"Materials Access. Each facility shall have a documented program to ensure that only properly authorized personnel have access to nuclear materials. This program shall address procedures and mechanisms to detect/respond to access by unauthorized personnel. In order to minimize the potential for unauthorized access to nuclear material, the amount of material in use shall be limited to that necessary for operational requirements, and excess material shall be stored in repositories or kept in enclosures designed to assure that access will be limited to authorized individuals. See DOE 5632.1C for additional access control and storage requirements for special nuclear material and DOE M 5632.1C-1, MANUAL FOR

PROTECTION AND CONTROL OF SAFEGUARDS AND SECURITY INTERESTS, for access authorization requirements for special nuclear categories."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 2.c

"Equipment Access. Each facility shall have a graded program to control access to data-generating and other equipment used in material control activities, thereby assisting in providing assurance of the integrity of equipment and data used for material control. Such equipment includes measurement equipment, data recording devices, and tamper-indicating devices.
An access control program comparable to that required for classified computer systems may be required if such controls are necessary to assure the integrity of the data system."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 3.b.(1)

"Category I and II. The material surveillance program for Category I and II quantities of special nuclear material shall assure that materials are in authorized locations and shall detect unauthorized material flows and transfers. Evaluations of Category I locations shall be performed to determine system capabilities to assess material losses from Materials Access Area and Protected Area boundaries. Evaluations of Category II locations shall be performed to determine system capabilities to assess material losses from the Protected Area boundary. Material surveillance procedures for all areas having Category I or II quantities of special nuclear material shall include the following:

(a) Only appropriately authorized personnel and knowledgeable personnel (i.e., individuals who are capable of detecting incorrect or unauthorized actions) shall be assigned responsibility for surveillance of special nuclear material.

(b) Controls shall be sufficient to ensure that one individual cannot gain access to a secure storage area.

(c) Procedures to ensure constant surveillance of all persons in secure storage areas (e.g., two-person rule or equivalent surveillance procedures) shall be in effect at any time the storage area is not locked and protected by an active alarm system.

(d) Surveillance shall be sufficient to ensure that unauthorized or unaccompanied authorized personnel cannot enter the storage area undetected when the door is unlocked or open.

(e) When two persons are assigned responsibility for maintaining direct control of the item(s) outside an alarmed storage area within an Materials Access Area or Protected Area, either the two authorized persons shall be physically located such that they have an unobstructed view of the item(s) and can positively detect unauthorized or incorrect procedures, or there shall be a system of hardware, procedures, and administrative controls sufficient to ensure no unauthorized accumulation of a Category I quantity without timely detection.

(f) Special nuclear material in use or process shall be under material surveillance procedures, under alarm protection, or with the approval of responsible Heads of Field Elements, protected by alternative means which can be demonstrated to provide equivalent protection."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 3.b.(2)

"Category III. The material surveillance program for Category III quantities shall assure that when materials are not in locked storage, they are attended, are in authorized locations, and are not accessed by unauthorized persons."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 4.a

"Materials Access Area and Protected Area. The facility shall have controls to assure that Category I quantities of special nuclear material are used, processed or stored only within an Materials Access Area contained in a Protected Area and that Category II quantities of special nuclear material are used, processed, or stored only within a Protected Area. The containment program shall:

(1) Be formally documented;

(2) Comply with the graded safeguards concept;

(3) Identify authorized activities and locations for nuclear materials;

(4) Identify mechanisms used to detect unauthorized activities;

(5) Identify material types, forms, and amounts authorized to be removed from the Material Access Area or Protected Area;

(6) Identify containment controls for normal and emergency conditions; and

(7) Require a periodic audit of the containment program to ensure compliance and system effectiveness."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 4.b

"Materials Balance Area. Each facility shall have controls to ensure that nuclear materials used, processed, or stored within an Materials Balance Area are controlled in accordance with the graded safeguards concept. Additionally, these controls shall ensure that materials are removed only via authorized pathways/portals and are subject to transfer and verification procedures as identified on page II-11, paragraph 5. The controls for Materials Balance Areas shall:

(1) Be formally documented;

(2) Identify geographical boundaries and functions of the Materials Balance Areas;

(3) Identify material types, forms, and quantities permitted in each Materials Balance Area;

(4) Describe the administrative controls for each Materials Balance Area;

(5) Define custodial responsibilities for nuclear materials contained within an Materials Balance Area;

(6) Identify personnel authorized to receive/ship nuclear material;

(7) Identify the material flows into and out of the Materials Balance Area

(8) Ensure that material transfer procedures are followed; and

(9) Ensure that material quantities transferred across Materials Balance Areas boundaries are based on measured values consistent with page II-16, paragraph 5b(5)."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 4.c

"Storage Repositories. The facility shall have controls for nuclear materials held in storage repositories consistent with the graded safeguards concept. The control for storage repositories are contained in DOE M 5632.1C-1."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 5, Introduction

"Detection/Assessment. Each facility shall have the capability to detect and assess the unauthorized removal of nuclear materials, consistent with the graded safeguards concept. The system shall be interfaced with the facility's physical protection and other organizational systems, as appropriate, and shall be able to detect removal of special nuclear material from its authorized location (theft/diversion/errors) and provide notification to the protective force and other organizations to respond when such events are detected."

REQUIREMENT SOURCE: DOE5633.3B Chapter III, Section 5.b

"Portal Monitoring. The minimum portal monitoring requirements are in DOE 5632.1C. In addition to those requirements, the detection level of the monitors shall be based upon detection of the typical special nuclear material product in the area and the credible number of removals associated with theft of the Category I quantity of material. All detectors and related calibration standards shall be maintained and controlled to ensure that portal monitors are capable of meeting detection requirements. Periodic performance testing of portal monitors shall be conducted in accordance with page I-10, paragraph 4b. Planning and documentation of performance testing shall meet the requirements of DOE 5630.16A. Performance requirements for portal monitors (both special nuclear material and metal) are contained on page I-10, paragraph 4. Controls shall be established to prevent unauthorized access to portal monitor instrumentation and cabling. A written response plan shall be prepared and implemented to provide evaluation and resolution of all alarm conditions, including requirements for notification in accordance with DOE 5000.3B (and the requirements contained on page I-13, paragraph 5,) in the event of unresolved alarms of malevolent actions. Controls shall be established to ensure detection capabilities during emergency conditions."

6.5 FACILITY APPROVALS, SECURITY AND NUCLEAR MATERIAL SURVEYS

Author's Note: The company level Safeguards and Security organization performs these functions with facility participation when requested.

REQUIREMENT SOURCE: DOE5634.1B Chapter III, Section 3

"COVERAGE.

a. Initial and Periodic Surveys cover the protection afforded DOE safeguards and security interests within a facility, including an evaluation of the adequacy and effectiveness of material control and accountability (MC&A) and security programs and a thorough examination of policies and procedures to ensure compliance/ performance with appropriate safeguards and security directives and agreements. All facilities are subject to the compliance and performance segments of surveys, as described in Chapters IV and V.

b. Special Surveys evaluate the following:

(1) Existing protection for additional activities;

(2) Need for changes in material control and accountability and security procedures and measures due to changing conditions; and

(3) New material control and accountability and security measures taken as a result of findings identified under a previous survey(s).

c. Termination Surveys evaluate actions taken to ensure termination of safeguards and security interests, execution of an appropriate security termination statement, and submission of a certificate of possession or nonpossession, as appropriate. Termination of facility approvals for Class "A" facilities, facilities possessing classified material, and/or SNM, require an onsite termination survey. For other facilities, termination may be by survey or correspondence.

d. Shipment Surveys provide a basis for evaluating the adequacy of protection afforded DOE classified matter or SNM during shipment. Shipments which move between sites by rail, truck, air, or ship are subject to survey based on an approved security plan unless the shipment is made via a commercial carrier(s) licensed by the Nuclear Regulatory Commission (NRC). Movements of SNM between security areas at the same site shall be surveyed during the security survey of the site protection system. Each type of security shipment shall be surveyed initially and at least once every 12 months thereafter by the organization having administrative jurisdiction over the shipment. Shipment survey reports shall provide sufficient detail to enable a proper evaluation of the report and its findings."

REQUIREMENT SOURCE: DOE5634.1B Chapter IV, Section 6

"COMPLIANCE SEGMENT. The compliance segment of the security survey shall address how well the facility meets requirements contained in DOE directives and the applicable facility Security Plan and/or Master Safeguards and Security Agreement. The results shall be entered on an approved security survey report form."

REQUIREMENT SOURCE: DOE5634.1B Chapter IV, Section 7

"PERFORMANCE SEGMENT. Surveys of facilities shall include a performance evaluation to assess the capability of the safeguards and security system to meet performance objectives. The performance evaluation shall determine system performance against scenarios for applicable threats/targets."

6.6 INFORMATION SECURITY PROGRAM

Author's Note: The following subelements, as identified in the ES&H Configuration Guide, are not applicable to the PFP, or the facility is not directly responsible for implementation:

1) 6.6.2 - Technical Surveillance and Countermeasures (TSCM). (Facility has no direct responsibility for implementation). The TSCM program is implemented through Site level programs as required.

2) 6.6.3 - Automated Information Systems Security (Classified Computers). (The Facility does not implement this program directly although classified computer systems are utilized. The program is implemented on a Site-level by Information Resources Management.)

3) 6.6.4 - Unclassified Computer and Sensitive Data Processing Systems. (Facility has no direct responsibility for implementation). This program is developed and implemented by Information Resources Management.

6.6.1 Classified Matter Protection and Control (CMPC)

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter III, Section 1.a

"Classification levels shall be used in determining the degree of protection and control required for classified matter."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter III, Section 1.b

"Access to classified matter shall be limited to persons who possess appropriate access authorization and who require such access (need-to-know) in the performance of official duties. Controls shall be established to detect and deter unauthorized access to classified matter."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter III, Section 1.c

"Custodians and authorized users of classified matter are responsible for the protection and control of such matter."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter III, Section 1.d

"Buildings and rooms containing classified matter shall be afforded the security measures necessary to prevent unauthorized persons from gaining access to classified matter, specifically to include security measures to prevent persons outside the facility protective zone from viewing or hearing classified information. Conference rooms and areas specifically designated for classified discussions shall follow Technical Surveillance Countermeasures Program requirements."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter III, Section 2, Sentence 1

"IN USE. Classified matter in use shall be constantly attended by or under the control of a person or persons having the proper access authorization and a need-to-know, who are responsible for its protection."

REQUIREMENT SOURCE: DOE-M-5632.1C-1 Chapter III, Section 3.a

"General. Classified matter shall be stored in a manner to prevent unauthorized persons from gaining access."

REQUIREMENT SOURCE: DOE5639.1 Preamble, Section 13.a

"Unaccounted-For Matter. This paragraph pertains to those situations where classified matter has been or may have been lost, missing, or otherwise unaccounted-for.

(1) Discovery. Any person who determines that classified matter has been or may have been lost, is missing, or is otherwise unaccounted-for shall take immediate action to preclude any further or potential compromises and report this information to the custodian or security officer. The measures listed below apply to custodians who determine or learn that classified matter is unaccounted-for.

(2) Initial Search. Upon determining or learning that classified matter may be unaccounted-for, a search of the immediate area where the matter was stored, handled, or processed shall be conducted. When applicable, the accountability records shall be audited for evidence of destruction, transmission, or other disposition.

(a) If the matter is found or otherwise accounted-for with no indication of compromise, no further actions need to be taken.

(b) If Secret or Confidential matter is unaccounted-for, the cognizant safeguards and security organization or officer shall be notified within 24 hours from initial indications of the unaccounted-for status.

(c) If Sigma 1 or Sigma 2 Weapon Data matter is unaccounted-for, the Office of Safeguards and Security (SA-10), the appropriate Secretarial Officer, and the Office of Military Applications (DP-20), through the cognizant safeguards and security organization or officer shall be notified within 24 hours.

(d) If Top Secret matter, classified matter of another agency, or classified matter of a foreign government is unaccounted-for, SA-10 and the appropriate Secretarial Officer, through the cognizant safeguards and security organization or officer, shall be notified within 24 hours. Documents related to the Joint Atomic Information Exchange Group (JAIEG) shall also be reported to DP-20 who will ensure appropriate reporting to JAIEG.

(3) Detailed Search. Unaccounted-for matter that cannot be reconciled after the initial search and audit of records shall require a more detailed search of the area where the matter may have been stored, processed, and handled. Additionally, custodians of document control stations providing immediate adjacent support, as well as one level above and one level below the holder must be queried. The facility's security organization shall initiate a detailed search in an attempt to ascertain whether or not a transmittal, receipt, or destruction may have been administratively mishandled. The detailed search and query process shall be completed within 48 hours. If the matter is found, or otherwise accounted-for, the search process will be discontinued; however, the facility security office shall review the surrounding circumstances and procedures for possible corrective action.

(4) Preliminary Inquiry. The purpose of a preliminary inquiry is to establish whether a compromise of classified information or a violation of law has occurred. Preliminary inquiries shall be conducted as expeditiously as possible and shall not be used as a means of holding in abeyance a decision to initiate a full-scale inquiry.

(a) When all efforts fail to reconcile unaccounted-for matter, the facility security office shall initiate a preliminary inquiry to document and ensure all basic areas of consideration have been satisfied. As a minimum the preliminary inquiry shall:

1 Include an interview with the last known custodian and require that individual, and any other personnel who may have pertinent information, prepare signed memoranda on the protection and control of the matter or the circumstances under which the matter became unaccounted-for.

2 Include a review by an authorized classifier of the classification assigned to the matter at the time it was determined unaccounted-for. If another copy of the unaccounted-for matter exists, arrangements shall be made to review the current classification and hold the copy for possible future reviews.

3 Ensure the conduct of a physical search of the office of the last known holder and other offices where the matter may logically be found. A part of any search shall include a review of the custodian's records, the central files, and the local central document control office (including downgrade and declassification notices, destruction certificates, classified document receipts, letters or transmittal, and incoming and outgoing mail logs).

4 Determine the reason why the matter is unaccounted-for and recommend action to prevent recurrence.

5 Assess the potential for compromise and determine if additional investigation is required.

6 Provide adequate information to be used to complete the Department of Justice eleven point criteria if deemed necessary.

(b) The preliminary inquiry shall be completed and a written report, DOE F 5635.11, "Reporting Unaccounted For Documents," or a form similar in content, with supporting statements/documentation, shall be forwarded to the cognizant Departmental Element safeguards and security organization or officer. A classification review of the form shall be performed by an authorized derivative classifier. An example of DOE F 5635.11 is shown as Attachment 3. The cognizant Departmental Element safeguards and security organization or officer shall notify SA-10 and the responsible Secretarial Officer in accordance with DOE 5000.3A, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION, of 5-30-90.

(c) The preliminary inquiry shall review the circumstances, procedures, and activities surrounding the incident, and provide for corrective action to preclude recurrence.

(5) Records. (See paragraph 13e for records retention). For accountability purposes, classified matter may be removed from accountability records, if any, and maintained in a separate record of unaccounted-for matter when:

(a) All inquiries have been completed; and
(b) Corrective actions have been implemented (commitments to implement shall not constitute implementation)."

REQUIREMENT SOURCE: DOE5639.1 Preamble, Section 13.e

"Records Retention. Records of all actions pertaining to unaccounted-for/compromised matter or compromises of information must be maintained by the facility and the cognizant Departmental Element safeguards and security organization or officer. In accordance with DOE 1324.2A, RECORDS DISPOSITION, of 9-13-88, records shall be destroyed 5 years after the close of all associated actions. These records will not be sent to Federal Records Centers."

REQUIREMENT SOURCE: DOE5650.2B Chapter V, Part A, Section 5.a

"DERIVATIVE CLASSIFICATION AUTHORITY.

a. Applicability. Individuals with Derivative Classification Authority may classify documents or material that contain or reveal RD, FRD, or NSI in accordance with classification guides authorized for the classifier's use, source documents, or instructions from an Original Classifier."

REQUIREMENT SOURCE: DOE5650.2B Chapter V, Part A, Section 5.b

"Qualifications. A Derivative Classifier must (1) have demonstrated competence in the subject area in which the authority will be used; (2) be knowledgeable in DOE classification policy and procedures (especially with all classification guides in the subject area in which the authority will be used); (3) be in a position with a proven or anticipated need for Derivative Classification Authority; (4) have successfully completed a training program and examination

given by the local classification office; and (5) be so designated in writing by appropriate authority as described below."

REQUIREMENT SOURCE: DOE5650.2B(930428) Chapter VII, Section 2.a, Sentence 1

"All new DOE and DOE contractor employees must understand their classification responsibilities before being given access to classified information."

6.6.2 Technical Surveillance and Countermeasures (TSCM)

Note: Refer to element 6.6 for nonapplicability statement.

6.6.3 Automated Information Systems Security Program (Classified Computer Security)

Note: Refer to element 6.6 for nonapplicability statement.

6.6.4 Unclassified Computer and Sensitive Automated Data Processing Systems

Note: Refer to element 6.6 for nonapplicability statement.

6.6.5 Communications Security

Author's Note: The communications security program is a company level set of requirements and will not be cited in this document.

6.7 OPERATIONS SECURITY (OPSEC)

Author's Note: PFP is not directly responsible for implementation of requirements relative to the (OPSEC) program. Most of the OPSEC requirements are implemented through company level programs. Facility requirements relative to the OPSEC program are adequately addressed in other element and subelements of this S/RID such as Protection Program Operations and Classified Matter Protection and Control.

6.8 FOREIGN OWNERSHIP, CONTROL OR INFLUENCE (FOCI)

Author's Note: The required (FOCI) submissions by a contractor should be addressed in company level correspondence.

6.9 EVALUATION OF RADIOLOGICAL AND TOXICOLOGICAL AND SABOTAGE CONSEQUENCES

Author's Note: The company level Safeguards and Security organization performs the evaluation of radiological and toxicological sabotage consequences with facility participation on the committee. The PFP organization is responsible for identifying facility personnel to participate, providing the project funding, and implementing the identified protection strategies.

REQUIREMENT SOURCE: DOE5632.1C Preamble, Section 5.b

"Protection and control shall be provided in a graded, cost-effective fashion, in accordance with the potential risks to the national security and/or the health and safety of DOE and contractor employees, the public, and the environment."

REQUIREMENT SOURCE: DOE5632.1C Preamble, Section 7.b

"Threat. The "Design Basis Threat Policy for the Department of Energy Programs and Facilities (U)" shall be used to identify and characterize the range of potential adversary threats to Departmental programs and facilities. Field Elements should review and develop, as appropriate, supplementary local threat policy to take into account site-specific and regional-specific threat considerations."

REQUIREMENT SOURCE: RLID5630.3A Section 7.0, Paragraph 1

"All RL contractors possessing hazardous materials in use or storage, including that contained in waste, shall perform graded assessments of the risk, due to radiological/toxicological sabotage consistent with the levels of hazards present within the facility. Graded assessments are performed by determining the amounts of radioactive and non-radioactive (toxicological) materials."

6.10 KEY INTERFACES

6.10.1 Emergency Management

The PFP Emergency Management personnel participate in facility specific emergency drills relative to security incidents.

6.10.2 Packaging and Transportation

The WHC Transportation and Packaging organization provides Safeguards and Security with the names of authorized shippers.

6.11 REFERENCES

6.11.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this S/RID:

DOE 5630.13A, Master Safeguards and Security Agreements, 06/08/92.

DOE 5631.2C, Personnel Security Program, 02/17/94.

DOE 5631.6A, Personnel Security Assurance Program, 09/15/92.

DOE 5632.1C, Protection and Control of Safeguards and Security Interests, 07/15/94.

DOE 5633.3B, Control and Accountability of Nuclear Materials, 09/07/94.

DOE 5634.1B, Facility Approvals, Security Surveys, and Nuclear Materials Surveys, 09/15/92.

DOE 5639.1, Information Security Program, 10/19/92.

DOE 5650.2B, Identification of Classified Information, 04/28/93.

DOE M 5632.1C-1, Manual for Protection and Control of Safeguards and Security Interests, 07/15/94.

RLID 5630.3A, Protection of Hanford Facilities Against Radiological and Toxilogical Sabotage, 09/29/94.

RLID 5632.1B, Asset Protection Requirements, 08/22/94.

6.11.2 Reviewed Documents Not Used as Requirement Sources

The following documents were reviewed as requirement sources but were not used in the development of this S/RID:

DOE 1240.2B, Unclassified Visits and Assignments by Foreign Nationals, 08/21/92.

DOE 1360.2B, Unclassified Computer Security Program, 05/18/92.

DOE 5630.3A, Protection of Departmental Facilities Against Radiological and Toxicological Sabotage, 6/28/93.

DOE 5630.11B, Safeguards and Security Program, 08/02/94.

DOE 5630.14A, Safeguards and Security Program Planning, 06/09/92.

DOE 5631.1C, Safeguards and Security Awareness Program, 05/04/94.

DOE 5632.7A, Protective Force Program, 04/13/94.

DOE 5634.3, Foreign Ownership, Control, or Influence Program, 06/14/93.

DOE 5639.3, Violation of Laws, Losses, and Incidents of Security Concerns, 09/15/92.

DOE 5639.5, Technical Surveillance Countermeasures Program, 08/03/92.

DOE 5639.7, Operational Security Program, 04/30/92.

DOE M 5639.6A-1, Manual of Security Requirements for the Classified Automated Information System Security Program, 07/15/94.

DOE 6430.1A, General Design Criteria, 04/06/89.

TABLE OF CONTENTS

7.0 ENGINEERING PROGRAM 1

7.1 MANAGEMENT AND ADMINISTRATION 3

7.1.1 Program Policy and Procedures 3
7.1.2 Authority and Responsibility 3
7.1.3 Staffing and Training 3
7.1.4 Planning 3
7.1.5 Scheduling 4
7.1.6 Cost Estimating 4
7.1.7 Standards and Guides 4
7.1.8 Engineering Assistance Request Process 4
7.1.9 Testing Program 4
7.1.10 Construction Inspection 4

7.2 DESIGN 5

7.2.1 Design Process 5
7.2.2 Design Criteria 5
7.2.3 Design Products 5
7.2.4 Design Review and Verification 5
7.2.5 Design Change Controls 5
7.2.6 Design Life 6

7.3 KEY INTERFACES 6

7.3.1 Management Systems 6
7.3.2 Quality Assurance 6
7.3.3 Operations 7
7.3.4 Maintenance 7
7.3.5 Construction Program 7
7.3.6 Fire Protection 7
7.3.7 Nuclear Safety 7
7.3.8 Research and Development and Experimental Activities 8
7.3.9 Occupational Safety and Health 8
7.3.10 Waste Management 8
7.3.11 Environmental Protection 8
7.3.12 Configuration Management 8
7.3.13 Emergency Preparedness and Management 8
7.3.14 Radiation Protection 8
7.3.15 Training and Qualification 8

7.4 REFERENCES 9

7.4.1 Requirement Source Documents 9
7.4.2 Reviewed Documents Not Used as Requirement Sources 9

7.0 ENGINEERING PROGRAM

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Engineering Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Engineering activities, as such activities are included in the current mission of the facility.

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to PFP, but are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words " shall" and "should" in requirements statements both indicate mandatory compliance. The Key interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements.

The Engineering Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. Element 7.4 was added to specify applied and considered references. Construction activities are governed by the Construction Program Functional Area.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

7.1 MANAGEMENT AND ADMINISTRATION

7.1.1 Program Policy and Procedures

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0101-1

"These criteria provide mandatory, minimally acceptable requirements for facility design. The predominant model building code in the region shall govern on issues not covered in these criteria.

State, municipal, county, and other local building and zoning codes and ordinances should be reviewed for possible conflicts with these criteria. While it is not mandatory that DOE projects comply with such local codes and regulations, the design professional is encouraged to cooperate with local officials and DOE personnel to accommodate the intent of local codes and regulations as much as possible.

These criteria apply to any building acquisition, new facility, facility addition and alteration, and leased facility that is required to comply with DOE 4300.1B. This includes on-site constructed buildings, pre-engineered buildings, plant-fabricated modular buildings, and temporary facilities. For existing facilities, original design criteria apply to the structure in general; however, additions or modifications shall comply with this Order and the associated latest editions of the references herein. Reactors and their safety systems shall be sited and designed according to DOE 5480.6.

These criteria shall be applied in the planning, design, and development of specifications for facilities, including the preparation of site-specific general design criteria and project-specific design criteria during the project planning phase.

If there are any conflicts between these criteria and DOE directives, these criteria shall govern. Any such conflicts shall be brought to the attention of the Headquarters OPFM.

Information cited in these criteria as being provided by the cognizant DOE authority shall be obtained by the design professional through the designated cognizant DOE authority."

7.1.2 Authority and Responsibility

Requirements for this subelement are included in the Management Systems Functional Area.

7.1.3 Staffing and Training

For the training requirements applicable to the Engineering Program Functional Area, see the PFP Training Functional Area S/RID.

7.1.4 Planning

A requirement for this subelement is included in 7.1.5.

7.1.5 Scheduling

REQUIREMENT SOURCE: DOE4700.1 Chapter III.F. 9.a.(2)[2]

"All the contractually authorized work shall be planned, scheduled, budgeted, and authorized by the contractor."

7.1.6 Cost Estimating

REQUIREMENT SOURCE: DOE4700.1 Chapter II.D.4.a.

"When a cost estimate is prepared for a project, a description of the basis for the cost estimate shall be made and included in the estimate documentation."

7.1.7 Standards and Guides

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0109, Sentences 1 and 2

"This section lists the reference standards and guides cited in these criteria. The latest edition of standards and guides shall be used."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0140[09]

"Deviations from specified standards shall be identified and procedures established to ensure their control."

7.1.8 Engineering Assistance Request Process

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(i)

"Work Processes. Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained."

7.1.9 Testing Program

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(iv)

"Inspection and Acceptance Testing. Inspection and testing of specified items, services, and processes shall be conducted using established acceptance and performance criteria. Equipment used for inspections and tests shall be calibrated and maintained."

7.1.10 Construction Inspection

Requirements for this subelement are included in the Construction Program Functional Area.

7.2 DESIGN

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(ii)

"Design. Items and processes shall be designed using sound engineering/scientific principles and appropriate standards. Design work, including changes, shall incorporate applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be verified or validated by individuals or groups other than those who performed the work. Verification and validation work shall be completed before approval and implementation of the design."

7.2.1 Design Process

Requirements for this subelement are included in 7.2.

7.2.2 Design Criteria

Additional requirements applicable to this subelement are included in 7.1.1.

REQUIREMENT SOURCE: DOE5480.11 Section 9.j(1)(d)

"Maintenance, Decontamination, and Decommissioning. Ease of maintenance and decontamination and decommissioning is to be considered in facility design and selection of materials."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0140[07 and 08]

"Wherever possible, design shall reflect experience gained on similar projects or similar types of construction.

Provisions shall be made for review and checking design calculations, drawings, and construction specifications by qualified personnel other than those responsible for the original design."

7.2.3 Design Products

Requirements for this subelement are included in 7.2.

7.2.4 Design Review and Verification

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0140[10]

"To the extent practicable, and particularly in the case of innovative design, the design should be independently reviewed by competent consultants in construction or manufacturing techniques to confirm the practicability of construction or manufacture."

7.2.5 Design Change Controls

Additional requirements applicable to this subelement are included in 7.2.

Author's Note: A graded approach should be applied for inconsequential editorial corrections. Such changes shall not require that the revised documents receive the same review as the original documents.

REQUIREMENT SOURCE: DOE5480.19(920518) Chapter VIII, Section C. 9

"Administrative control systems should be established for installation of temporary modifications such as electrical jumpers, lifted leads, pulled circuit boards, disabled annunciators/alarms, mechanical jumpers/bypasses, temporary setpoint changes, installed or removed block flanges, disabled relief or safety valves, installed or removed filters or strainers, plugged floor drains, and temporary pipe supports. Prior to modification, these controls should provide for communicating the installation of temporary modifications to the design authority to allow for technical oversight and an evaluation of the impact on current design activities, and approval of the design modification. These control systems should make provisions for safety reviews, installation approval, independent verification of correct installation and removal, documentation of the modification, update of operating procedures and documents, training, marking of installed modifications, and periodic audits of outstanding modifications."

7.2.6 Design Life

REQUIREMENT SOURCE: DOE-STD-1073-93 Chapter 1, Section 1.3.7.1

"A program plan, an action plan, and implementing procedures should be developed for the MCA adjunct program. The program plan should be based on the initial assessments and the graded approach. The program plan should address the same topics identified for the CM program plan (described in criterion 1.3.1.1.c)."

7.3 KEY INTERFACES

INTERFACE BOUNDARIES

The Engineering Program Functional Area applies to all engineering activities at a facility. This functional area interfaces essentially with all other functional areas to some degree, in both programmatic and technical functional areas.

The following functional areas have a major interface with the Engineering Program Functional Area:

7.3.1 Management Systems

The Engineering Program uses applicable higher tier policies and procedures developed outside this functional area. Policies and procedures applicable solely to the Engineering Program Functional Area should exist within this functional area, but should be subject to general controls from the Management Systems Functional Area. Design-related needs for document control and records management should be contained in the Engineering Program Functional Area.

7.3.2 Quality Assurance

The QA Functional Area provides oversight of the conduct of the Engineering Program Functional Area. The Engineering Programs should ensure that appropriate QA controls are imposed on subcontractors and vendors. The Engineering Program Functional Area should

incorporate into its processes a means of timely dispositioning of deficiencies whether identified by the QA function or through design verification and self-assessment activities. The Engineering Program Functional Area should also specify quality control inspection requirements for physical attributes important to design.

7.3.3 Operations

The Operations Functional Area should provide operational mission and needs and capabilities to engineering for new design efforts. The Engineering Program provides information necessary to permit the Operations Functional Area to ensure operation of the facility within the limits imposed by the design. For example, the engineering design function must provide information on safety limits for equipment operation and provide inputs for use in operational activities such as instrument calibration and establishment of instrument setpoints. The system engineering function is within the scope of the Operations S/RID; however the Engineering Program S/RID includes requirements for obtaining system engineer input for design changes.

7.3.4 Maintenance

The interface between Engineering and Maintenance Program Functional Areas should be defined so that maintenance activities that change design features of facility components are treated as design changes and are subject to applicable design control requirements. Maintenance activities that maintain or restore the facility to its as-designed condition are solely within the Maintenance Functional Area. The Engineering Program Functional Area should provide post-maintenance testing requirements for work affecting the design and should develop technical requirements for materials and services used in maintenance activities that potentially affect the design. The Engineering Program should also provide maintenance with vendor instructions and recommendations obtained during the project construction phase.

This functional area identifies any construction activities that should be coordinated with the Engineering Program, in the event that such activities will be required in the future by the facility.

7.3.5 Construction Program

This functional area identifies any construction activities that should be coordinated with the Engineering Program, in the event that such activities will be required in the future by the facility.

7.3.6 Fire Protection

The interface between Engineering Program and Fire Protection Functional Areas is necessary because the Fire Protection Functional Area evaluates the fire hazards and defines the design features that are necessary to mitigate those hazards. The Engineering Program Functional Area ensures that those design features are incorporated into the design and provides the necessary support services (power, water, etc.) required by fire protection systems.

7.3.7 Nuclear Safety

The Nuclear Safety Functional Area contains the controls and requirements for SAR preparation, definition and analysis of credible accidents, and performing dose calculations needed for the SAR. The Engineering Program Functional Area recognizes the need for engineering support to this process and the need to ensure that designs are consistent with the SAR and other technical safety requirements and commitments.

7.3.8 **Research and Development and Experimental Activities**

This functional area identifies any research and development activities that should be coordinated with the Engineering Program, in the event that such activities will be required in the future by the facility.

7.3.9 **Occupational Safety and Health**

Public Law requires that this functional area be integrated into the design of facilities to ensure a safe working environment for operating personnel.

7.3.10 **Waste Management**

There is a series of Public Laws that affect design relating to this functional area. Their primary purpose is to manage and remediate waste as the releases to the environment are eliminated and to assure that the health of workers and the public is not compromised.

7.3.11 **Environmental Protection**

The Environmental Protection Functional Area interfaces with the Engineering Program in the areas of developing data necessary to the preparation of National Environmental Policy Act documents, licenses, and permits.

7.3.12 **Configuration Management**

The Engineering Program Functional Area provides information to the Configuration Management Functional Area and uses the design and configuration baselines maintained within that functional area.

7.3.13 **Emergency Preparedness and Management**

The Engineering Program Functional Area incorporates into its designs the requirements necessary to support emergency preparedness and management functions. Such requirements include those necessary to perform safety-related functions under emergency conditions, as well as the capability to monitor facility conditions, and provide communications and other necessary support.

7.3.14 **Radiation Protection**

The Radiation Protection Functional Area provides design input regarding the radiation hazards associated with the processes being conducted within the facility. The Engineering Program Functional Area contains requirements for ensuring that appropriate design measures are taken to ensure compliance with radiation protection standards and requirements. The Radiation Protection Functional Area provides timely input to the design process by providing reviews of designs for compliance with radiation protection standards and requirements.

7.3.15 **Training and Qualification**

The Engineering Program Functional Area contains requirements for defining the training needs of personnel assigned to carry out the requirements contained therein. The Engineering Program is responsible for implementing the appropriate engineering-specific training and qualifications requirements. The Training and Qualification Functional Area defines the

requirements for general employee training, security training, and instructor training and qualification.

7.4 REFERENCES

7.4.1 Requirement Source Documents

10 CFR Part 830, Nuclear Safety Management, 4/5/94

DOE 4700.1, Project Management System, Change 1, 06/02/92

DOE 5480.11, Radiation Protection for Occupational Workers, Change 3, 06/17/92

DOE 5480.19, Conduct of Operations Requirements for DOE Facilities, Chg. 1, 05/18/92

DOE 6430.1A, General Design Criteria, 04/06/89

DOE-STD-1073-93, Guide for Operational Configuration Management Program, November 1993

7.4.2 Reviewed Documents Not Used as Requirement Sources

DOE Implementation Guide for 10 CFR 830.120, 08/94

DOE 5400.1, General Environmental Protection Program, Change 1, 06/29/90.

DOE 5400.5, Radiation Protection of the Public and the Environment, Change 2, 01/07/93.

DOE 5480.1B, Environment, Safety and Health Program for Department of Energy Operations, Change 5, 05/10/93.

DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards, 05/15/84.

DOE 5481.1B, Safety Analysis and Review System, Change 1, 05/19/87.

DOE 5700.6C, Quality Assurance, 08/21/91.

DOE 5820.2A, Radioactive Waste Management, 09/26/88.

ASME NQA 1 1994, Quality Assurance Program Requirements for Nuclear Facility Applications, 1994.

BMP 84 026, Setpoint Change Control Program, Revision 1, June 1986.

BMP 85 013, Plant Modification Control Program, May 1985.

BMP 90 009, Guidelines for the Conduct of Design Engineering, Revision 1, February 1992.

ANSI N45.2.11, Quality Assurance Requirements for Design of Nuclear Power Plants, 1974.

TABLE OF CONTENTS

8.0 CONSTRUCTION PROGRAM 1

8.1 MANAGEMENT AND ADMINISTRATION 3

8.1.1 Policies and Procedures 3
8.1.2 Authority and Responsibility 3
8.1.3 Staffing and Training 3

8.2 PROGRAM ACTIVITIES 3

8.2.1 Planning 4
8.2.2 Scheduling 4
8.2.3 Cost Estimating 4
8.2.4 Constructibility/Maintainability/Value Engineering 5
8.2.5 Material and Equipment Storage 5
8.2.6 Contract Selection 5
8.2.7 Construction Program Controls 5
8.2.8 Walkthroughs of Construction Sites 7

8.3 KEY INTERFACES 8

8.3.1 Management Systems 8
8.3.2 Quality Assurance 8
8.3.3 Configuration Management 8
8.3.4 Training and Qualification 8
8.3.5 Safeguards and Security 9
8.3.6 Engineering Program 9
8.3.7 Operations 9
8.3.8 Maintenance 9
8.3.9 Radiation Protection 10
8.3.10 Fire Protection 10
8.3.11 Research and Development and Experimental Activities 10
8.3.12 Occupational Safety and Health 10
8.3.13 Environmental Protection 10

8.4 REFERENCES 10

8.4.1 Requirement Source Documents 10
8.4.2 Reviewed Documents Not Used as Requirement Sources 11

8.0 CONSTRUCTION PROGRAM

INTRODUCTION

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Construction Program Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Construction activities, as such activities are included in the current mission of the facility.

The PFP S/RID contains standards/requirements that are necessary for safe operation of the PFP and that are the direct responsibility of the facility manager. The Construction Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to PFP are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words "shall" and "should" in requirements statements both indicate mandatory compliance. The Key interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

8.1 MANAGEMENT AND ADMINISTRATION

8.1.1 Policies and Procedures

Author's Note: Additional requirements are contained in the Quality Assurance Functional Area.

REQUIREMENT SOURCE: DOE4700.1 Attachment III-7.2.a.(1)

"The contractor's management control systems shall include policies, procedures, and methods which are designed to ensure that they will accomplish the following: Define all authorized work and related resources to meet the requirements of the contract, using the framework of the contract work breakdown structure."

8.1.2 Authority and Responsibility

REQUIREMENT SOURCE: 10CFR830 Part 120(c)(2)(i)

"Performance

Work Processes. Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained."

8.1.3 Staffing and Training

The comprehensive requirements for Training and Qualification programs are contained within that functional area element.

8.2 PROGRAM ACTIVITIES

REQUIREMENT SOURCE: DOE4700.1 Attachment III-7.2.a.(2)

"The contractor's management control systems shall include policies, procedures, and methods which are designed to ensure that they will accomplish the following: Identify the internal organizational elements and the major subcontractors responsible for accomplishing the authorized work."

REQUIREMENT SOURCE: DOE4700.1 Attachment III-7.2.a.(4)

"The contractor's management control systems shall include policies, procedures, and methods which are designed to ensure that they will accomplish the following: Identify the managerial positions responsible for controlling overhead (indirect costs)."

REQUIREMENT SOURCE: DOE4700.1 Attachment III-7.2.a.(5)

"The contractor's management control systems shall include policies, procedures, and methods which are designed to ensure that they will accomplish the following: Provide for integration of the contract work breakdown structure with the contractor's functional organizational structure in a manner that permits cost and schedule performance measurement for contractor work breakdown structure and organizational elements."

8.2.1 Planning

REQUIREMENT SOURCE: DOE4700.1 Chapter V.A.2.c.(1) [1]

"Specific project management plans shall be prepared for each major system acquisition and major project per Chapter II."

REQUIREMENT SOURCE: DOE4700.1 Chapter V.A.2.c.(2)

"General project management plans shall be prepared for categories or types of projects which are to be managed similarly, encompassing the same areas that the specific management plans address."

REQUIREMENT SOURCE: DOE4700.1 Chapter V.A.2.c.(3) [1]

"Projects managed by general management plans shall have a specific document containing scope, estimate, schedule, and designated individuals assigned authorities and responsibilities."

REQUIREMENT SOURCE: DOEN4700.5 Attachment 2, Section 2.a.(4)(b)1

"Ensure that a process is established and is in operation throughout the project life to identify programmatic, operational, legislative, institutional, and other requirements or constraints, which may affect technical, cost, or schedule baselines and ensure that such baselines properly reflect such potential impacts."

8.2.2 Scheduling

REQUIREMENT SOURCE: DOEN4700.5 Attachment 2, Section 2.a.(4)(b)2

"Develop schedules that integrate with the WBS and cost estimate, and represent all work scope regardless of funding source. Use activity logic to depict all work scope, constraints, and decision points. Estimate and assign durations to activities representing work accomplishment."

REQUIREMENT SOURCE: DOEN4700.5 Attachment 2, Section 2.a.(4)(b)3

"Establish an approved schedule baseline which clearly depicts critical path activities and milestones from which actual performance for all activities and milestones can be compared, and from which forecast data can be generated. Resource-load activities, as required and at the appropriate level, to develop time phased budgets that are integrated with the schedule. Permit only authorized changes to the schedule baseline."

8.2.3 Cost Estimating

REQUIREMENT SOURCE: DOE5700.2D Preamble, Section 8.c.

"All sequential cost estimates shall be reconciled and kept on file with previous estimates until the project is completed, thereby ensuring traceability from project start to completion. Each estimate documentation file shall also include the basis for the estimate, show how the estimate was performed, and contain a contingency analysis. All estimates shall be performed in constant-year dollars and then escalated into year-of-expenditure (generally fiscal year) dollars. Both the estimates and the escalation rates used will be kept on file until the project is completed."

REQUIREMENT SOURCE: DOE5700.2D Preamble, Section 8.d.

"Check estimates are recommended for validating project estimates. Check estimates can be made by the project engineer/manager or by any qualified DOE or support contractor personnel. It is highly desirable that the check estimate be made by someone other than those who performed the original estimate. The check estimate may utilize any of the estimating methods shown in Attachment 1."

REQUIREMENT SOURCE: DOEN4700.5 Attachment 2, Section 2.a.(3)(b)1

"Prepare cost estimates using appropriate estimating methodologies that are integrated with the WBS, and the DOE cost structure as specified by the DOE, for all contract work. Ensure that all estimates are consistent with DOE 5700.2D and in accordance with FAR 15.804, "Cost and Price Data Analysis, as applicable."

8.2.4 Constructibility/Maintainability/Value Engineering

REQUIREMENT SOURCE: DOE4700.1 Chapter V.A.2.q.(2)

"Maintainability considerations shall include: Ease of replacement or installed equipment;"

REQUIREMENT SOURCE: DOE4700.1 Chapter V.A.2.q.(3)

"Maintainability considerations shall include: Accessibility of installed equipment and building systems for performance of maintenance;

REQUIREMENT SOURCE: DOE4700.1 Chapter V.A.2.q.(5)

"Maintainability considerations shall include: Provisions of maintenance instructions and as-built drawings, especially the location of underground and otherwise concealed utility lines, process chemical and coolant piping."

REQUIREMENT SOURCE: DOE4700.1 Chapter V.C.2.h.(2)(a) [4]

"In adopting any new techniques or methods, care should be exercised to assure that the design criteria are satisfied, and that the results will be achieved without any decrease in desired quality and without any sacrifice in essential requirements."

8.2.5 Material and Equipment Storage

Requirements for this subelement are included in Section 8.1.2 and the Packaging and Transportation Functional Area.

8.2.6 Contract Selection

Author's Note: Requirements for this section are included in the Engineering Functional Area.

8.2.7 Construction Program Controls

Author's Note: The following four requirements from DOE 1324.2A provide direction for the maintenance and disposition of construction records.

REQUIREMENT SOURCE: DOE1324.2A Chapter V, Attachment V-14, Item 2.a

"Working drawings and construction specifications, "as-built" drawings, shop drawings, standard drawings, repair and alteration drawings, equipment specifications, operating and maintenance manuals, equipment warranty data, final inspection and acceptance reports, construction cost and schedule data, space assignment plans, and other essential information to document the construction process.

(1) For completed projects. Until dismantlement or disposal of facility, equipment, system or process; or when superseded or obsolete, whichever is earlier (see item d., below, for exceptions).

(2) For projects terminated prior to construction completion. 5 years after construction is terminated."

REQUIREMENT SOURCE: DOE1324.2A Chapter V, Attachment V-14, Item 2.b

"Construction Completion Reports (Documented summary of the project, from design through construction completion.)

(1) For unique or special-interest by projects. 20 years, unless covered exception in d., below.

(2) For other projects. Until dismantlement or disposal of the facility, equipment, or process; or when superseded or obsolete, whichever is earlier."

REQUIREMENT SOURCE: DOE1324.2A Chapter V, Attachment V-14, Item 2.c

"Miscellaneous Construction Records. Information correspondence, and other records developed during the construction process, essential to performance of the process but not essential for project record purposes following project completion. Until project completion."

REQUIREMENT SOURCE: DOE1324.2A Chapter V, Attachment V-14, Item 2.d

"Records selected for architectural, historical, and technological significance (see notes at end of schedule for selection criteria). Permanent. Offer to NARA when file is inactive. (See first paragraph of introduction to this schedule).

(1) Project description, location, construction costs and performance schedules.

(2) "As built" architectural and engineering drawings (selected to adequately depict the principal architectural and engineering features).

(3) Photographs of completed project.

(4) Construction Completion Reports."

REQUIREMENT SOURCE: DOE4700.1 Chapter V.C.2.h.(2)(d)1 [5]

"Standard change controls procedures shall be established for projects not having specific project management plans."

REQUIREMENT SOURCE: DOE4700.1 Chapter V.C.2.h.(2)(d)1 [6]

"These procedures shall include authorities and responsibilities for changes during both design and construction."

REQUIREMENT SOURCE: DOE6430.1A Section 0150-4.1

"General
Pollution and soil erosion controls shall be implemented during construction activities to mitigate impacts on air, water, and other environmental resources and to assure compliance with Federal, State and local laws and regulations.
Site-specific industrial waste problems shall be considered prior to construction. Special construction permit and environmental protection requirements shall be addressed at a pre-bid conference and shall be clearly stated within the contract documents."

REQUIREMENT SOURCE: DOE6430.1A Section 0150-5, Sentences 1 thru 4

"TEMPORARY SECURITY FENCING
Prior to construction the following conditions and requirements for temporary security fencing shall be implemented:

o Exclusion of unauthorized vehicular and pedestrian traffic from the construction site
o Restriction of authorized vehicular traffic to designated access roads
o Protection of construction materials and installed work

Temporary security fencing shall be installed, as required, at unsecured construction sites to prevent vandalism or theft.

Temporary security fencing shall provide a level of integrity and a clear zone to suit site-specific conditions.

Temporary security fencing shall be consistent with site-specific security and protection goals and operational requirements."

8.2.8 Walkthroughs of Construction Sites

REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.j

"Inspection. Inspection methods of activities affecting quality should be established and executed by or for the organization performing the activity. The inspection should validate conformance with the prescribed documented instructions, procedures, and drawings. Examinations, measurements, or tests of material or products processed should be performed for each work operation, where necessary, to assure quality. If inspection of processed material or products is impossible or not advantageous, indirect control by monitoring processing methods, equipment, and personnel should be provided. Both inspection and process monitoring should be provided when control is inadequate without both. If mandatory inspection points which require witnessing or inspection by the contractor's designated representative, and if work cannot proceed beyond these points without the consent of its designated representative, the specific points should be indicated in appropriate documents."

REQUIREMENT SOURCE: DOE4700.1 Chapter V, Section A.2.l

"Construction Health and Safety. A comprehensive health and safety program must be established and utilized for all Departmental construction projects. The goals of this program

are to protect DOE employees, contractor employees, and the general public from hazards; to protect property from damage, and to prevent delay or interruption in the Department's programs caused by accidents and fires in connection with construction activities. The authorities, responsibilities, and standards for construction safety are contained in DOE 5480.1A, DOE 5481.1A, and DOE 6430.1, Chapter 10. Consideration of safety requirements must begin early in the planning phase of a project to ensure that they are included in all plans, studies, schedules, and cost estimates. An example of a safety requirement which must begin early is the case in which additional real estate may be required to achieve fire separations necessary to meet the improved risk criteria of DOE 5480.1A."

8.3 KEY INTERFACES

The Construction Program Functional Area interfaces to some degree with most other Functional Areas. Key interface areas are identified below.

8.3.1 Management Systems

The Construction Program interfaces with Management Systems primarily in the areas of policy and procedures development, organizational structure, assignment of authorities and responsibilities, and project control and reporting systems. DOE 4700.1 provides the major management requirements that interface and overlap between Management Systems and Construction Program management activities.

Requirements for Operational Readiness Reviews (ORR) are contained in the Management Systems Functional Area.

8.3.2 Quality Assurance

The Construction Program, working with the procurement staff, should implement the Quality Assurance Program through incorporation of appropriate quality assurance clauses in construction management and construction contracts, and monitoring construction operations to ensure performance in accordance with the contracts. A detailed description of the Quality Assurance requirements that interface with construction is found within the Quality Assurance Program Functional Area.

8.3.3 Configuration Management

The Construction Management Program interfaces with both this functional area and the Engineering Program to implement Configuration Management requirements for control of changes to the baseline technical scopes, schedules and estimates. A shared interface for overall document control exists among Construction, Quality Assurance, and Configuration Management.

8.3.4 Training and Qualification

The interface with this functional area is primarily in two areas: ensuring training of the Construction Program staff in the areas of construction management, government contracting including contract administration, and occupational safety and health; and in establishing and scheduling specific training and accrediting programs to ensure availability of adequate qualified construction craft personnel.

Due to a wide variety of special processes that may be part of a construction project, varying degrees of training and qualification may be required. Several of these areas have been included in this document, and provide examples of areas of interface.

8.3.5 Safeguards and Security

The interfaces in this area are in the areas of physical protection of construction materials and equipment, and prevention of construction contractor personnel intrusion into operating areas.

8.3.6 Engineering Program

The Construction Program is responsible for implementing the Engineering Program's design drawings and specifications. Extensive interfacing should occur between the two, particularly for the following:

- Establishing cost estimates and schedules;
- Constructibility reviews;
- Establishing work packages for procurement;
- Control of scope, estimates and schedules;
- Permitting and licensing efforts;
- Review and approval of vendor drawings;
- Identifying laydown space and temporary utility needs;
- Construction inspection activities;
- Planning and execution of startup; and,
- Record maintenance, distribution and retention.

A principal interface occurs among engineering, construction, and Quality Assurance, wherein construction's nonconformances with engineering direction are identified, processed, and resolved.

8.3.7 Operations

The operations staff of the facility become the in-situ owners of the construction project on behalf of DOE. Therefore, the major interface is the operability testing and final acceptance of the constructed project.

8.3.8 Maintenance

The interface between Construction and Maintenance Programs may exist on many levels depending on the size and complexity of the project. Normal interfaces are in the areas of scheduling, temporary utilities, startup, and records maintenance, distribution and retention. Additionally, construction forces may be required to adopt and implement many of the Maintenance Program's functions in order to preserve and maintain systems, structures, components, tools, vehicles, and equipment either constructed or used in construction. Other interfaces may develop as systems, structures, or components are accepted by operations and maintenance from construction on an individual basis.

For construction items that are turned over, the interface is the transfer of responsibility and documentation for the particular item.

8.3.9 **Radiation Protection**

Interfacing with this functional area is primarily for personnel protection. For most new facility projects no interface will be required.

8.3.10 **Fire Protection**

Interfacing with this functional area is primarily for planning, installation and test of temporary and permanent fire protection systems. In all cases the fire protection requirements prescribed by the Fire Protection Program will be implemented by the Construction Program, as applicable.

8.3.11 **Research and Development and Experimental Activities**

There is no interface with this Functional Area.

8.3.12 **Occupational Safety and Health**

The Construction Program, working with the procurement staff, should implement OSHA through incorporation of appropriate clauses in construction management and construction contracts and, working with the construction inspector, should monitor construction operations to ensure contractor conformance to OSHA. The Construction Program also interfaces with OS&H in the area of personnel training.

Many of the requirements (and standards therein) specified within OS&H are also applicable to ensure the safety and quality of systems, structures, and components as described in Section 8.2.7.5.

8.3.13 **Environmental Protection**

The Construction Program interfaces with this functional area for permitting, licensing and pollution control activities.

8.4 REFERENCES

Documents referenced as requirements in this document are summarized below in Section 8.4.1. Additional documents reviewed, but not included are summarized in Section 8.4.2.

8.4.1 Requirement Source Documents

The following references have provided requirements used in this document.

10 Code of Federal Regulations Part 830, Nuclear Safety Management, 04/05/94.

DOE Order 1324.2A, Records Disposition, U.S. Department of Energy, Change 1, 04/09/92.

DOE Order 4700.1, Project Management System, U.S. Department of Energy, Change 1, 06/02/92.

DOE Order 5700.2D, Cost Estimating, Analysis, and Standardization, U.S. Department of Energy, 06/12/92.

DOE Order 6430.1A, General Design Criteria, U.S. Department of Energy, 04/06/89.

DOE Notice 4700.5, Project Control System Guidelines, U.S. Department of Energy, 08/21/92.

8.4.2 **Reviewed Documents Not Used as Requirement Sources**

Numerous documents were reviewed for applicability and inclusion into this functional area. These were not included because they were higher level requirements that had been integrated into referenced requirements, they were lower level requirements used during implementation, or they were found to be not applicable to this functional area. The documents reviewed are as follows:

29 CFR 1926, Safety and Health Regulation for Construction, Occupational Safety and Health Administration, U.S. Department of Labor, 07/01/93.

ACI SP-4-89, Formwork for Concrete, American Concrete Institute, Fifth Edition, 1989.

AISI WR 120, Wire Rope User's Manual, American Iron and Steel Institute, Second Edition, 1985.

ANSI/ASQC-C1-85, Specification of General Requirements for a Quality Assurance Program, American Society of Quality Control, 1985.

ASME B30 series, "Safety Standards for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings", American Society of Mechanical Engineers.

DOE Order 1300.2A, U.S. Department of Energy Technical Standards Program, U.S. Department of Energy, 05/19/92.

DOE Order 1324.5A, Records Management Program, U.S. Department of Energy, 04/30/92.

DOE Order 2030.3, Federalism Guidelines, U.S. Department of Energy, Change 1, 05/14/92.

DOE Order 2200.6A, Financial Accounting, U.S. Department of Energy, Change 1, 04/13/93.

DOE Order 4010.1A, Value Engineering, U.S. Department of Energy, 05/14/92.

DOE Order 4200.1C, Competition in Contracting, U.S. Department of Energy, 01/09/87.

DOE Order 4300.1C, Real Property Management, U.S. Department of Energy, 06/28/92.

DOE Order 4320.1B, Development Planning, U.S. Department of Energy, 01/07/91.

DOE Order 4700.3, General Plant Projects, U.S. Department of Energy, Change 1, 11/16/92.

DOE Notice 4700.6, Extension of DOE N 4700.5, U.S. Department of Energy, 06/07/93.

DOE Order 5480.4, Environmental Protection, Safety, and Health Protection Standards, U.S. Department of Energy, 05/15/84.

DOE Order 5480.6, Safety of Department of Energy-Owned Nuclear Reactors, U.S. Department of Energy, 09/23/86.

DOE Order 5632.6, Physical Protection of DOE Property and Unclassified Facilities, U.S. Department of Energy, 02/09/88.

DOE Order 5700.5A, Policy and Management Procedures for Financial Incentives Programs, U.S. Department of Energy, 06/08/92.

DOE Order 5700.6C, Quality Assurance, U.S. Department of Energy, 08/21/91.

DOE Order 5700.7C, Work Authorization System, U.S. Department of Energy, 05/18/92.

DOE/EH-0135, Performance Objectives and Criteria for Technical Safety Appraisals at Department of Energy s, U.S. Department of Energy, 06/90.

DOE/MA-0040, Cost & Schedule Control Systems Criteria for Contract Performance Measurement Work Breakdown Schedule Guide, U.S. Department of Energy, 10/81.

DOE/MA-0046, Cost Estimating Manual, U.S. Department of Energy, 01/82.

DOE/MA-0063, Volume 1, Cost Guide (Economic Analysis), U.S. Department of Energy, 01/82.

DOE/MA-0063, Volume 2, Cost Guide (Standard Procedures for Determining Revenue Requirements), U.S. Department of Energy, 06/82.

DOE/MA-0063, Volume 3, Cost Guide (Cost Factors), U.S. Department of Energy, 04/82.

DOE/MA-0063, Volume 4, Cost Guide (Cost Data and Cost Estimating Relationships--CER), U.S. Department of Energy, 05/82.

DOE/MA-0063, Volume 5, Cost Guide (Construction of Economic Escalation Indices), U.S. Department of Energy, 05/82.

DOE/MA-0154, Acquisition Regulators Handbook - Source Evaluation, U.S. Department of Energy, 02/86.

DOE/MA-0295, Work Breakdown Structure Guide, U.S. Department of Energy, 02/06/87.

FAR Part 48, Value Engineering, 04/01/84.

FAR Part 52.248, Value Engineering - Construction, 03/89.

Hanford Federal Facilities Agreement and Consent Order (Tri-Party Agreement), U.S. Department of Energy, Washington Department of Ecology, U.S. Environmental Protection Agency, 03/01/94.

ASME-NQA-1-1994, Quality Assurance Program Requirements for Nuclear Facilities, American Society of Mechanical Engineers, 07/24/94.

BMP 85-031, Guidelines for the Conduct of Technical Support Activities at Nuclear Power Stations, Institute of Nuclear Power Operations, Revision 2, 03/92.

BMP 86-023, Guidelines for Nuclear Power Plant Construction Projects, Institute of Nuclear Power Operations, 10/86.

NFPA 204M, Smoke and Heat Venting, National Fire Protection Association, 1991.

NFPA 241, Safeguarding Construction, Alteration, and Demolition Operations, National Fire Protection Association, 1993.

OMB Circular A-34, Instructions on Budget Execution, .

OMB Circular A-109, Major System Acquisitions, 04/05/76.

OMB A-119, Use of Voluntary Standards, 01/17/80.

P.L. 95-507, Small Business Investment Act of 1977.

DOE-RL Order 4330.1, Maintenance of Property, U.S. Department of Energy, Richland, Change 1, 01/25/88.

RLIP 4330.4, Automotive and Construction Equipment Maintenance Management, U. S. Department of Energy, Richland, 04/23/93.

RLID 5700.3, Project Cost Estimating, Analysis, and Standardization, U.S. Department of Energy, Richland, 04/25/94.

RLIP 4700.1A, Project Management System, U.S. Department of Energy, Richland, Change 3, 02/16/93.

RLIPP 4010.1, Value Engineering, U.S. Department of Energy, Richland, 11/20/90.

WAC 296-24, General Safety and Health Standards, Washington Department of Labor and Industries, 12/31/92.

WAC 296-155, Construction Safety, Washington Department of Labor and Industries, 12/31/92.

TABLE OF CONTENTS

9.0 OPERATIONS 1

9.1 MANAGEMENT 2

9.2 KEY INTERFACES 2

9.2.1 Management Systems 2
9.2.2 Quality Assurance 2
9.2.3 Configuration Management 2
9.2.4 Training and Qualification 3
9.2.5 Emergency Management 3
9.2.6 Engineering Program 3
9.2.7 Maintenance 3
9.2.8 Radiation Protection 4
9.2.9 Research and Development and Experimental Activities 4
9.2.10 Nuclear Safety 4
9.2.11 Occupational Safety and Health 4
9.2.12 Environmental Protection 5
9.2.13 Fire Protection 5
9.2.14 Safeguards and Security 5
9.2.15 Construction 5
9.2.16 Packaging and Transportation 5

9.3 REFERENCES 5

9.3.1 Requirement Source Documents 5
9.3.2 Reviewed Documents Not Used as Requirement Sources 6

9.0 OPERATIONS

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Operations Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Operations activities, as such activities are included in the current mission of the facility. The requirements in this S/RID were identified based on the nature of the facility, its mission, hazards, and specific conditions existing at the PFP. The job positions/titles and the activities performed by the individuals in these jobs were important considerations.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

9.1 MANAGEMENT

PFP will comply with DOE Order 5480.19 utilizing a graded approach as outlined in the order. The graded approach is documented in the implementing procedures identified in the "PFP Conduct of Operations Applicability Matrix" dated July 9, 1993.

9.2 KEY INTERFACES

Because of the unique nature of operations, interfaces exist to some extent with each of the other Functional Areas. The proper management of these interfaces is critical to the success of Operations. The interfaces identified should be verified to have been adequately addressed.

9.2.1 Management Systems

Management Systems interface with Operations to provide the administrative programs and procedures that control the following:

- Policies and their related administrative procedures to provide the framework for promulgation of site and facility management controls.
- Operating and emergency procedures to ensure consistency in format content and use at all facilities.
- Operational records retention and storage requirements to incorporate federal, state, and company regulations for the types of records maintained.
- Occurrence investigation and reporting procedures to include DOE, state, and company requirements for identification, reporting, and investigating events.
- Operational Readiness Review Program to include requirements for readiness reviews of systems, components, and processes

9.2.2 Quality Assurance

Quality Assurance interfaces with Operations to:

- Provide the requirements to be applied to activities that are important to quality as described in the WHC Quality Assurance Plan.
- Perform independent audits and surveillance of Operations activities, including Quality Control inspections.

9.2.3 Configuration Management

Configuration management interfaces with Operations to:

- Define, maintain, and distribute drawings and vendor material required to operate the facilities within ES&H guidelines.
- Establish a change control process to ensure normal and emergency procedures are maintained to current configuration and requirements.
- Provide verification and control of vendor related material required for Operations.

- Maintain and distribute safety analysis, including technical specifications and/or operational safety requirements.

9.2.4 Training and Qualification

Training and Qualification interfaces with Operations to:

- Establish the procedures and qualification requirements that control the training and/or selection of operations personnel.
- Develop and implement the training curricula and programs for Operations.
- Conduct management and supervisory training.
- Conduct personnel protection and safety training.
- Provide for a Systematic Approach to Training to ensure the training programs adequately prepare operations personnel to perform their assigned tasks.

9.2.5 Emergency Management

Emergency Management interfaces with Operations to:

- Develop the facility Emergency Plans.
- Develop emergency response procedures for Operations.
- Participate in emergency drills as part of team training.
- Ensure communications systems are adequate.

9.2.6 Engineering Program

Engineering interfaces with Operations to:

- Provide safety analysis, technical requirements, limiting conditions for operations, and operational safety requirements to define the safety envelope.
- Ensure modifications are accomplished within an approved Change Control Program that provides for an Operational Readiness Review if required, as-built drawings and procedures, and approved vendor material.
- Provide direct day-to-day Engineering support.

9.2.7 Maintenance

Maintenance interfaces with Operations to:

- Provide a priority system for maintenance response to equipment problems affecting operations.
- Provide operations input to maintenance tasks to ensure personnel are aware of potential hazards.
- Obtain access to equipment in accordance with maintenance schedules.

- Ensure equipment Lockout/Tagout as required to protect the health and safety of workers.

- Provide post maintenance tests requirements.

9.2.8 Radiation Protection

Radiation Protection interfaces with Operations to:

- Develop and implement programs and procedures for monitoring the radiation levels in the work place and in facility effluents.

- Develop and implement the operational procedures necessary to protect Operations personnel and the environment from exposure and uncontrolled releases.

Advise and assist Operations personnel on elements of the Radiation Protection Program.

9.2.9 Research and Development and Experimental Activities

No interface exists with this functional area.

9.2.10 Nuclear Safety

Nuclear Safety interfaces with Operations to:

- Ensure Operations are conducted within the prescribed safety envelope through an established Unreviewed Safety Question Program applied to evolutions and procedure changes.

- Ensure appropriate nuclear safety requirements are incorporated into operating documents.

9.2.11 Occupational Safety and Health

Occupational Safety and Health interfaces with Operations to:

- Develop the programs and implementing procedures for identification and mitigation of industrial safety hazards (including chemical and physical hazards), industrial hygiene, and medical evaluation and treatment.

- Establish qualification and training requirements for industrial safety practices.

- Provide the facility with detailed implementation requirements for a lockout/tagout program to protect personnel performing equipment servicing and maintenance.

- Provide medical examinations to prospective employees.

- Provide medical reexaminations for personnel in specific positions every two years and upon return to work following serious injury or illness preventing performance of their duties for more than one month.

- Ensure medical examinations meet applicable American National Standards Institute/American National Standard (ANSI/ANS) requirements.

9.2.12 **Environmental Protection**

Environmental Protection interfaces with Operations to:

- Ensure requirements are incorporated into operating procedures and other control documents.

9.2.13 **Fire Protection**

Fire Protection interfaces with Operations to:

- Establish the requirements for surveillance of fire protection equipment, such as fire extinguishers.
- Establish the requirements for fire prevention activities, such as proper storage and handling of flammable materials.
- Test emergency communication systems.
- Establish requirements for qualification and training of operations personnel for activities assigned under the Fire Protection Functional Area.

9.2.14 **Safeguards and Security**

Safeguards and Security interfaces with Operations to:

- Determine operations specific responsibility for Safeguards and Security.
- Establish qualification and training requirements to carry out assigned responsibility.

9.2.15 **Construction**

Construction interfaces with Operations to:

- Establish procedures for testing and turnover of facilities and equipment.

9.2.16 **Packaging and Transportation**

- Define responsibility of Operations personnel to implement elements of the Packaging and Transportation Program.
- Establish qualification or training requirements for operators conducting program activities.

9.3 REFERENCES

9.3.1 Requirement Source Documents

The following documents were used as requirements sources in the development of this S/RID:

DOE 5480.19, Conduct Of Operations Requirements for DOE Facilities, Chg 1, 5/18/92.

9.3.2 **Reviewed Documents Not Used as Requirement Sources**

The following documents were reviewed as requirement sources but were not used in the development of this S/RID. These documents were not used because the requirements contained in DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities," are more prescriptive.

DOE 5480.20A, Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities, 11/15/94.

DOE 5480.24, Nuclear Criticality Safety, 8/12/92.

DOE-STD-1030-92, Guide to Good Practices for Lockouts and Tagouts.

DOE-STD-1031-92, Guide to Good Practices for Communications.

DOE-STD-1032-92, Guide to Good Practices for Operations Organization and Administration, December 1992.

DOE-STD-1033-92, Guide to Good Practices for Operations and Administration Updates Through Required Reading, December 1992.

DOE-STD-1034-93, Guide to Good Practices for Timely Orders to Operators, March 1993.

DOE-STD-1035-93, Guide to Good Practices for Logkeeping, March 1993.

DOE-STD-1036-93, Guide to Good Practices for Independent Verification, June 1993.

DOE-STD-1037-93, Guide to Good Practices for Operations Aspects of Unique Processes, June 1993.

DOE-STD-1038-93, Guide to Good Practices for Operations Turnover, June 1993.

DOE-STD-1039-93, Guide to Good Practices for Control of Equipment and System Status, March 1993.

DOE-STD-1040-93, Guide to Good Practices for Control of On-Shift-Training.

DOE-STD-1041-93, Guide to Good Practices for Shift Routines and Operating Practices, June 1993.

DOE-STD-1042-93, Guide to Good Practices for Control Area Activities, June 1993.

DOE-STD-1043-93, Guide to Good Practices for Operator Aids Postings, June 1993.

DOE-STD-1044-93, Guide to Good Practices for Equipment and Piping Labeling.

DOE-STD-1045-93, Guide to Good Practices for Notifications and Identification of Abnormal Events.

WAC 173-303-340, Department of Ecology, 1993.

ANSI/ANS- 8.1-1983, Nuclear Criticality Safety with Fissionable Materials Outside Reactors, 10/7/83.

ANSI/ANS- 8.19-1984, Administrative Practices for Nuclear Criticality Safety, 10/1/84.

ANSI/ANS- 8.20-1991, Nuclear Criticality Safety Training.

TABLE OF CONTENTS

10.0 MAINTENANCE 1

10.1 PROGRAM MANAGEMENT 3

10.2 KEY INTERFACES 4

10.2.1 Configuration Management 4
10.2.2 Engineering Program 4
10.2.3 Operations 5
10.2.4 Quality Assurance 5
10.2.5 Radiation Protection 5
10.2.6 Training and Qualification 6
10.2.7 Occupational Safety and Health 6

10.3 REFERENCES 7

10.3.1 Requirement Source Documents 7
10.3.2 Reviewed Documents Not Used as Requirement Sources 7

10.0 MAINTENANCE

INTRODUCTION

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Maintenance Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Maintenance activities, as such activities are included in the current mission of the facility.

The Maintenance Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement.

The Maintenance Functional Area defines managements commitment to establish policy and programs to effectively manage those activities required to monitor and maintain the Department of Energy (DOE) PFP facilities in a manner that supports the environmental, safety, and health (ES&H) policies. Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2 and the DOE Environment, Safety, and Health Configuration Guide, Revision 0, govern development of this Standards/Requirements Identification Document (S/RID). The DNFSB recommended strengthening of DOE facility activities through identification and application of relevant standards which supplement DOE requirements.

The requirements have been based on DOE Order 4330.4B, "Maintenance Management Program", which describes a comprehensive approach to the maintenance function. This document is consistent with other industry standards and is acceptable to DOE. In reviewing this order, as well as the other documents cited in the references for this S/RID, it was determined that Section 10 and Chapter II of DOE Order 4330.4B contained the necessary and sufficient requirements for the PFP maintenance program. It was also determined that while the reviewed documents contained valuable implementation guidance, they did not offer significant additional coverage of maintenance requirements. In the interest of simplicity, the maintenance requirements cited in this document have been extracted from DOE Order 4330. 4B.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

10.1 PROGRAM MANAGEMENT

REQUIREMENT SOURCE: DOE4330.4B Preamble, Section 10.a

"Each DOE contractor in coordination with the appropriate field element shall develop, implement, and document a program in conformance with the policy and objectives of this Order in a Site Maintenance Plan (SMP) and/or a Maintenance Implementation Plan. An approved Maintenance Implementation Plan and the Program Implementation and Baseline Activities part of the SMP constitute agreements between the field element and the contractor on the implementation of the requirements of this Order. The program shall clearly define:

(1) The structures, systems, and components included, using a graded approach and the requirements derived from Technical Safety Requirements.

(2) The management systems used to control maintenance activities, including the means for monitoring and measuring the effectiveness of the program and the management of maintenance backlog.

(3) The assignment of responsibilities and authority for all levels of the maintenance organization.

(4) Mechanisms for feedback of relevant information, such as trend analysis and instrumentation performance/reliability data, to identify necessary program modifications.

(5) Provisions for identification, evaluation, and correction of possible component, system design, quality assurance, or other relevant problems.

(6) Performance indicators and criteria to be utilized to measure equipment, systems, and personnel effectiveness in maintenance activities.

(7) Interfaces between maintenance and other organizations (i.e., operations, engineering, quality, training, environment, safety, and health).

(8) A self-assessment program to monitor the effectiveness and efficiency of the maintenance program.

(9) Provisions for planning, scheduling, and coordination of maintenance activities."

REQUIREMENT SOURCE: DOE4330.4B Preamble, Section 10.b, Sentence 1

"Periodic inspections of structures, systems, components, and equipment, particularly those important to the safe and reliable operation of a facility, shall be performed to determine whether deterioration is taking place and to identify and address technical obsolescence that threatens performance, safety, or facility preservation."

REQUIREMENT SOURCE: DOE4330.4B Preamble, Section 10.d, Sentence 1

"For DOE nuclear facilities, a graded approach shall be used to determine the depth of detail required and magnitude of resources expended for each maintenance program element described in Chapter II."

REQUIREMENT SOURCE: DOE4330.4B Preamble, Section 10.d, Sentence 3

"For each DOE nuclear facility, the maintenance program shall be described in a Maintenance Implementation Plan, which addresses the 18 elements (excluding the introduction) in the sequence and format of Chapter II."

REQUIREMENT SOURCE: DOE4330.4B Preamble, Section 10.d, Sentence 5

"For those DOE nuclear facilities where deviations from the maintenance program elements are considered necessary and appropriate (or not applicable), such deviations (or nonapplicable elements) shall be identified in the Maintenance Implementation Plan with supporting rationale."

REQUIREMENT SOURCE: DOE4330.4B Preamble, Section 10.e

"Maintenance Implementation Plans for nuclear facilities shall be submitted to the Managers of field elements for approval. For new nuclear facilities, Maintenance Implementation Plans shall be submitted 90 days prior to startup. Changes to Maintenance Implementation Plans shall be submitted and approved prior to implementation."

REQUIREMENT SOURCE: DOE4330.4B Chapter II, Paragraph 8, Sentence 2 and 3

Author's Note: The PFP MIP addresses the objectives identified in Chapter 2 of DOE 4330.4B.

"The Introduction subsection briefly describes the objective to be achieved. Addressing each of the objectives is a requirement for an adequate maintenance program."

10.2 KEY INTERFACES

10.2.1 Configuration Management

Configuration Management ensures that safety-related drawings, flow control diagrams, electrical one-lines, I&C schematics, etc., of critical structures, systems and components are controlled and reflect the current approved configuration/operational status. Maintenance should ensure that any activities that change the design of the facility are treated as design changes and are implemented using applicable design control and configuration management guidelines. Maintenance work request should be periodically reviewed to ensure that they are not used to implement facility design and configuration changes.

The requirements documents effecting configuration control are identified in the Engineering Functional Area of this S/RID.

10.2.2 Engineering Program

Engineering provides the basis for maintenance of the facility through the issuance of equipment design/purchase specifications, drawings, change control documents and operational limits. Specific maintenance related guidance, recommended spare parts lists and preventive maintenance criteria are typically provided by equipment vendors. The design output and vendor supplied information are subsequently used to develop the facility specific maintenance, inspection, surveillance and testing procedures.

Maintenance and Engineering have a critical interface on Post-Maintenance testing. Equipment testing requirements are normally issued as part of the original facility basis and subsequently modification work control packages. Feedback must be provided to Engineering on the adequacy or inadequacy of testing requirements. Maintenance must also have a continuous interface with Engineering and technical support functions in determining the cause of repetitive equipment failures and to investigate the root cause of unplanned events.

Requirements documents not covered by this Functional Area are addressed in the Engineering Functional Area of this S/RID.

10.2.3 Operations

All Maintenance activities on equipment that is important to safety, that affects operation or that changes control indications or alarms must be authorized by Operations. This authorization should be in writing on the document controlling the work. Maintenance is responsible for ensuring that documentation on the status of work in progress is available in the control area for review by Operations personnel.

Operations interface with Maintenance on Post-Maintenance and Post-Modification testing is also an important link to safe operation of the facility. Testing by maintenance personnel should include performance of all functions that may have been affected by the work. The testing should also verify the maintenance or modification performed served to correct the original problem and that no new problems were introduced. Any testing following maintenance should be specified on the maintenance work order other work authorizing document. The Operations supervisor ensures that testing appropriately proves equipment operability.

Interface actions not directly addressed in the Maintenance Functional Area are addressed in the Operations Functional Area of the S/RID.

10.2.4 Quality Assurance

The Maintenance Organization is responsible for establishing and implementing a process to detect and prevent quality problems and to ensure quality improvement. Data on equipment reliability and performance, maintenance work process, personnel training and qualifications should be reviewed and analyzed to identify items and processes needing improvement. The elements of this quality improvement process are used as input to the facility QAP so that a method exists for providing continuous feedback on potential areas of improvement.

The Maintenance organization will also closely interface with Quality Assurance on procurement, inspection and testing to ensure that approved suppliers continue to provide acceptable parts and services, that processes are conducted using established acceptance and performance criteria and that equipment used for inspections and tests are properly calibrated and maintained. These interfaces should be defined in policy and facility level guidelines and procedures that control these activities.

10.2.5 Radiation Protection

The Radiation Protection Functional Area provides input into the Work Control portion of the Maintenance Functional Area regarding the requirements necessary to perform the maintenance task ALARA. The Maintenance Functional Area should establish controls to ensure that maintenance planning and the maintenance craft are integrated with the Radiation Protection activity to ensure that the maintenance task can be performed as planned and within the ALARA guidelines.

The primary personnel safety concerns affecting Maintenance activities are to ensure that radiation exposure levels are maintained in accordance with ALARA criteria. Maintenance interfaces with the Radiation Protection functional areas through the use of Radiation Work Permits and facility specific Radiation Protection training. Both of these areas incorporate ALARA criteria and guidelines but require feedback from Maintenance in order to be effective. Maintenance should interface with the Health Physics organization during facility condition inspections to assist in determining levels of radiation and determining areas and levels of surface and airborne contamination. Health Physics provides supporting services to Maintenance organization by measuring radiation exposures, incorporating ALARA criteria into work control documents and processes, and by specifying temporary shielding, protective clothing and respiratory protection required for maintenance activities in controlled areas.

10.2.6 Training and Qualification

The Maintenance manager is responsible and accountable for determining the training and qualification needs of each individual in the maintenance organization. The Maintenance manager and supervisors should closely interface with the Training organization to establish and maintain course content, determine and support training schedules, accomplish on-the-job training (OJT) and provide feedback to adjust course content and emphasis. The Maintenance manager is also responsible for developing and maintaining appropriate personnel job descriptions.

The Training organization maintains existing programs, develops new training programs and presents the training using in-house personnel or vendor supplied personnel when appropriate. The Training organization should maintain maintenance training programs that meet the intent of established industrial guidelines and address specific facility needs. These training programs should be supported and guided by the Maintenance organization via periodic reviews. The Training organization is also responsible for developing and implementing performance-based training.

10.2.7 Occupational Safety and Health

The Maintenance organization interfaces with the Occupational Health and Safety (OSHA) functional areas by using and following industry accepted guidelines and practices covering a wide spectrum of personnel and equipment\ safety issues. These interfaces should be defined in the policy and facility level guidance and procedures that control the safety issues.

A shared responsibility exists between the Maintenance and Safety organizations to insure that work documents and activities are developed and conducted in accordance with OSHA criteria and guidelines. The areas that most affect the conduct of Maintenance are as follows:

1. Toxic and Hazardous Materials
2. Personal Protection Equipment
3. Materials Handling and Storage
4. Hand Held Equipment and Tools
5. Welding and Brazing
6. Hoisting and Rigging
7. Carcinogen Control
8. Medical and First Aid
9. Confined Space Entry
10. Powered Platforms and Lifts
11. Electrical Safety
12. Health and Safety Training

10.3 REFERENCES

10.3.1 Requirement Source Documents

In the S/RID development process several documents were reviewed (see the documents listed in Section 10.14.2). In the course of this review it was determined the DOE Order 4330.4B, "Maintenance Management Program" dated February 10, 1994, contained the necessary and sufficient requirements for the Maintenance Programs at Hanford Site. This document is current and is familiar to DOE facility personnel. Therefore this DOE Order has been used as the source of requirements for the PFP Maintenance S/RID. Specific references to other standards and requirements are referenced in the Functional Area document that has primary responsibility for implementation.

10.3.2 Reviewed Documents Not Used as Requirement Sources

The following documents were reviewed during the development of this S/RID. It was determined that DOE 4330.4B referenced in Section 10.14.1 adequately addressed the maintenance issues and that the documents listed below didn't offer any significant additional coverage of maintenance requirements. These documents do offer additional insights and guidance for implementation. DOE Order 5480.20A provides the qualification requirements for Maintenance Personnel. These requirements have been addressed in the Operations S/RID and have not been duplicated in this S/RID.

10 CFR 830.120, Quality Assurance, 5/4/94

29 CFR 1910, OSHA, General Industry

29 CFR 1926, OSHA, Construction

WAC 173-303, Dangerous Waste Regulations

DOE 5480.20A, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Nuclear Facilities, 11/15/94.

DOE 5483.1A, Occupational Safety and Health Program, 6/22/83

DOE 6430.1A, Design Criteria, 4/6/89

BMP 83-025, MA-308 Unscheduled Outage Planning, 6/84.

BMP 85-032, Rev. 01, MA-30, Preventive Maintenance, 12/88.

BMP 90-008, Maintenance Programs in the Nuclear Power Industry, 3/90.

BMP 92-001, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, 4/92.

BMP TQ-501, Development and Implementation of On-The-Job Training Programs, 10/82.

DOE-STD-1050-93, Guidelines to Good Practices for Planning, Scheduling, and Control of Maintenance at DOE Nuclear Facilities, 3/93.

DOE-STD-1051-93, Guidelines to Good Practices for Maintenance Organization and Administration at DOE Nuclear Facilities, 3/93.

DOE-STD-1052-93, Guidelines to Good Practices for Types of Maintenance at DOE Nuclear Facilities, 3/93.

DOE-STD-1053-93, Guidelines to Good Practices for the Control of Maintenance Activities at DOE Nuclear Facilities, 3/93.

DOE-STD-1054-93, Guidelines to Good Practices for the Control and Calibration of Measurement and Test Equipment (M&TE) at DOE Nuclear Facilities, 3/93.

DOE-STD-1055-93, Guidelines to Good Practices for Maintenance Management Involvement at DOE Nuclear Facilities, 3/93.

DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual, 1/93.

TABLE OF CONTENTS

11.0 RADIATION PROTECTION 1

11.1 MANAGEMENT 3

11.1.1 Exposure Reduction and ALARA 3

11.1.1.1 Exposure Controls 4
11.1.1.2 Exposure Control Requirements for Specific Work Activities . . . 6
11.1.1.3 Emergency Exposure Control Requirements 7
11.1.1.4 Radiological Work Planning 7
11.1.1.5 ALARA Reviews 9
11.1.1.6 Dose Tracking and Trending 10

11.1.2 Radiation Protection Training 10
11.1.3 Radiological Program Performance Goals 10
11.1.4 Program Policy and Procedures 10
11.1.5 Policy for Response to Abnormal Situations 11
11.1.6 Radiological Occurrences 12
11.1.7 Records Management 12

11.1.7.1 Survey Records/Radiological Work Control Records 13
11.1.7.2 ALARA Review/Program Records 14
11.1.7.3 Miscellaneous Radiation Protection Records 14

11.2 MONITORING AND SURVEYS 15

11.2.1 Radiation Monitors, Alarms and Surveys 15
11.2.2 Airborne Radioactivity Monitors, Alarms and Surveys 15
11.2.3 Contamination Monitoring and Surveys 16
11.2.4 Dose Rate Surveys 17

11.3 PERSONNEL EXPOSURE MONITORING 18

11.3.1 Personnel Monitoring 18
11.3.2 Exposure Limits 19
11.3.3 Dosimetry Program 21
11.3.4 Calculation Methods and Models 21

11.4 RADIATION AREA ACCESS CONTROL 21

11.4.1 Access Restrictions and Posting 21
11.4.2 Radiation Work Permits 28

11.5 RADIOACTIVE MATERIALS MANAGEMENT 29

11.5.1 Storage, Labels and Transportation 29
11.5.2 Movement of Material 31
11.5.3 Specific Nuclide Control 33
11.5.4 Sealed Source Management 34

11.6 CONTAMINATION CONTROL 35

11.6.1 Personnel, Equipment and Area Contamination Control 35

11.6.1.1 Personnel Contamination Monitoring 35
11.6.1.2 Personnel Contamination Control 36
11.6.1.3 Equipment and Area Contamination Control 37

11.6.2 Personnel, Equipment and Area Decontamination 40
11.6.3 Respiratory Protection Program 40
11.6.4 Source Containment, Confinement, and Ventilation Control 41

11.7 LABORATORY ANALYSIS 42

11.8 RADIATION PROTECTION EQUIPMENT AND SUPPLIES 43

11.8.1 Monitoring and Survey Instrumentation 43
11.8.2 Respiratory Equipment and Supplies 43
11.8.3 Protective Clothing 43
11.8.4 Equipment Maintenance and Calibration 45

11.9 RADIATION PROTECTION OF THE PUBLIC AND ENVIRONMENT 45

11.9.1 Dose Limits 45
11.9.2 Liquid Waste Discharges 45
11.9.3 Solid Waste Disposal 45
11.9.4 Demonstration of Compliance 45

11.10 KEY INTERFACES 46

11.10.1 Management Systems 46
11.10.2 Quality Assurance 46
11.10.3 Configuration Management 46
11.10.4 Training and Qualifications 46
11.10.5 Emergency Planning 46
11.10.6 Engineering Program 46
11.10.7 Operations 46
11.10.8 Maintenance 47
11.10.9 Packaging and Transportation 47
11.10.10 Research and Development and Experimental Activities 47
11.10.11 Nuclear Safety 47
11.10.12 Environmental Protection 47
11.10.13 Waste Management 47
11.10.14 Occupational Safety and Health 47

11.11 REFERENCES 47

11.11.1 Requirement Source Documents 47
11.11.2 Reviewed Documents Not Used as Requirement Sources 48

11.0 RADIATION PROTECTION

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Radiation Protection Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Radiation Protection activities, as such activities are included in the current mission of the facility.

This S/RID describes the PFP Radiation Protection Program as defined through the relevant U.S. Department of Energy (DOE) Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practice. The definition of a Radiation Protection Program as specified by this document is intended to address Defense Nuclear Facilities Safety Board Recommendations 90-2 and 91-1, which call for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders.

The Radiation Protection Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. An additional element and various sub-elements sub-subelements were added to the basic format for further clarification and definition. Sub-element 11.1.1, Exposure Reduction and ALARA, was further clarified by the addition of the following sub-elements: Exposure Controls (11.1.1.1), Exposure Control Requirements for Specific Work Activities (11.1.1.2), Radiological Work Planning (11.1.1.3), ALARA Reviews (11.1.1.4), ALARA Committee and Staffing (11.1.1.5), and Dose Tracking and Trending (11.1.1.6). Element 11.1, Management, was further defined by the addition of the following sub-elements: Radiological Program Performance Goals (11.1.3), Program Policy and Procedures (11.1.4), Policy for Response to Abnormal Situations (11.1.5), Radiological Occurrences (11.1.6), and Records Management (11.1.7). Element 11.2, Monitoring and Surveys, was embellished with the addition of sub-element 11.2.4, Dose Rate Surveys. Sub-element 11.5.4, Sealed Source Management, was added to address that topic. Sub-element 11.6.1, Personnel, Equipment, and Area Contamination Control, was further clarified by the addition of the following sub-subelements: Personnel Contamination Monitoring (11.6.1.1), Personnel Contamination Control (11.6.1.2), and Equipment and Area Contamination Control (11.6.1.3). Sub-elements 11.6.3, Respiratory Protection Program, 11.6.4, Source Containment, Confinement, and Ventilation Control, and 11.8.4, Equipment Maintenance and Calibration, were added to address those topics. Interface statements addressing Waste Management (11.10.13) and Occupational Safety and Health (11.10.14) were added. Element 11.11, References, was added to define applied and considered reference documents.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

PFP will conduct the radiation protection program in accordance with the requirements of 10 CFR 835 and the Hanford Site Radiological Control Manual by implementation of the DOE approved WHC 10 CFR 835 Radiation Protection Program and WHC Radiological Control Manual Implementation Plan.

11.1 MANAGEMENT

NOTE: The Plutonium Finishing Plant will conduct radiological activities in accordance with the requirements of 10 CFR 835 by implementation of the DOE-approved WHC 10 CFR 835 Radiation Protection Program and WHC Radiological Control Manual Implementation Plan.

11.1.1 Exposure Reduction and ALARA

Although limiting contamination (Section 11.6, Contamination Control), the monitoring of radiation (Section 11.2, Facility Monitoring and Surveys) and Entry and Exit Control (Section 11.4, Access Controls) are also integral parts of the overall As-Low-As-Reasonably-Achievable (ALARA) program. Requirements relating to these specific subjects are included in the individual sections of the PFP Radiation Protection Functional Area.

REQUIREMENT SOURCE: 10CFR835 Part 101

Author's Note: Only Section (c) is applicable to the PFP facility.

"Radiation protection programs.
(a) A DOE activity shall be conducted in compliance with a documented radiation protection program (RPP) as approved by the DOE.

(b) The DOE may direct or make modifications to a RPP.

(c) The content of each RPP shall be commensurate with the nature of the activities performed and shall include formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure.

(d) The RPP shall specify the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP. Except as provided in 835.101(i), any task outside the scope of a RPP shall not be initiated until an update of the RPP is approved by DOE.

(e) The content of the RPP shall address but shall not necessarily be limited to each requirement in this part.

(f) The RPP shall include plans schedules, and other measures for achieving compliance with regulations of this part. Compliance with this part shall be achieved no later than January 1 1996.

(g) The RPP for an existing activity shall be submitted to DOE no later than January 1 1995.

(h) An update of the RPP shall be submitted to DOE:

(1) Whenever a change or an addition to the RPP is made;
(2) Prior to the initiation of a task not within the scope of the RPP; or
(3) Within 180 days of the effective date of any modifications to this part.

(i) Changes additions, or updates to the RPP may become effective without prior Department approval only if the changes do not decrease the effectiveness of the RPP and the RPP as changed continues to meet the requirements of this part. Proposed changes that decrease the effectiveness of the RPP shall not be implemented without submittal to and approval by the Department.

(j) An initial RPP or an update shall be considered approved 180 days after its submission unless rejected by DOE at an earlier date."

REQUIREMENT SOURCE: 10CFR835 Part 102

"Internal audits. Internal audits of all functional elements of the radiation protection program shall be conducted no less frequently than every 3 years and shall include program content and implementation."

REQUIREMENT SOURCE: 10CFR835 Part 1001(a)

"Measures shall be taken to maintain radiation exposure in controlled areas as low as is reasonably achievable through facility and equipment design and administrative control. The primary methods used shall be physical design features (e.g., confinement, ventilation, remote handling, and shielding). Administrative controls and procedural requirements shall be employed only as supplemental methods to control radiation exposure."

REQUIREMENT SOURCE: 10CFR835 Part 1001(b)

"For specific activities where use of physical design features are demonstrated to be impractical, administrative controls and procedural requirements shall be used to maintain radiation exposures ALARA."

REQUIREMENT SOURCE: 10CFR835 Part 1003(a)

"During routine operations, the combination of design features and administrative control procedures shall provide that:

(1) The anticipated magnitude of the total effective dose equivalent shall not exceed 5 rems (0.05 sievert) in a year;

(2) The anticipated magnitude of the committed dose equivalent to any organ or tissue, plus any deep dose equivalent from external exposure, shall not exceed 50 rems (0.5 sievert) in a year; and

(3) Exposure levels are as low as reasonably achievable."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 311

"Planning Radiological Work
Requirements
Technical requirements for the conduct of work, including construction, modifications, operations, maintenance and decommissioning, shall incorporate radiological criteria to ensure safety and maintain radiation exposures ALARA. The primary methods used to maintain exposures ALARA shall be facility and equipment design features. These features may be augmented by administrative and procedural requirements. To accomplish this, the design and planning processes should incorporate radiological considerations in the early planning stages. The checklist in Appendix 3A is helpful in reducing occupational radiation exposure."

11.1.1.1 Exposure Controls

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 314.1

"Temporary Shielding
The installation, use and removal of temporary shielding should be controlled by procedure."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 314.2

"The effects of the additional weight of temporary shielding on systems and components should be evaluated and established to be within the design basis prior to installation."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 314.3

"Installed temporary shielding should be periodically inspected and surveyed to verify effectiveness and integrity."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 314.4

"Radiation surveys should be performed during the alteration or removal of installed temporary shielding."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 314.5

"Installed temporary shielding should be visibly marked or labeled with the following or equivalent wording: "Temporary Shielding - Do Not Remove Without Permission from Radiological Control.""

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 314.6

"Installed temporary shielding should be periodically evaluated to assess the need for its removal or replacement with permanent shielding."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342. 8

"Where practicable, parts and components should be removed to areas with low dose rates to perform work."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 343.1

"Logs and Communications
Radiological Control personnel should maintain logs to document radiological occurrences, status of work activities and other relevant information."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 343.3

"Communication systems required by the Radiological Work Permit or technical work document should be checked for operability before being brought into the work area and periodically during work."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 343.4

"Workers should keep Radiological Control personnel informed of the status of work activities that affect radiological conditions."

11.1.1.2 Exposure Control Requirements for Specific Work Activities

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 347.2

"The following controls apply to localized benchtop and laboratory fume hood operations:
a. Protective clothing shall, at a minimum, include lab coats and gloves. Gloves should be secured at the wrist as necessary.
b. Shoecovers should be considered based on the potential for floor contamination;
c. Workers should periodically monitor their hands during work;
d. Upon completion of work or prior to leaving the area, workers shall monitor those areas of their body that are potentially contaminated. At a minimum, this includes hands, arms, and front portions of the body. Workers should perform a whole body frisk."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 347.3

"The following controls apply to sample station operations:
a. Protective clothing shall, at a minimum, include labcoats and gloves. Gloves should be secured at the wrist as necessary;
b. Shoecovers should be considered based on the potential for floor contamination;
c. If there is a potential for splashing or airborne radioactivity, such as when taking pressurized samples, additional controls such as rubber aprons, face shields, full PCs, or respiratory protection should be instituted;
d. Workers should periodically monitor their hands during work.
e. Upon completion of work or prior to leaving the area, workers shall monitor those areas of their body that are potentially contaminated. At a minimum, this includes hands, arms, and front portions of the body. Workers should perform a whole body frisk."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 347.4

"The following controls apply to glovebox operations:
a. Gloveboxes should be inspected for integrity and operability prior to use;
b. Gloveboxes should be marked with or survey measurements should be posted to identify whole body and extremity dose rates;
c. Protective clothing shall, at a minimum, include labcoats and gloves. Gloves should be secured at the wrist as necessary;
d. Shoecovers should be considered based on the potential for contamination;
e. Workers should periodically monitor their hands during work;
f. Upon completion of work or prior to leaving the area, workers shall monitor those areas of their body that are potentially contaminated. At a minimum, this includes hands, arms, and feet. Workers should perform a whole body frisk."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 6, Article 361.1

"Primary emphasis shall be placed on engineered features to contain plutonium and to prevent airborne and surface contamination."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 6, Article 365.6

"Safety devices and interlocks at fixed installations shall be operational prior to and during generation of a radiation field. Operational status shall be verified by testing."

11.1.1.3 Emergency Exposure Control Requirements

The Emergency Management Functional Area contains much more detailed and extensive requirements concerning emergency exposures. Although many of the activities associated with these requirements would be carried out by Radiation Protection personnel and Radiation Protection would have responsibilities for compliance with these requirements, emergency preparedness related requirements are included in the Emergency Management Functional Area as they are more closely associated with that subject.

The Emergency Preparedness Functional Area contains much more detailed and extensive requirements concerning emergency exposures. Although many of the activities associated with these requirements would be carried out by Radiation Protection personnel and Radiation Protection would have responsibilities for compliance with these requirements, Emergency Preparedness related requirements are included in the Emergency Preparedness Functional Area as they are more closely associated with that subject.

11.1.1.4 Radiological Work Planning

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 312.1

"Planning for Maintenance, Operations and Modifications
Maintenance and modification plans and procedures shall be reviewed to identify and incorporate radiological requirements, such as engineering controls and dose and contamination reduction considerations. Performance of this review is the responsibility of line management, with support and concurrence from the Radiological Control Organization."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 312.2

"For routine tasks, such as surveillance, tours and minor non-radiological maintenance, performance of the above review and documentation of identified radiological requirements may be conducted as part of the Radiological Work Permit process (see Article 321)."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 315.1

"Technical Work Documents
Technical work documents, such as procedures, work packages, or job or research plans, should be used to control hands-on work with radioactive materials. Technical work documents are not required for incidental or routine work activities that involve a low potential

of worker exposure or workplace contamination, such as the collection of trash or used protective clothing."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 315.2

"Technical work documents used to control radiological work activities should be reviewed and approved by the Radiological Control Organization."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 315.3

"Radiological Control Hold Points should be incorporated into technical work documents for steps that require action by the Radiological Control Organization to prevent radiation exposures in excess of Administrative Control Levels, high airborne radioactivity concentrations, or the release of radioactivity to the environment."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 324.1

"Pre-Job Briefings
At a minimum, pre-job briefings should be held prior to the conduct of work anticipated to exceed the trigger levels identified in Article 312.3."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 324.2

"At a minimum, the pre-job briefing should include:
a. Scope of work to be performed;
b. Radiological conditions of the workplace;
c. Procedural and RWP requirements;
d. Special radiological control requirements;
e. Radiologically limiting conditions, such as contamination or radiation levels that may void the RWP;
f. Radiological Control Hold Points;
g. Communications and coordination with other groups;
h. Provisions for housekeeping and final cleanup;
i. Emergency response provisions."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 324.3

"Pre-job briefings should be conducted by the cognizant work supervisor."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 324.4

"Workers and supervisors directly participating in the job, cognizant Radiological Control personnel, and representatives from involved support organizations should attend the briefing."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 324.5

"A summary of topics discussed and attendance at the pre-job briefing should be documented. This documentation should be maintained with the technical work document."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 341.1

"Radiological Work Controls
Requirements
Radiological work activities shall be conducted as specified by the controlling technical work document and Radiological Work Permit."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342. 6

"The identity of components and systems should be verified prior to work."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342. 7

"Work activities and shift changes should be scheduled to prevent idle time in radiation areas."

11.1.1.5 ALARA Reviews

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 312.4

"Tasks with the potential to exceed the above trigger levels shall undergo a formal, documented radiological or ALARA review. At a minimum, this review should consider the following:
a. Inclusion of Radiological Control Hold Points in the technical work documents;
b. Elimination or reduction of radioactivity through line flushing and decontamination;
c. Use of work processes and special tooling to reduce time in the work area;
d. Use of engineered controls to minimize the spread of contamination and generation of airborne radioactivity;
e. Specification of special radiological training or monitoring requirements;
f. Use of mock-ups for high exposure or complex tasks;
g. Engineering, design and use of temporary shielding to reduce radiation levels;
h. Walkdown or dry-run of the activity using applicable procedures;
i. Staging and preparation of necessary materials and special tools;
j. Maximization of prefabrication and shop work;
k. Review of abnormal and emergency procedures and plans;
l. Identification of points where signatures and second party or independent verifications are required;
m. Establishment of success or completion criteria, with contingency plans to anticipate difficulties;
n. Development of a pre-job estimate of collective dose to be incurred for the job;
o. Provisions for waste minimization and disposal."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 312.5

"Radiological requirements identified as part of the above radiological review should be documented in the job plans, procedures or work packages."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 312.6

"Radiological work anticipated to exceed individual or collective dose criteria established in the Site-Specific Radiological Control Manual should be reviewed and approved by the ALARA Committee."

11.1.1.6 Dose Tracking and Trending

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 344.3

"During the performance of jobs for which a pre-job dose estimate was made, the Radiological Control Organization, in cooperation with line periodically monitor collective dose accumulation and management, should periodically monitor collective dose accumulation and compare it with the pre-job dose estimate. Differences should be reviewed to identify causes and assess the need for corrective actions."

11.1.2 Radiation Protection Training

The Training and Qualification Functional Area is responsible for conducting training in accordance with requirements which ensure all training programs are developed and presented using established good training and qualification methods and processes. The Plutonium Finishing Plant's Radiological Control organization assists this process by interfacing with the training organization to ensure the proper job tasks are addressed.

11.1.3 Radiological Program Performance Goals

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 2, Article 121. 9

"A performance indicator program for measuring and trending the effectiveness of the Radiological Control Program against predetermined goals should be established and maintained."

11.1.4 Program Policy and Procedures

REQUIREMENT SOURCE: 10CFR835 Part 501(d)

"Administrative procedures shall be written as necessary to demonstrate compliance with the provisions of this section. These administrative procedures shall include actions essential to ensure the effectiveness and operability of barricades, devices, alarms, and locks. Authorizations shall be required to perform specific work within the area and shall include specific radiation protection measures."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 2, Article 125.5

"Managers, supervisors and workers should be involved in the development of accurate, clear, written procedures for performing radiological work. If during the use of procedures a written requirement cannot be responsibly followed, the work should be stopped and guidance obtained."

11.1.5 **Policy for Response to Abnormal Situations**

REQUIREMENT SOURCE: 10CFR835 Part 1304(a)

"Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass, such that the excessive exposure of personnel to radiation from a nuclear accident is possible, shall provide nuclear accident dosimetry for those personnel."

REQUIREMENT SOURCE: 10CFR835 Part 1304(b)

Author's Note: Only Sections (3) and (4) apply to the PFP facility.

"Nuclear accident dosimetry shall include the following:

(1) A method to conduct initial screening of personnel involved in a nuclear accident to determine whether significant exposures to radiation occurred;

(2) Methods and equipment for analysis of biological materials;

(3) A system of fixed nuclear accident dosimeter units; and

(4) Personal nuclear accident dosimeters worn by all personnel who enter locations in which installed criticality alarm systems are required."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 345.1

"Stop Radiological Work Authority
Radiological Control Technicians and their supervisors, line supervision, and any worker through their supervisor has the authority and responsibility to stop radiological work activities for any of the following reasons:
a. Inadequate radiological controls;
b. Radiological controls not being implemented;
c. Radiological Control Hold Point not being satisfied."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 345.3

"Once radiological work has been stopped, it shall not be resumed until proper radiological control has been reestablished."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 345.4

"Resumption of radiological work requires the approval of the line manager responsible for the work and the Radiological Control Manager."

11.1.6 Radiological Occurrences

REQUIREMENT SOURCE: 10CFR835 Part 1301(b)

"All exposures exceeding the limits specified in §§ 835.202 or 835.205 shall be recorded in the affected individual's occupational exposure file and reported to the DOE in accordance with Departmental requirements for occurrence reporting and processing."

REQUIREMENT SOURCE: 10CFR835 Part 1301(c)

"When the conditions under which the emergency or accident exposures were received have been eliminated, operating management shall notify the Head of the responsible DOE field organization."

REQUIREMENT SOURCE: 10CFR835 Part 1301(d)

"Operations after an emergency or accidental exposure in excess of the limits specified in §§ 835.202 or 835.205 may be resumed only with the approval of the DOE."

REQUIREMENT SOURCE: 10CFR835 Part 1301(e)

"Occurrence reports to DOE regarding emergencies and/or accidents shall be prepared and submitted in accordance with Departmental requirements for occurrence reporting and processing."

11.1.7 Records Management

The Records Management element includes requirements which are specific for the maintenance of PFP Radiation Protection records and for generating required Radiation Protection Reports. The Document Control and Records Management Functional Area under Management Systems provides overall requirements for maintaining records and the Document Control Organization will likely take responsibility for the long term handling and control of Radiation Protection records using the requirements contained in the Management Systems Functional Area. Additionally, there may be Document Control and Records Management requirements from the Management Systems Functional Area which Radiation Protection (and other functional areas) are responsible for complying with.

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 1, Article 713.1

"Recordkeeping Standards
Radiological control records shall be accurate and legible. The records should include the following:
a. Identification of the facility, specific location, function and process;
b. Signature or other identifying code of the preparer and date;
c. Legible entries in black ink;
d. Corrections identified by a single line-out, initialed and dated;
e. Supervisory signature to ensure review and proper completion of forms."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 1, Article 713.3

"Radiological control records should not include:
a. Opaque substances for corrections;

b. Shorthand or other nonstandardized terms."

11.1.7.1 Survey Records/Radiological Work Control Records

REQUIREMENT SOURCE: 10CFR835 Part 4

"Radiological units. Unless otherwise specified the quantities used in the records required by this part shall be clearly indicated in special units of curie rad, or rem, including multiples and subdivisions of these units. The SI units becquerel (Bq), gray (Gy), and sievert (Sv) are only provided parenthetically in this part for reference with scientific standards. These SI units are not authorized for use in records required under this part."

REQUIREMENT SOURCE: 10CFR835 Part 703

Author's Note: Items (d)(1) and (2) are covered at the site level.

"The following information shall be documented and maintained:

(a) Results of surveys for radiation and radioactive material in the workplace as required by §§ 835.401, 835.403, and 835.404;

(b) Results of surveys, measurements, and calculations used to determine individual occupational exposure from external and internal sources;

(c) Results of surveys for the release of material and equipment as required by § 835.1101(d); and

(d) Results of maintenance and calibration performed on:

(1) Instruments used for area monitoring and contamination control as required by § 835.401; and

(2) Devices used for individual monitoring as required by §§ 835.401 and 835.402."

REQUIREMENT SOURCE: 10CFR835 Part 704(e)

"Changes in equipment, techniques, and procedures used for monitoring in the workplace shall be documented."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 5, Article 751.1

"Radiological Surveys
Requirements
Radiological Control Programs require the performance of radiation, airborne radioactivity and contamination surveys to determine existing conditions in a given location. Maps with sufficient detail to permit identification of original survey and sampling locations should be maintained. Records shall contain sufficient detail to be meaningful even after the originator is no longer available. Radiological surveys should be recorded on appropriate standard forms and include the following common elements:
1. Date, time and purpose of the survey.
2. General and specific location of the survey.
3. Name and signature of the surveyor and analyst.

4. Pertinent information needed to interpret the survey results.
5. Reference to a specific Radiological Work Permit if the survey is performed to support the permit."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 5, Article 753

"Airborne Radioactivity
In addition to the elements provided in Article 751, records of airborne radioactivity shall include, at a minimum, the following information:
a. Model and serial number of the sampler and laboratory counting instrument when available or unique identifier of each sampler and instrument.
b. Location of fixed air samplers
c. Location of portable air samplers used for a survey
d. Air concentrations in general airborne areas and breathing zones
e. Supporting parameters, including collection efficiency, flow rate, duration of sampling, correction factors and filter medium."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 5, Article 754

"Contamination Surveys
In addition to the elements required by Article 751, records of contamination surveys shall include, at a minimum, the following information:
a. Model and serial number of counting equipment.
b. Contamination levels (using appropriate units) and appropriate supporting parameters including counting efficiency, counting time, correction factors, type of radiation and whether the contamination was fixed or removable.
c. Location of areas found to contain hot particles or high concentrations of localized contamination.
d. Follow-up survey results for decontamination processes cross-referenced to the original survey."

11.1.7.2 ALARA Review/Program Records

REQUIREMENT SOURCE: 10CFR835 Part 704(b)

"Actions taken to maintain occupational exposures as low as reasonably achievable, including the actions required for this purpose by § 835.101, as well as facility design and control actions required by §§ 835.1001, 835.1002, and 835.1003, shall be documented."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 7, Part 4, Article 742

"ALARA Records
Records of As-Low-As-Reasonably-Achievable (ALARA) plans and goals shall be maintained to demonstrate the adequacy of the ALARA Program. These records should include the minutes of ALARA committees and other committees where radiological safety issues are formally discussed."

11.1.7.3 Miscellaneous Radiation Protection Records

REQUIREMENT SOURCE: 10CFR835 Part 704(c)

"Records shall be maintained to document the results of internal audits and other reviews of program content and implementation."

REQUIREMENT SOURCE: 10CFR835 Part 704(d)

"Written declarations of pregnancy shall be maintained."

11.2 MONITORING AND SURVEYS

REQUIREMENT SOURCE: 10CFR835 Part 401(a)

"Monitoring of individuals and areas shall be performed to:

(1) Demonstrate compliance with the regulations in this part;

(2) Document radiological conditions in the workplace;

(3) Detect changes in radiological conditions;

(4) Detect the gradual buildup of radioactive material in the workplace; and

(5) Verify the effectiveness of engineering and process controls in containing radioactive material and reducing radiation exposure."

REQUIREMENT SOURCE: 10CFR835 Part 401(b)

"Area monitoring in the workplace shall be routinely performed, as necessary, to identify and control potential sources of personnel exposure to radiation and/or radioactive material."

REQUIREMENT SOURCE: 10CFR835 Part 401(c)

"Instruments used for monitoring and contamination control shall be:

(1) Periodically maintained and calibrated on an established frequency of at least once per year;

(2) Appropriate for the type(s), levels, and energies of the radiation(s) encountered;

(3) Appropriate for existing environmental conditions; and

(4) Routinely tested for operability."

11.2.1 Radiation Monitors, Alarms and Surveys

Requirements for this section are listed under sections 11.2.2 and 11.2.4.

11.2.2 Airborne Radioactivity Monitors, Alarms and Surveys

REQUIREMENT SOURCE: 10CFR835 Part 403(a)

"Measurements of radioactivity concentrations in the ambient air of the workplace shall be performed as follows:

(1) Air sampling shall be performed in occupied areas where, under typical conditions, an individual is likely to receive an annual intake of 2 percent or more of the specified ALI values. For a given radionuclide and lung retention class, the ALI is the product of the DAC listed in appendix A of this part and the constant 2.4 x 109 ml[SIC]. Samples shall be taken

as necessary to detect and evaluate the level or concentration of airborne radioactive material at work locations.

(2) Real-time air monitoring, using continuous air monitors as defined in § 835.2, shall be performed in normally occupied areas where an individual is likely to be exposed to a concentration of airborne radioactivity exceeding 1 DAC as specified in appendix A of this part or where there is a need to alert potentially exposed individuals to unexpected increases in airborne radioactivity levels.

(3) For the airborne radioactive material that could be encountered, real-time air monitors shall have alarm capability and sufficient sensitivity to alert potentially exposed individuals that immediate action is necessary in order to minimize or terminate inhalation exposures."

11.2.3 Contamination Monitoring and Surveys

REQUIREMENT SOURCE: 10CFR835 Part 404(a)

"Instruments and techniques used for radioactive contamination monitoring and control shall be adequate to ensure compliance with the requirements specified in this section."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 554.1

"Contamination Surveys
In addition to the requirements of Article 551, routine contamination surveys should be conducted in Radiological Buffer Areas established for the control of contamination and other areas with the potential for spread of contamination as follows:
a. Prior to transfer of equipment and material from one Radiological Buffer Area to another;
b. Prior to transfer of equipment and material from highly contaminated areas within Radiological Buffer Areas unless precautions such as bagging or wrapping are taken prior to transfer;
c. Only, at contamination area control points, change areas, or step-off pads when in use, or per shift in high use situations;
d. Daily, in office space located in Radiological Buffer Areas;
e. Daily, in lunch rooms or eating areas near Radiological Buffer Areas;
f. Weekly, in routinely occupied Radiological Buffer Areas;
g. Weekly, or upon entry if entries are less frequent, in areas where radioactive materials are handled or stored;
h. Weekly, or upon entry if entries are less frequent, where contamination boundaries or postings are located;
i. During initial entry into a known or suspected contamination area, periodically during work, at completion of job, or as specified in a Radiological Work Permit;
j. After a leak or spill of radioactive materials."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 554.3

"Contamination surveys should incorporate techniques to detect both removable and fixed contamination."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 554.6

"Swipe surveys for removable contamination shall be reported in units of disintegrations per minute per 100 cm2 (dpm/100 cm2). For swipe surveys of small items covering less than 100 cm2, the results shall be reported in units of dpm per area swiped."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 554.7

"Large area wipes are encouraged and should be used to supplement standard swipe techniques in areas generally assumed not to be contaminated, such as entrances to Radiological Buffer Areas. If an evaluation indicates that an area wiped is contaminated, a thorough contamination swipe survey should be performed."

11.2.4 Dose Rate Surveys

REQUIREMENT SOURCE: 10CFR835 Part 403(b)

"Monitoring of radiation in the workplace shall be performed using stationary (area) or portable radiation instruments, or a combination thereof. The instruments shall be readily available and shall be capable of measuring ambient radiation dose rates for the purpose of controlling radiation exposures."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 552.1

"Radiation Exposure Surveys
In addition to the requirements of Article 551, routine radiation surveys should be performed in accordance with the following minimum frequencies:
a. Daily, in office space located in Radiological Buffer Areas where the potential exists for external radiation exposure;
b. Weekly, in routinely occupied Radiological Buffer Areas and Radiation Areas;
c. Upon initial entry, weekly during continuing operations, and when levels are expected to change in High Radiation Areas;
d. Weekly, for operating HEPA-filtered ventilation units;
e. Weekly, for temporary Radiation Area boundaries to ensure that radiation areas do not extend beyond posted boundaries;
f. Monthly, or upon entry, if entries are less frequent than monthly for Radioactive Material Areas;
g. Monthly, for potentially contaminated ducts, piping and hoses in use outside radiological facilities."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 552.2

"Performance of radiation surveys should include dose rate measurements of the general area, dose rates at a distance of 30 centimeters from a source or surface of interest to evaluate potential whole body exposures, and dose rates on contact with potential sources of radiation where there is a potential for hands-on work."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 552.3

"Surveys should be conducted whenever operations are being performed that might result in personnel being exposed to small intense beams of radiation, such as those generated by shielded x-ray devices or due to removal or alteration of shielding."

11.3 PERSONNEL EXPOSURE MONITORING

11.3.1 Personnel Monitoring

REQUIREMENT SOURCE: 10CFR835 Part 402(a)

"For the purpose of monitoring individual exposures to external radiation, personnel dosimetry shall be provided to and used by:

(1) Radiological workers who, under typical conditions, are likely to receive one or more of the following:

(i) An effective dose equivalent to the whole body of 0.1 rem (0.001 sievert) or more in a year;

(ii) A shallow dose equivalent to the skin or to any extremity of 5 rems (0.05 sievert) or more in a year;

(iii) A lens of the eye dose equivalent of 1.5 rems (0.015 sievert) or more in a year;

(iv) A deep dose equivalent from external exposures to any organ or tissue other than the lens of the eye of 5 rems (0.05 sievert);

(2) Declared pregnant workers who are likely to receive from external sources a dose equivalent to the embryo/fetus in excess of 10 percent of the applicable limit in § 835.206;

(3) Minors and members of the public likely to receive, in 1 year, from external sources, a dose in excess of 50 percent of the applicable limits in § 835.207 or § 835.208, respectively; or

(4) Individuals entering a high or very high radiation area."

REQUIREMENT SOURCE: 10CFR835 Part 402(c)

"For the purpose of monitoring individual exposures to internal radiation, internal dose evaluation programs (including routine bioassay programs) shall be conducted for:

(1) Radiological workers who, under typical conditions, are likely to receive 0.1 rem (0.001 sievert) or more committed effective dose equivalent, and/or 5 rems (0.05 sievert) or more committed dose equivalent to any organ or tissue, from all occupational radionuclide intakes in a year;

(2) Declared pregnant workers likely to receive an intake resulting in a dose equivalent to the embryo/fetus in excess of 10 percent of the limit stated in § 835.206; or

(3) Minors and members of the public who are likely to receive, in 1 year, an intake resulting in a committed effective dose equivalent in excess of 50 percent of the limits stated in § 835.207 or § 835.208, respectively."

11.3.2 Exposure Limits

REQUIREMENT SOURCE: 10CFR835 Part 202(a)

"The occupational exposure to general employees resulting from DOE activities, other than planned special exposures under § 835.204 and emergency exposure situations under § 835.1302, shall be controlled so the following annual limits are not exceeded:

(1) A total effective dose equivalent of 5 rems (0.05 sievert);

(2) The sum of the deep dose equivalent for external exposures and the committed dose equivalent to any organ or tissue other than the lens of the eye of 50 rems (0.5 sievert);

(3) A lens of the eye dose equivalent of 15 rems (0.15 sievert); and

(4) A shallow dose equivalent of 50 rems (0.5 sievert) to the skin or to any extremity."

REQUIREMENT SOURCE: 10CFR835 Part 204(a)

"A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in § 835.202(a), provided that each of the following conditions is satisfied:

(1) The planned special exposure is considered only in an exceptional situation when alternatives that might prevent a radiological worker from exceeding the limit in § 835.202(a)(1) are unavailable or impractical;

(2) The contractor management (and employer, if the employer is not the contractor) specifically requests the planned special exposure, in writing; and

(3) Joint written approval from the appropriate DOE Headquarters program office and the Assistant Secretary for Environment, Safety and Health is received."

REQUIREMENT SOURCE: 10CFR835 Part 204(b)

"Prior to requesting an individual to participate in an authorized planned special exposure, the individual's dose from all previous planned special exposures and all doses in excess of the occupational dose limits shall be determined."

REQUIREMENT SOURCE: 10CFR835 Part 204(d)

"Prior to a planned special exposure, written consent shall be obtained from each individual involved. Each individual shall be:

(1) Informed of the purpose of the planned operations and procedures to be used;

(2) Informed of the estimated doses and associated potential risks and specific radiological conditions and other hazards which might be involved in performing the task; and

(3) Instructed in the measures to be taken to keep the dose ALARA considering other risks that may be present."

REQUIREMENT SOURCE: 10CFR835 Part 206(a)

"The dose equivalent limit for the embryo/fetus from the period of conception to birth, as a result of occupational exposure of a declared pregnant worker, is 0.5 rem (0.005 sievert)."

REQUIREMENT SOURCE: 10CFR835 Part 206(b)

"Substantial variation above a uniform exposure rate that would satisfy the limits provided in § 835.206(a) shall be avoided."

REQUIREMENT SOURCE: 10CFR835 Part 206(c)

"If the dose equivalent to the embryo/fetus is determined to have already exceeded 0.5 rem (0.005 sievert) by the time a worker declares her pregnancy, the declared pregnant worker shall not be assigned to tasks where additional occupational exposure is likely during the remaining gestation period."

REQUIREMENT SOURCE: 10CFR835 Part 207

"Any minor exposed to radiation and/or radioactive material during direct on-site access at a DOE site or facility shall not exceed 0.1 rem (0.001 sievert) total effective dose equivalent in a year."

REQUIREMENT SOURCE: 10CFR835 Part 208

"Any member of the public exposed to radiation and/or radioactive material during direct on-site access at a DOE site or facility shall not exceed 0.1 rem (0.001 sievert) total effective dose equivalent in a year."

REQUIREMENT SOURCE: 10CFR835 Part 209(a)

"The derived air concentration (DAC) values given in appendices A and C to this part shall be used in the control of occupational exposures to airborne radioactive material."

REQUIREMENT SOURCE: 10CFR835 Part 209(b)

"With regard to inhalation exposures and external exposures from airborne radionuclides, compliance with this part shall be demonstrated through conformity with § 835.101 and § 835.202 which establishes the applicable regulatory limits."

REQUIREMENT SOURCE: 10CFR835 Part 1301(a)

"A general employee whose occupational exposure has exceeded any of the limits specified in §§ 835.202 or 835.205 may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met:

(1) Approval is first obtained from the contractor management and the Head of the responsible DOE field organization;

(2) The individual receives counseling from radiological protection and medical personnel regarding the consequences of receiving additional occupational exposure during the year; and

(3) The affected employee agrees to return to radiological work."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 1, Article 213.5

"The radiological worker dose limits provided in Table 2-1 also apply to general employees. However, general employees who have not completed Radiological Worker I or II Training are not permitted unescorted access to any area in which they are expected to receive doses in excess of 100 mrem in one year. General employees who have not received Radiological Worker I or II training are not normally expected to exceed 100 mrem in a year."

11.3.3 Dosimetry Program

REQUIREMENT SOURCE: 10CFR835 Part 205(a)

"Non-uniform exposures of the skin from X-rays, beta radiation, and/or radioactive material on the skin are to be assessed as specified in this section."

REQUIREMENT SOURCE: 10CFR835 Part 205(b)

"For purposes of demonstrating compliance with § 835.202(a)(4), assessments shall be conducted as follows:

(1) Area of skin irradiated is 100 cm2 or more. The non-uniform dose equivalent received during the year shall be averaged over the 100 cm2 of the skin receiving the maximum dose, added to any uniform dose equivalent also received by the skin, and recorded as the shallow dose equivalent to any extremity or skin for the year.

(2) Area of skin irradiated is 10 cm2 or more, but is less than 100 cm2. The non-uniform dose equivalent (H) to the irradiated area received during the year shall be added to any uniform dose equivalent also received by the skin and recorded as the shallow dose equivalent to any extremity or skin for the year. H is the dose equivalent averaged over the 1 cm2 of skin receiving the maximum absorbed dose, D, reduced by the fraction f, which is the irradiated area in cm2 divided by 100 cm2 (i.e., H = fD). In no case shall a value of f less than 0.1 be used.

(3) Area of skin irradiated is less than 10 cm2. The non-uniform dose equivalent shall be averaged over the 1 cm2 of skin receiving the maximum dose. This dose equivalent shall:

(i) Be recorded in the individual's occupational exposure history as a special entry; and

(ii) Not be added to any other shallow dose equivalent to any extremity or skin recorded as the dose equivalent for the year."

11.3.4 Calculation Methods and Models

There are no requirements in this section which are directly related to the PFP.

11.4 RADIATION AREA ACCESS CONTROL

11.4.1 Access Restrictions and Posting

REQUIREMENT SOURCE: 10CFR835 Part 404(e)

"Entry control pursuant to § 835.501 and posting pursuant to § 835.603 are not required for areas with fixed contamination meeting the conditions of § 835.404(d)."

REQUIREMENT SOURCE: 10CFR835 Part 501(a)

"Personnel entry control shall be maintained for each radiological area."

REQUIREMENT SOURCE: 10CFR835 Part 501(b)

"The degree of control shall be commensurate with existing and potential radiological hazards within the area."

REQUIREMENT SOURCE: 10CFR835 Part 501(c)

"One or more of the following methods shall be used to ensure control:

(1) Signs and barricades;
(2) Control devices on entrances;
(3) Conspicuous visual and/or audible alarms;
(4) Locked entrance ways; or
(5) Administrative controls."

REQUIREMENT SOURCE: 10CFR835 Part 501(e)

"No control(s) shall be installed at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions."

REQUIREMENT SOURCE: 10CFR835 Part 502(a)

"High radiation areas. One or more of the following features shall be used for each entrance or access point to a high radiation area where radiation levels exist such that an individual could exceed a deep dose equivalent to the whole body of 1 rem (0.01 sievert) in any one hour at 30 centimeters from the source or from any surface that the radiation penetrates:

(1) A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining a high radiation area;

(2) A device that functions automatically to prevent use or operation of the radiation source or field while personnel are in the area;

(3) A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry;

(4) Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained;

(5) Continuous direct or electronic surveillance that is capable of preventing unauthorized entry;

(6) A control device that will automatically generate audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source."

REQUIREMENT SOURCE: 10CFR835 Part 502(b)

"Very high radiation areas. In addition to the above requirements, additional measures shall be implemented to ensure individuals are not able to gain access to very high radiation areas when dose rates are in excess of the posting requirements of § 835.603(c)."

REQUIREMENT SOURCE: 10CFR835 Part 502(c)

"No control(s) shall be established in a high or very high radiation area that would prevent rapid evacuation of personnel."

REQUIREMENT SOURCE: 10CFR835 Part 601(a)

"Working areas that require posting because of the presence, or potential presence, of radiation and/or radioactive material are delineated in the subsequent paragraphs of this section. Radioactive items or containers of radioactive materials, shall be individually labeled if adequate warning is not provided by control measures and required posting."

REQUIREMENT SOURCE: 10CFR835 Part 601(b)

"DOE approved signs, labels, and radiation symbols shall be used to identify areas specified in this subpart."

REQUIREMENT SOURCE: 10CFR835 Part 601(c)

"Required signs and labels shall have a yellow background. The radiation symbol shall be black or magenta."

REQUIREMENT SOURCE: 10CFR835 Part 601(d)

"Signs required by this subpart shall be clear and conspicuously posted and may include radiological protection instructions."

REQUIREMENT SOURCE: 10CFR835 Part 602(a)

"Each access point to a controlled area (as defined in § 835.2) shall be posted, identifying it as a controlled area, whenever radioactive material and/or radiation fields which would require posting under § 835.603 may be present in the area."

REQUIREMENT SOURCE: 10CFR835 Part 603

"Each access point to a radiological area (as defined in § 835.2) shall be posted with conspicuous signs bearing the wording provided in this section.

(a) Radiation Area. The words "Caution, Radiation Area" shall be posted at any area accessible to individuals in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.005 rem (0.05 millisievert) in 1 hour at 30 centimeters from the source or from any surface that the radiation penetrates.

(b) High Radiation Area. The words "Danger, High Radiation Area" shall be posted at any area accessible to individuals in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.1 rem (0.001 sievert) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

(c) Very High Radiation Area. The words "Grave Danger, Very High Radiation Area" shall be posted at any area accessible to individuals in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in one hour at 1 meter from the radiation source or from any surface that the radiation penetrates.

(d) Airborne Radioactivity Area. The words "Caution, Airborne Radioactivity Area" shall be posted for any occupied area in which airborne radioactivity levels exceed, or are likely to exceed, 10 percent of the DAC value listed in appendix A or appendix C of this part.

(e) Contamination Area. The words "Caution, Contamination Area" shall be posted where contamination levels exceed values listed in appendix D of this part, but are less than or equal to 100 times those values.

(f) High Contamination Area. The words "Danger, High Contamination Area" shall be posted where contamination levels are greater than 100 times the values listed in appendix D of this part."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 233, Introduction

"Posting Radiological Buffer Areas
A Radiological Buffer Area shall be established within the Controlled Area to provide secondary boundaries to minimize the spread of contamination and to limit doses to general employees who have not been trained as radiological workers. It is not expected that Radiological Buffer Areas will be established around inactive or secured Contamination Areas. The need for Radiological Buffer Areas in conjunction with Radioactive Material Areas should be evaluated."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 233.1

"The size of the Radiological Buffer Area should be commensurate with the potential for the spread of contamination outside Contamination, High Contamination and Airborne Radioactivity Areas. At a minimum, the Radiological Buffer Area should include the area adjacent to any exit from and entrance to Contamination, High Contamination and Airborne Radioactivity Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 233.2

"A Radiological Buffer Area is not required for High Contamination Areas or Airborne Radioactivity Areas that are completely within Contamination Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 233.3

"A Radiological Buffer Area established to limit exposure to external radiation should surround Radiation, High Radiation and Very High Radiation Areas. The boundary for the Radiological Buffer Area should be established to limit radiation doses to general employees to less than 100 mrem per year. Radiological Buffer Areas need not be posted for external exposure control if other posted boundaries provide equivalent employee protection."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 233.4

"Posting of Radiological Buffer Areas shall be in accordance with Article 231 and shall contain the wording "CAUTION, RADIOLOGICAL BUFFER AREA.""

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 236.1

"Posting Radioactive Material Areas
Areas where radioactive materials are used, handled or stored should be posted "CAUTION, RADIOACTIVE MATERIAL." The posting shall meet the requirements in Article 231."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 236.2

"Radioactive Material Areas should be located within Controlled Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 236.3

"Radioactive Material Areas are not required when the radioactive
material in any one location:
a. Consists of ten or less sealed sources with half-lives less than 30 days or activities less than those specified in Table 1 of DOE N5400.9 (Extended by DOE N5400.10)
b. Is inside a Contamination, High Contamination, or Airborne Radioactivity Area."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 237.1

"Posting Underground Radioactive Material Areas
Underground Radioactive Material Areas shall be established to indicate the presence of underground items that contain radioactive materials such as pipelines, radioactive cribs, covered ponds, covered ditches, catch tanks, inactive burial grounds, and sites of known, covered, unplanned releases (spills)."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 237.2

"Underground Radioactive Material Area shall be posted "UNDERGROUND RADIOACTIVE MATERIAL." Posting should include instructions or special warnings to workers such as "Consult With Radiological Control Organization Before Digging" or "Subsurface Contamination Exists." The posting shall meet the applicable requirements of Article 231."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 3, Article 237.3

"Underground Radioactive Material Areas may be located outside Controlled Areas unless access is likely to result in individual doses greater than 100 mrem/year in a year from underground radioactive material."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 1

"Radiation, High Radiation and Very High Radiation Areas
Minimum requirements for unescorted entry into Radiation Areas shall include the following:
a. Radiological Worker I training;
b. Worker's signature on the Radiological Work Permit (RWP), as applicable;
c. Personnel dosimetry."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 2

"Physical controls to prevent inadvertent or unauthorized access to High and Very High Radiation Areas shall be maintained in accordance with Appendix 3B."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 3

"Minimum requirements for unescorted entry into High Radiation Areas shall include the following:
a. Radiological Worker II training (or Radiological Worker I with High/Very High Radiation Area access training in accordance with Article 632.5) and training in the use of a survey meter (or dose rate indicating device), as described in Article 126
b. Worker's signature on the RWP;
c. Personnel and supplemental dosimeters;
d. Survey meter or dose rate indicating device available at the work area."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 4

"Minimum requirements for unescorted entry into High Radiation Areas where dose rates exist such that a worker could exceed a whole body dose of 1 rem in one hour shall include those items listed in Article 334.3 and the following:
a. A determination of the worker's current exposure, based on primary and supplemental dosimeter readings;
b. Pre-job briefing, as applicable;
c. Review and determination by the Radiological Control Organization regarding the required level of Radiological Control Technician coverage."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 5

"Workers shall be prevented from entry to Very High Radiation Areas when the radiation source is exposed and very high radiation fields are present. In addition to the controls required in Articles 334.2 and 334.3, a survey shall be made prior to the first entry to the area after the source has been secured or shielded to verify the very high radiation field has been terminated."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 6

"Facility operations personnel should be notified prior to personnel entry to areas where operational or system changes made by operations personnel could result in significantly increased area dose rates."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 7

"The number, issue and use of keys shall be strictly controlled where locked entryways are used to control access to High and Very High Radiation Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 8

"The Radiological Control Organization should maintain an inventory of High and Very High Radiation Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 334. 9

"Weekly inspections of the physical access controls to High and Very High Radiation Areas should be made to verify controls are adequate to prevent unauthorized entry."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 335.5

"Multiple step-off pads should be used at the exits from High Contamination Areas. Use of multiple step-off pads is described in Appendix 3C."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 336.1

"Site procedures shall identify area entry requirements and access restrictions for visitors."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 336.2

"Visitors with a demonstrated need to enter the following areas may be allowed access if such access is controlled with a combination of training and the use of escorts trained for the specific area:
a. Radiological Buffer Areas;
b. Radiation Areas;
c. Contamination Areas;
d. Radioactive Material Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 336.3

"Visitors shall be prevented from entering Very High Radiation Areas in accordance with Article 334.5 and should be prohibited access to High Radiation, High Contamination and Airborne Radioactivity Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 553.6

"Where an area radiation monitor is incorporated into a safety interlock system the circuitry shall be such that a failure of the monitor shall either prevent entry into the area or prevent operation of the radiation producing device."

11.4.2 Radiation Work Permits

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.1

"Use of Radiological Work Permits
RWPs shall be used to control the following activities:
a. Entry into High and Very High Radiation Areas;
b. Entry into High Contamination Areas;
c. Entry into Airborne Radioactivity Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.2

"RWPs should be used to control the following activities:
a. Entry into Radiation Areas;
b. Entry into Contamination Areas;
c. Handling of materials with removable contamination that exceed the values of Table 2-2."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.3

"Job-specific RWPs shall be used to control non-routine operations or work in areas with changing radiological conditions. The job-specific RWP shall remain in effect only for the duration of the job."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.4

"General RWPs may be used to control routine or repetitive activities, such as tours and inspections or minor work activities, in areas with well-characterized and stable radiological conditions. General RWPs should not be approved for periods longer than 1 year."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.5

"Radiological surveys shall be routinely reviewed to evaluate adequacy of RWP requirements. RWPs shall be updated if radiological conditions change to the extent that protective requirements need modification."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.6

"RWPs should be posted at the access point to the applicable radiological work area."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.7

"Workers shall acknowledge by signature or through electronic means where automated access systems are in place that they have read, understand and will comply with the RWP prior to initial entry to the area and after any revisions to the RWP."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.8

"Worker pocket or electronic dosimeter readings should be recorded in a format that identifies and provides linkage to the applicable RWP."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 322.9

"An alternative formal mechanism, such as written procedures or experiment authorizations, may be used in lieu of an RWP as the administrative control over radiological work activities. If an alternative mechanism is used, it should meet the requirements of this Article and Articles 321 and 323."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 323.1

"Radiological Work Permit Preparation
The responsibility for ensuring adequate planning and control of work activities resides with line management. The lead work group responsible for the planned activity or for the area should initiate the preparation of the RWP."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 323.2

"RWPs shall be reviewed and approved by the Radiological Control Organization."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 323.3

"The RWP shall be based on current radiological surveys and anticipated radiological conditions."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 323.4

"The RWP shall be approved by the supervisor responsible for the work or area and the appropriate Radiological Control supervisor. Revisions or extensions to RWPs shall be subject to the same approval process."

11.5 RADIOACTIVE MATERIALS MANAGEMENT

11.5.1 Storage, Labels and Transportation

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 1

"Radioactive Material Storage
Radioactive material should be stored in a designated Radioactive Material Area."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 2

"Long-term (more than 60 days) storage of radioactive material should be in a specially designated Radioactive Material Area."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 4

"Each Radioactive Material Area should be approved by the Radiological Control Manager."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 5

"A custodian should be assigned responsibility for each Radioactive Material Area. A custodian may have responsibility for more than one storage area."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 6

"The custodian should conduct walkthroughs of Radioactive Material Areas to check container integrity."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 7

"The custodian should conduct annual or more frequent reviews of each Radioactive Material Area, with emphasis on decontamination, movement of material to long-term storage locations and disposal of unneeded material."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 8

"Storage of nonradioactive material in a Radioactive Material Area is discouraged."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414. 9

"Outdoor storage of radioactive material is discouraged. In cases where outdoor storage is necessary, the integrity of containers used shall be ensured to prevent degradation from weathering and subsequent release of radioactive material. The custodian should check container integrity monthly at outdoor Radioactive Material Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414.10

"Radioactive material should be stored in a manner that reduces combustible loading. The use of cardboard containers for storage is discouraged."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414.11

"Flammable or combustible materials should not be stored adjacent to Radioactive Material Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 1, Article 414.12

"Fire protection measures, such as smoke detectors, water sprinklers and fire extinguishers, should be considered when establishing a Radioactive Material Area."

11.5.2 Movement of Material

REQUIREMENT SOURCE: 10CFR835 Part 1101

"The following requirements apply for the release of materials and equipment from radiological areas for use in controlled areas:

(a) In radiological areas established to control surface or airborne radioactive material, material and equipment shall be treated as radioactive material and shall not be released from radiological areas to controlled areas if either of the following conditions exist:

(1) Measurements of accessible surfaces show that either the total or removable contamination levels exceed the values specified in appendix D to this part; or

(2) Prior use suggests that the contamination levels on inaccessible surfaces are likely to exceed the values specified in appendix D to this part.

(b) Material and equipment exceeding the total or removable contamination levels specified in appendix D to this part may be conditionally released for movement on-site from one radiological area for immediate placement in another radiological area only if appropriate monitoring and control procedures are established and exercised.

(c) Material and equipment with fixed contamination levels that exceed the limits specified in appendix D to this part may be released for use in controlled areas outside of the radiological areas with the following provisions:

(1) Removable contamination levels are below the level specified in appendix D of this part; and

(2) Materials shall be routinely monitored, clearly labeled, or tagged to alert personnel of the contaminated status; appropriate administrative procedures shall be established and exercised to maintain control of these items.

(d) The records for release of material and equipment shall describe the property, date on which the release survey was performed, identity of the individual who performed the survey, type and identification number of the survey instrument used, and results of the survey."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 2, Article 422.1

"Release to Uncontrolled Areas
Material in Controlled Areas or Radioactive Material Areas, documented to have been released from Contamination, High Contamination, or Airborne Radioactivity Areas, shall be surveyed prior to release to uncontrolled areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 2, Article 422.2

"DOE 5400.5 describes radiological criteria for releasing material to uncontrolled areas. Material being released shall also be evaluated for internal contamination and contamination under any coatings."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 2, Article 422.3

"DOE 5400.5 describes criteria for releasing radioactive material that has been contaminated in depth or volume, such as activated material or smelted contaminated material."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 2, Article 422.4

"Material not immediately released after survey shall be controlled to prevent contamination while awaiting release."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 2, Article 422.5

"Radiological labeling shall be removed from or defaced on material prior to release for unrestricted use."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 3, Article 431.3

"Receipt surveys of radiological material shipments shall be performed by the Radiological Control Organization."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 554.2

"Surveys for the release of radioactive materials shall be conducted in accordance with Articles 421 and 422."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 554.4

"Items with inaccessible surfaces which were located in known or suspected contamination areas and had the potential to become contaminated at levels likely to exceed Table 2-2 values shall be treated as potentially contaminated and subject to administrative controls unless the items are dismantled and monitored or special survey techniques are used to survey all surfaces."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 554.5

"The requirements for assessing representative samples of bulk material, such as sand, sweeping compounds or plate steel, which are not suitable for normal loose and fixed contamination-level assessment techniques, are specified in DOE 5400.5."

REQUIREMENT SOURCE: DOE5400.5 Chapter II, Section 5.c, Items (1)-(4)

"Release of Materials and Equipment.

(1) Surface Contamination Levels. Prior to being released, property shall be surveyed to determine whether both removable and total surface contamination (including contamination present on and under any coating) is greater than the levels given in Figure IV-1 and that the contamination has been subjected to the ALARA process.

(2) Potential for Contamination. Property shall be considered to be potentially contaminated if it has been used or stored in radiation areas that could contain unconfined radioactive material or that are exposed to beams of particles capable of causing activation (neutrons, protons, etc.).

(3) Surveys. Surfaces of potentially contaminated property shall be surveyed using instruments and techniques appropriate for detecting the limits stated in Figure IV-1.

(4) Inaccessible Areas. Where potentially contaminated surfaces are not accessible for measurement (as in some pipes, drains, and ductwork), such property may be released after case-by-case evaluation and documentation based on both the history of its use and available measurements demonstrate that the unsurveyable surfaces are likely to be within the limits given in Figure IV-1."

11.5.3 Specific Nuclide Control

This subelement also includes requirements for controlling "Hot Particles" (high specific activity individual radioactive particles) which may be encountered at the facility.

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 348.1

"The Site-Specific Radiological Control Manual should define hot particles, such as those capable of producing a shallow dose equivalent greater than 100 mrem in one hour, specific to facility operations and source terms."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 348.2

"Measures for controlling hot particles, as identified in items 3 through 7 of this Article, should be implemented under the following conditions:
a. Upon identification of hot particles;
b. During new or non-routine operations with a high potential for hot particles, based on previous history;
c. Upon direction of the Radiological Control Organization."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 348.3

"Areas or operations with the potential for hot particle contamination should be surveyed in accordance with Article 554.7."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 348.4

"Contamination Area posting should be annotated to specifically identify the presence of hot particles."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 348.5

"Access to hot particle areas should be controlled by a job-specific RWP. The following controls should be considered for inclusion on the RWP:
a. Periodic personnel monitoring during the work activity, at a frequency based on the potential magnitude of skin exposure;
b. Additional Personal Protective Equipment and clothing;
c. Direct Radiological Control coverage during work or assistance during protective clothing removal;
d. Use of sticky pads or multiple step-off pads."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 348.6

"Personal Protective Equipment and clothing used in hot particle areas should be segregated from other radiological protective equipment and clothing during laundering and surveyed prior to reuse."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 348.7

"Response to hot particle skin contamination of personnel should include the following:
a. Immediate removal and retention of the hot particle for subsequent analysis;
b. Analysis of the particle;
c. Assessment of worker dose;
d. Evaluation of work control adequacy."

11.5.4 Sealed Source Management

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 3, Article 431.1

"DOE N 5400.9 (extended by DOE N 5400.10) describes how sealed radioactive sources shall be controlled and maintained, and specifies requirements for receipt, inventory, storage, transfer, disposal and integrity testing. Unsealed sources shall be controlled and maintained in a similar manner except for integrity testing."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 3, Article 431.2

"Procurement of radioactive sources shall be coordinated with the Radiological Control Organization."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 3, Article 431.4

"Radioactive sources, including radiography sources, shall not be brought on-site by external organizations without the prior written approval of the Radiological Control Organization."

11.6 CONTAMINATION CONTROL

11.6.1 Personnel, Equipment and Area Contamination Control

11.6.1.1 Personnel Contamination Monitoring

REQUIREMENT SOURCE: 10CFR835 Part 404(f)

"Appropriate monitoring to detect and prevent the spread of contamination shall be performed by individuals exiting radiological areas established to control removable contamination and/or airborne radioactivity."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 338.1

"Monitoring for Personnel Contamination
Personnel shall perform a whole body frisk under the following conditions:
a. Immediately upon entry into an uncontaminated area after exiting Contamination Areas, High Contamination Areas and Airborne Radioactivity Areas;
b. As directed by the RWP or the Radiological Control Organization."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 338.2

"In addition to the above, personnel exiting a Radiological Buffer Area containing Contamination, High Contamination or Airborne Radioactivity Areas should, at a minimum, perform a hand and foot frisk. This frisk is optional if the Radiological Buffer Area exit is immediately adjacent to the location where the exiting worker has already performed a whole body frisk."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 338.3

"Where frisking cannot be performed at the exit from Contamination Areas, High Contamination Areas or Airborne Radioactivity Areas due to high background radiation levels, personnel shall:
a. Remove all protective equipment and clothing at the exit;
b. Proceed directly to the nearest designated monitoring station;
c. Conduct a whole body frisk."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 338.4

"Personnel frisking shall be performed after removal of protective clothing and prior to washing or showering."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 338.5

"Personnel frisking shall be performed using instruments that meet the minimum detection requirements of Article 221.2. Guidelines for personnel frisking are provided in Appendix 3D."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 338.7

"Personal items, such as notebooks, papers and flashlights, shall be subject to the same frisking requirements as the person carrying them."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 338.8

"Instructions for personnel frisking should be posted adjacent to personnel frisking instruments or monitors."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 4, Article 541.2

"When personnel detect skin contamination, they shall notify the Radiological Control Organization."

11.6.1.2 Personnel Contamination Control

REQUIREMENT SOURCE: 10CFR835 Part 404(g)

"Protective clothing shall be required for entry to areas in which removable contamination exists at levels exceeding those specified in appendix D to this part."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342.11

"To minimize intakes of radioactive material by personnel, smoking, eating, or chewing shall not be permitted in Contamination, High Contamination or Airborne Radioactivity Areas. When a potential exists for personnel heat stress, drinking may be permitted within a Contamination Area under the following conditions and controls:
a. The potential for heat stress cannot be reduced by the use of administrative or engineering controls;
b. All drinking is from approved containers or sources;
c. At a minimum, worker's hands and faces are monitored for contamination prior to drinking.
d. Participating workers are monitored as part of the bioassay program.
e. The applicable requirements and controls are described in approved procedures."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 4, Article 542.1

"Contaminated Wounds
Emergency medical care should be administered immediately for injuries involving radioactive materials in accordance with National Council on Radiation Protection and Measurements Report Number 65. Medical treatment of injuries takes precedence over radiological considerations."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 4, Article 542.2

"The treatment of contaminated injuries should include the following:

a. Treatment of contaminated wounds by medically qualified personnel;

b. Monitoring of wounds and associated bandages for contamination, including alpha emitters if applicable;

c. Identification of the radionuclides involved;

d. Medical determination of the need for therapeutic intervention such as blocking or chelating agents;

e. Initiation of appropriate bioassay monitoring;

f. Determination of need for work restrictions."

11.6.1.3 Equipment and Area Contamination Control

REQUIREMENT SOURCE: 10CFR835 Part 404(b)

"Appropriate controls shall be maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions."

REQUIREMENT SOURCE: 10CFR835 Part 404(c)

"Any area in which contamination levels exceed the values specified in appendix D of this part shall be:

(1) Posted in accordance with § 835.603; and

(2) Controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable contamination levels."

REQUIREMENT SOURCE: 10CFR835 Part 404(d)

"Areas with fixed contamination exceeding the total radioactivity values specified in appendix D of this part may be located outside of radiological areas provided the following conditions are met:

(1) Removable contamination levels are below the levels specified in appendix D of this part;

(2) Unrestricted access to the area is not likely to cause any individual to receive a total effective dose equivalent in excess of 0.1 rem (0.001 sievert) in a year;

(3) The area is routinely monitored;

(4) The area is clearly marked to alert personnel of the contaminated status;

(5) Appropriate administrative procedures are established and exercised to maintain control of these areas; and

(6) Dose rates do not exceed levels which would require posting in accordance with § 835.603."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 1, Part 2, Article 125.10

"Conditions that could cause or promote the spread of contamination, such as a leaking roof or piping, should be identified and corrected on a priority basis."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 2, Article 222.3

"In addition to the posting criteria in Article 235, the conditions for establishing and maintaining Fixed Contamination Areas include all of the following:
a. Radiological surveys shall be performed to detect contamination that may become removable over time.
b. A formal inventory shall be maintained of Fixed Contamination Areas.
c. Markings shall be kept legible.
d. Removable contamination should not exceed Table 2-2 values and should be reduced as far below Table 2-2 as is reasonably achievable before fixative coating is applied.
e. Fixed contamination should be covered with two layers of fixative coatings having different colors.
f. Markings should include the standard radiation symbol, be clearly visible from all directions and contrast with the colors of the surface coatings.
g. Additional coating should be applied when the bottom color appears.
h. A plan for identifying and adding to the inventory of existing areas of fixed contamination not included in the initial inventory should be developed."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 2, Article 222.6

"For contaminated soil that is not releasable in accordance with DOE 5400.5, a Soil Contamination Area shall be established that:
a. Is posted as specified in Article 235. Posting should include instructions or special warnings to workers such as "Consult With Radiological Control Organization Before Digging" or "Subsurface Contamination Exists."
b. Meets the requirements of Article 231.1 through 231.8."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 2, Article 222.7

"Soil Contamination Areas may be located outside a Radiological Buffer Area."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 337.1

"Use solid barriers to enclose areas wherever practicable"

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 337.2

"Mark and secure items such as hoses and cords that cross the boundary"

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 337.3

"Control and direct airflow from areas of lesser to greater removable contamination;"

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 3, Article 337.4

"Use engineering controls and containment devices such as glovebags, gloveboxes and tents."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342. 2

"Tools and equipment should be inspected to verify operability before being brought into Contamination, High Contamination or Airborne Radioactivity Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342. 4

"Engineering controls, such as containment devices, portable or auxiliary ventilation and temporary shielding, should be installed in accordance with the technical work documents and inspected prior to use."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342. 5

"Hoses and cables entering the work area should be secured to prevent the spread of contamination or safety hazards."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 7, Article 372.1

"The use of covers, wind screens and runoff collection basins to preclude the inadvertent spread of radioactive material"

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 7, Article 372.2

"Provisions for worksite personnel to assemble and be monitored prior to release or reestablishment of work."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 7, Article 372.3

"Evaluation of work area to determine if a need exists for modified work controls or decontamination."

11.6.2 Personnel, Equipment and Area Decontamination

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 2, Part 2, Article 222.2

"Surfaces exceeding the values of Table 2-2 for total contamination may be covered with a fixative coating to prevent the spread of contamination. However, reasonable efforts should be made to decontaminate an area before a coating is applied. A fixative coating shall not be applied without the approval of the Radiological Control Manager."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342. 1

"Work Conduct and Practices
Contamination levels caused by ongoing work shall be monitored and maintained ALARA. Work should be curtailed and decontamination performed at preestablished levels, taking into account worker exposure."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 4, Article 342.10

"Requirements for area cleanup should be included in the technical work documents. Work activities should not be considered complete until support material and equipment have been removed and the area has been returned to at least prework status."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 6, Article 463.7

"Facility line management should be responsible for directing decontamination efforts."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 4, Article 541.3

"The extent of skin contamination should be determined prior to initiating decontamination procedures."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 4, Article 541.4

"Skin decontamination methods should be established for site-specific radionuclides. Skin abrasion should be avoided during the decontamination process. Intrusive decontamination methods, such as tissue removal, require medical assistance."

11.6.3 Respiratory Protection Program

Issues related to respiratory equipment and supplies are addressed in Section 11.8.2 "Respiration Equipment and Supplies" (this section includes equipment issuance).

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 316.3

"When engineering and administrative controls have been applied and the potential for airborne radioactivity still exists, respiratory protection should be used to limit internal exposures. Use of respiratory protection should be considered under the following conditions:
a. Entry into posted Airborne Radioactivity Areas;
b. During breach of contaminated systems or components;
c. Work in areas or on equipment with removable contamination levels greater than 100 times the values in Table 2-2;
d. During work on contaminated or activated surfaces with the potential to generate airborne radioactivity."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 1, Article 316.5

"In specific situations the use of respiratory protection may be contraindicated due to physical limitations or the potential for significantly increased external exposure. In such situations, written authorization should be obtained from the line organization manager and the Radiological Control Manager prior to incurring internal exposure. Specific justification of the need to accept the exposure, including a description of measures taken to mitigate the airborne radioactivity, should be documented as part of the authorization process."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 3, Article 531.2

"DOE 5480.4 mandates the requirements contained in ANSI Z88.2 and 29 CFR 1910.134 for implementation of the Respiratory Protection Program and associated training of personnel."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 3, Article 533

"Use of Respiratory Protection
Personnel using respiratory protection shall:
1. Be issued respirators only upon verification of medical approval, training and fit testing.
2. Perform fit checks of their respirators to ensure a proper seal before entering areas requiring respirator use.
3. Be clean shaven in the area of fit.
4. Use corrective lenses, if needed, that are approved for respirators.
5. Be trained to leave the work area when experiencing respirator failure.
6. Be trained to remove their respirators to avoid life-threatening situations when exiting an area after respirator failure."

11.6.4 Source Containment, Confinement, and Ventilation Control

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 5, Article 453.2

"The Radiological Control Organization shall be notified when engineering controls that prevent worker exposure to airborne radioactivity, such as barriers, gloveboxes and glovebags, are compromised. An evaluation should be made of continuing operations with compromised engineering controls. The use of respiratory protection to continue activities under these conditions is discouraged. Implementation of short-term engineering modifications that provide a commensurate level of worker protection is the preferred alternative."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 5, Article 453.3

"Preventive maintenance and surveillance procedures shall be established to ensure equipment controls are maintained in an operable condition for containment of airborne radioactivity."

11.7 LABORATORY ANALYSIS

This element addresses requirements for the appropriate handling and laboratory analysis of samples.

REQUIREMENT SOURCE: DOE/EH0173T Section 6.1.1

"Each monitoring and surveillance organization should have a sample identification system that provides positive identification of samples and aliquots of samples throughout the analytical process. The system should incorporate a method for tracking all pertinent information obtained in the sampling process."

REQUIREMENT SOURCE: DOE/EH0173T Section 6.1.2

"To Prevent incorrect analysis results caused by the spread of contamination among samples, each laboratory should establish and adhere to written procedures to minimize the possibility of cross-contamination between samples. High-activity samples should be kept separate from low-activity samples. In addition, the integrity of samples should be maintained; that is, the degradation of samples should be minimized by using proper preservation and handling practices that are compatible with the analytical methods used."

REQUIREMENT SOURCE: DOE/EH0173T Section 6.2

"To comply with the sample identification system requirement, all pertinent information on the samples and their analysis should be recorded in a permanent laboratory record book and/or computer system with hardcopy backup. The sample identification number should enable tracking of the exact location of the record entry or computer file and indicate the chain of custody for the samples."

REQUIREMENT SOURCE: DOE/EH0173T Section 6.2.3

"High- and low-activity samples should be treated in different laboratories, or at least in separate, distinct locations of the laboratory. The measurements made during sample screening with survey instruments should be among the criteria used to determine which laboratory (location) will receive the sample. Laboratory glassware that has been used in processing highly radioactive samples should be appropriately discarded and not reused. A clean material, such as bench paper, should be used to cover laboratory benches before processing a set of samples. Periodic surveys of gross activity levels in the laboratory should be conducted to detect any contamination that might occur. Detected contamination should be removed by proper decontamination practices. Following physical and chemical treatment of the original samples, the resulting samples should again be sealed in plastic bags before being transported to the counting room for counting."

11.8 RADIATION PROTECTION EQUIPMENT AND SUPPLIES

11.8.1 Monitoring and Survey Instrumentation

The elements within this section are specific to the equipment itself. Requirements relative to surveys performed with the equipment or the monitoring of facility areas using the equipment are included in Section 11.2, Facility Monitoring and Surveys.

REQUIREMENT SOURCE: 10CFR835 Part 401(c)

"Instruments used for monitoring and contamination control shall be:

(1) Periodically maintained and calibrated on an established frequency of at least once per year;

(2) Appropriate for the type(s), levels, and energies of the radiation(s) encountered;

(3) Appropriate for existing environmental conditions; and

(4) Routinely tested for operability."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 5, Article 551. 5

"Instruments used to perform radiation surveys shall be readily available and response-checked daily or prior to operation. When response checks are not within + 20 percent of the expected value, the instrument should be taken out of service. When response checks are not feasible, such as with instruments used to measure neutrons or tritium, compensatory actions should be established to ensure proper instrument performance."

11.8.2 Respiratory Equipment and Supplies

This subelement addresses those requirements related to respiratory equipment and supplies (including issuance). The selection and proper use of respiratory equipment is addressed in Section 11.6.3, Respiratory Protection Program.

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 3, Article 531.4

"Positive controls shall be maintained for the issue, use and return of respirators to ensure that only qualified personnel wear respirators."

11.8.3 Protective Clothing

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.1

"Personal Protective Equipment and Clothing
Personnel shall wear protective clothing during the following activities:
a. Handling of contaminated materials with removable contamination in excess of Table 2-2 levels;
b. Work in Contamination, High Contamination and Airborne Radioactivity Areas;
c. As directed by the Radiological Control Organization or as required by the RWP."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.2

"Protective clothing and shoes designated for radiological control shall be:
a. Marked in accordance with Article 451;
b. Used only for radiological control purposes."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.3

"Protective clothing dress-out areas should be established directly adjacent to the work area. Workers should proceed directly to the radiological work area after donning Personal Protective Equipment and clothing."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.4

"Personal Protective Equipment and clothing shall be selected as prescribed by the controlling RWP. General guidelines for protective clothing selection and use are provided in Appendix 3C and in Table 3-1."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.5

"The use of lab coats as radiological protective clothing is appropriate for limited applications such as those discussed in Appendix 3C where the potential for personal contamination is limited to the hands, arms, and upper front portion of the body. Lab coats should not be used as protective clothing for performing physical work activities in Contamination, High Contamination or Airborne Radioactivity Areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.6

"Instructions for donning and removing protective clothing should be posted at the dress-out and step-off pad areas."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.7

"The use of Personal Protective Equipment or clothing (including respiratory protection) beyond that authorized by the Radiological Control Organization detracts from work performance and is contrary to ALARA principles and waste minimization practices. Such use should not be authorized."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 3, Part 2, Article 325.8

"Company-issued clothing, such as work coveralls and shoes, should be considered the same as personal clothing. Company-issued clothing should not be used for radiological control purposes."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 4, Part 6, Article 462.6

"Cleaned Personal Protective Equipment and laundered protective clothing shall be inspected prior to use. Clothing should be free of tears, separated seams, deterioration and damage, or repaired in a manner that provides the original level of protection."

11.8.4 Equipment Maintenance and Calibration

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 6, Article 562.8

"Instruments whose "as found" readings indicate that the instrument may have been used while out of calibration shall be reported to the Radiological Control Organization. The Radiological Control Organization should review surveys performed with the instrument while it was out of calibration."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 6, Article 563.3

"Radiological instruments shall undergo calibration prior to use following any preventive or corrective maintenance or any adjustment that voids the previous calibration. A battery change is not normally considered maintenance."

REQUIREMENT SOURCE: DOE/EH0256T(940431) Chapter 5, Part 6, Article 564.2

"For organizations that do not possess or use their own calibration facilities, contracted calibration services should be performed in accordance with the referenced standards."

11.9 RADIATION PROTECTION OF THE PUBLIC AND ENVIRONMENT

11.9.1 Dose Limits

Dose limits and other requirements related to general public exposures and exposures from discharges/effluents are included in the Environmental Protection Functional Area.

11.9.2 Liquid Waste Discharges

Requirements which specify control of radioactive liquid discharges to surface waters, aquifers or public sewerage systems are included in the Environmental Protection Functional Area.

11.9.3 Solid Waste Disposal

Requirements which regulate the disposal of solid radioactive waste are included in the Waste Management Functional Area.

11.9.4 Demonstration of Compliance

Requirements for the monitoring and surveillance of radioactive effluents are included in the Waste Management Functional Area and the Environmental Protection Functional Area.

11.10 KEY INTERFACES

Radiation Protection is a unique functional area in that all other functional areas at some time are likely to interface with Radiation Protection in the extension of their prescribed responsibilities. The following sections do not address this type of interface as it is understood that any group which has need to access or otherwise impact a radiologically controlled area will have some level of interface with the Radiation Protection functional area.

11.10.1 Management Systems

An interface to Management Systems is needed to ensure that a commitment to radiation protection and ALARA is incorporated into every aspect of operations at the highest management level.

11.10.2 Quality Assurance

An interface to the Quality Assurance Functional Area is needed to ensure that all requirements for the radiation protection of the workers and the general public and all reporting requirements are properly incorporated into operations.

11.10.3 Configuration Management

Activities in the Configuration Management Functional Area must interface to the Radiation Protection (RP) Functional Area to ensure that current radiation protection systems are not compromised by modifications, and that new activities receive the proper review in case new systems are needed as part of routine surveillance/maintenance and/or as part of D&D activities.

11.10.4 Training and Qualifications

An interface to Training and Qualifications is necessary to ensure that the specific Radiation Protection (RP) training requirements are included in the worker training profiles.

11.10.5 Emergency Planning

Because of the potential for emergency situations involving radioactive material and potential exposure of emergency response personnel, an interface to Emergency Planning is required.

11.10.6 Engineering Program

An Engineering Program and ALARA interface is necessary for the routine review of new construction and modifications required as part of routine surveillance/maintenance and/or as part of D&D activities. This review should include a cost/benefit analysis for radiation exposure reduction features beyond those required by regulatory exposure limits.

11.10.7 Operations

An interface to the Operations Functional Area is needed to ensure that radiation protection and the ALARA principle is incorporated into daily operations.

11.10.8 Maintenance

An interface with the Maintenance Functional Area is needed because the monitoring systems used for radiation protection must have a maintenance plan, and because other areas of maintenance must be aware of potential radiation hazards.

11.10.9 Packaging and Transportation

Physical management of radioactive materials requires an interface to the Packaging and Transportation Functional Area to ensure proper labeling, packaging and transportation of those materials.

11.10.10 Research and Development and Experimental Activities

Although the PFP has R&D activities, requirements for this functional area are located throughout other functional area sections.

11.10.11 Nuclear Safety

Because the Nuclear Safety Functional Area encompasses the operation of nuclear facilities from design through decommissioning, an interface with the Radiation Protection (RP) Functional Area is necessary to ensure that radiation protection standards are incorporated into the nuclear safety program.

11.10.12 Environmental Protection

Because of the requirements for limiting release of radioactive materials to the environment, an interface with the Environmental Protection Functional Area is necessary to ensure a consistent approach to application of environmental protection requirements.

11.10.13 Waste Management

The Radiation Protection Functional Area interfaces with the Waste Management Functional Area by establishing radiological safety requirements for all radioactive Waste Management activity.

11.10.14 Occupational Safety and Health

The Radiation Protection Functional Area, in conjunction with the Occupational Safety and Health Functional Area, establishes policies and procedures to ensure exposures are kept as low as reasonably achievable (ALARA). The Radiation Protection Functional Area and the Occupational Safety and Health Functional Area Coordinate all routine and non-routine activities to ensure employee health and safety.

11.11 REFERENCES

11.11.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this S/RID:

10 CFR 835, Occupational Radiation Protection, 12/13/93.

DOE 5400.5, Radiation Protection of the Public and the Environment, 2/8/90.

DOE/EH0173T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance, 1/91.

DOE/EH0256T, DOE Radiological Control Manual, 4/30/94.

11.11.2 **Reviewed Documents Not Used as Requirement Sources**

The following Documents were reviewed as requirement sources but were not used in the development of this S/RID:

10 CFR 20, Standards for Protection Against Radiation, 12/31/93.

WAC 246-243, Department of Health, 1/1/90.

WAC 402-24, Washington Administrative Code-Standards for Protection against Radiation, 12/31/89.

DOE 5000.3A, Occurrence Reporting and Processing of Operations Information, 5/30/90.

DOE 5400.1, General Environmental Protection Program, 6/29/90.

DOE 5400.9, Sealed Radioactive Source Accountability, 2/8/90.

DOE 5480.1B, Environmental, Safety, and Health Protection Program for DOE Operations, 9/23/86.

DOE 5480.5A, Safety of Nuclear Facilities, 8/2/90.

DOE 5480.15, Department of Energy Laboratory Accreditation Program for Personnel Dosimetry, 12/14/87.

DOE 5480.20A, Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities, 11/15/94.

DOE 5480.24, Nuclear Criticality Safety Program, 8/12/92.

DOE 5483.1B, Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated (GOCO) Facilities, 5/31/89.

DOE 6430.1A, General Design Criteria, 4/6/89.

DOE-EH0256T, U.S. Department of Energy Radiological Control Manual, 6/1/92.

DOE-PNL-6534, Health Physics Manual for Good Practices for Plutonium Facilities, 1988.

ANSI/ASME N510, Testing of Nuclear Air Cleaning Systems, 1980.

ANSI-N13.14-1983, Internal Dosimetry Standard for Tritium, 1983.

ANSI N13.15-1985, Performance of Personnel Thermoluminescence Dosimetry, 1985.

ANSI-N13.27-1981, Performance Requirements for Pocket-Sized Alarm Dosimeters and Alarm Ratemeters, 1981.

ANSI-N42.6-1980, Bases for GM counter tubes interrelationship of Quartz- Fiber Electrometer Type Exposure Meters and Companion Exposure Meter Charges, 1980.

ANSI-N42.9-1972, IEEE Standard Test Procedures for Photomultipliers for Scintillation Counting and Glossary for Scintillation Counting Field, 1972.

ANSI-N42.12-1980, Sodium Iodide Detector Systems, Calibration and Usage, 1980.

ANSI-N42.15-1980, Performance verification of Liquid-Scintillation Counting Systems, 1980.

ANSI-N43.3-1993, Installations using Non-Medical X-Ray and Sealed Gamma Ray Sources - Energies up to 10 Mev, 1/28/93.

ANSI-N322-1977, Inspection and Test Specification for Direct and Indirect Quartz Fiber Pocket Dosimeters 1983.

ICRP 54, Individual Monitoring For Intakes of Radionuclides by workers: Design and Interpretation, 1988.

ICRU 14, Radiation Dosimetry: X-rays and Gamma Rays with Maximum Photon Energies between 0.6 and 50 MeV, 9-15-69.

NCRP 65, Management of Persons Accidentally Contaminated with Radionuclides, 4-15-80.

NCRP 84, General Concepts for the Dosimetry of Internally Deposited Radionuclides, 9-30-85.

NCRP 87, Use of Bioassay Procedures for Assessment of Internal Radionuclide Deposition, 2-28-87.

NUREG-0041, Manual of Respiratory Protection Against Radioactive Materials, 10/76.

NUREG-0761, Radiation Protection for Nuclear Power Plant Licensees, 3/1/81.

TABLE OF CONTENTS

12.0 FIRE PROTECTION 1

12.1 MANAGEMENT AND ADMINISTRATION 3

12.1.1 Management 3
12.1.2 Administrative 4

12.1.2.1 Fire Prevention Procedures 4
12.1.2.2 Assessment Results Tracking Program 4
12.1.2.3 Interim Compensatory Measures 5
12.1.2.4 Operability Specifications 5
12.1.2.5 Emergency Planning 5
12.1.2.6 Training 5
12.1.2.7 Communications 5

12.2 FIRE PROTECTION PROGRAM 5

12.2.1 Fire Protection 6

12.2.1.1 Fire Hose and Standpipe 6

12.2.2 Fire Protection Suppression Systems 6

12.2.2.1 Automatic Fire Suppression Provisions 8

12.2.2.1.1 Automatic Sprinkler Systems 10
12.2.2.1.2 Wet Pipe Systems 11
12.2.2.1.3 Dry Pipe Systems 11
12.2.2.1.4 Preaction 11
12.2.2.1.5 Deluge 11
12.2.2.1.6 Self-Restoring 12
12.2.2.1.7 Quick-Response Sprinklers 12

12.2.2.2 Special Fire Suppression Systems 12
12.2.2.3 Control of Liquid Runoff 12

12.2.3 Water Supply and Distribution Systems 13

12.2.3.1 Water Supply Systems 13

12.2.3.1.1 Fire Hydrant Capacity 13
12.2.3.1.2 Fire Hydrant Spacing and Location 14
12.2.3.1.3 Air Release and Vacuum Valves 14
12.2.3.1.4 Distribution Systems Mains Depth 14
12.2.3.1.5 Water Distribution Loop Systems 14
12.2.3.1.6 Sprinkler Supply Lead-Ins 14
12.2.3.1.7 Combined Fire and Domestic Process Water Systems . . . 15
12.2.3.1.8 Key Operated Buried Valves 15
12.2.3.1.9 Sprinkler Systems Lead-Ins and Fire Hydrants 15

12.2.3.1.10 Piping Protection Against Differential Settlements 15
12.2.4 Passive Fire Protection 15
12.2.4.1 Fire Barrier Design Requirements 15
12.2.5 Life Safety 16
12.2.5.1 Facility Buildings 16
12.2.5.1.1 Life Safety for Laboratories 17
12.2.5.1.2 Egress 17
12.2.5.1.3 Corridor Widths 17
12.2.5.1.4 Door Encroachment 17
12.2.5.1.5 Security Areas 17
12.2.5.1.6 Zoning for Automatic Control 18
12.2.5.1.7 Life Safety in Hazardous Areas 18
12.2.6 Improved Risk Facilities 19
12.2.7 Decommissioning Planning 19
12.2.8 Construction 20
12.2.9 Fire Alarm Systems 21
12.2.9.1 Fire Detection and Alarm Systems Design, Installation, Inspection, and Testing 21
12.2.9.2 Fire Alarm System Features 22
12.2.9.3 Compatibility of Alarm Systems 22
12.2.9.4 Fire Watch and Alarm Systems 22
12.2.9.5 Underground Cables for Alarm Systems 23
12.2.10 Fire Detection Systems 23
12.3 FIRE HAZARD ANALYSIS 23
12.4 FIRE PREVENTION (BUILDING DESIGN) 24
12.4.1 Performance Objectives in the Design of DOE Facilities 24
12.4.2 Exterior Fire Protection Systems and Features 25
12.4.3 Fire Resistance for Materials and Construction 25
12.4.4 Control of Combustibles 25
12.4.4.1 Interior Finish Materials 25
12.4.4.2 Interior Floor Coverings 25
12.4.4.3 Control of Combustible Materials by Building Design 25
12.4.4.4 Quantities of Stored Materials 26
12.4.4.5 Fire and Explosion Potential of the Materials 26
12.4.5 Electrical Systems 26
12.4.5.1 Ignition Source by Electrical Equipment 26
12.4.5.2 Conduits 26

12.4.5.3 Redundant Electric Circuits 27

12.4.6 Exhaust and Ventilation Systems 27

12.4.6.1 Ductwork and Air Ventilation Systems 27
12.4.6.2 Smoke Pressurization and Evacuation Systems 27
12.4.6.3 Confinement Systems Function During the DBF 27
12.4.6.4 Confinement Systems and Fire Protection 28
12.4.6.5 Design Features for Lower Flammability Limit 28
12.4.6.6 HEPA Filters 28

12.4.7 Lightning Protection 28
12.4.8 Seismic Requirements 29
12.4.9 Safety Class Equipment 29

12.5 FIRE, HAZMAT AND MEDICAL SUPPORT 29

12.6 ASSESSMENT 29

12.6.1 Control of Fire Protection Impairments 33

12.7 KEY INTERFACES 34

12.7.1 Configuration Management 34
12.7.2 Engineering Program 34
12.7.3 Emergency Management 34
12.7.4 Training and Qualification 34
12.7.5 Nuclear Safety 34
12.7.6 Occupational Safety and Health 35
12.7.7 Management Systems 35

12.8 REFERENCES 35

12.8.1 Requirement Source Documents 35
12.8.2 Reviewed Documents Not Used as Requirement Sources 35

12.0 FIRE PROTECTION

INTRODUCTION

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

The PFP S/RID contains standards/requirements that are necessary for safe operation of the PFP and its associated facilities, and that are the direct responsibility of the specific facility manager. The Fire Protection Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to PFP, but are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words "shall" and "should" in requirements statements both indicate mandatory compliance. The Key interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements. Additionally, some of the requirements cited in this document are intentionally duplicated in the corresponding Company Level S/RID. This was necessary to address required implementation responsibilities occurring at both the company and facility levels.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

12.1 MANAGEMENT AND ADMINISTRATION

12.1.1 Management

REQUIREMENT SOURCE: 29CFR1926 Part 150(a)(2)

"Access to all available firefighting equipment shall be maintained at all times."

REQUIREMENT SOURCE: 29CFR1926 Part 150(a)(3)

"All firefighting equipment, provided by the employer, shall be conspicuously located."

REQUIREMENT SOURCE: 29CFR1926 Part 150(a)(4)

"All firefighting equipment shall be periodically inspected and maintained in operating condition. Defective equipment shall be immediately replaced."

REQUIREMENT SOURCE: DOE5480.7A Section 8.i

"As required by the PSO or the Heads of Field Organizations and directed by the Contracting Officer, contractors shall be required to:

(1) Provide and maintain a level of fire protection to meet the objectives of paragraph 4, and the criteria of paragraph 9.

(2) Provide and maintain a system to ensure that the requirements of the DOE fire protection program are documented and incorporated in the plans and specifications for all new facilities and for major modifications of existing facilities. This includes review and comment by a qualified fire protection engineer of plans, specifications and test procedures and results for fire protection features.

(3) Assists DOE in coordinating fire safety assessments at those facilities included in the survey program, establish action plans for compliance with recommendations resulting from the assessments, and forward compliance plans, exemption requests, and other requested data to DOE field organizations.

(4) Establish and maintain a list of facilities for which the contractor has fire protection assessment responsibility.

(5) Conduct fire protection assessments of facilities according to the scope and frequency established by this Order.

(6) Provide fire protection technical assistance to DOE.

(7) Submit request for exemptions and fire safety equivalencies to the Head of the Field Organization for those facilities where compliance with specific program elements is not attainable and where an acceptable level of safety has been achieved.

(8) Maintain or have access to an adequate fire protection staff, including a qualified fire protection engineer(s). Continuing education and training should be provided to maintain and enhance the level of competency of the fire protection staff."

12.1.2 Administrative

Author's Note: The requirements implementation is the joint responsibility of the site and facility.

REQUIREMENT SOURCE: DOE5480.7A Section 9(1)

"A DOE facility shall be characterized by a level of fire protection sufficient to fulfill the requirements for the best protected class of industrial risks (Highly Protected Risks/Improved Risks). This program is characterized by the inclusion of a continuing, sincere interest on the part of management and employees in minimizing losses from fire and related perils and the inclusion of preventive features necessary to ensure the satisfaction of objectives related to safety."

REQUIREMENT SOURCE: DOE5480.7A Section 9(2)

"Based on the above paragraph the DOE Fire Protection Program shall meet or exceed the minimum requirements established by the National Fire Protection Association as directed by the PSO. Basic requirements shall include: a reliable water supply of acceptable capacity for fire suppression; noncombustible construction of an acceptable nature for the occupancy of the facility; automatic fire extinguishing systems; a fully staffed, trained, and equipped emergency response force; a means to summon the emergency response force in the event of a fire; and a means to notify and evacuate building occupants in the event of a fire. For areas subject to significant life safety risks, serious property damage, program interruption, or loss of safety class equipment as defined in the relevant facility SAR, additional protection measures may be necessary as determined by the AHJ."

REQUIREMENT SOURCE: DOE5480.7A Section 9(3)

"This level of protection also includes: administrative procedures encompassing controls for hazardous substances/processes; inspection, maintenance, and testing of fire protection features; and other programmatic fire safety and activities as defined below."

12.1.2.1 Fire Prevention Procedures

REQUIREMENT SOURCE: DOE5480.7A Section 9.c.(1)

"Fire Prevention Procedures. Facilities shall have procedures governing the use and storage of combustible, flammable, radioactive and hazardous materials as to minimize the risk from fire. Such procedures shall also exist for activities, such as smoking limitations, isolation of hot work, and other fire prevention measures, which contribute to the decrease in fire risk."

12.1.2.2 Assessment Results Tracking Program

REQUIREMENT SOURCE: DOE5480.7A Section 9.c.(2)

"Assessment Results Tracking Program. There shall be a program to identify, prioritized and monitor the status of fire protection related assessment findings/recommendations until resolution is achieved. Resolution could be achieved by either: plant modification, procedure change, fire safety equivalency, or exemption."

12.1.2.3 Interim Compensatory Measures

REQUIREMENT SOURCE: DOE5480.7A Section 9.c.(3)

"Interim Compensatory Measures. When final resolution of a finding/recommendation will be significantly delayed because of funding, scheduling, or other considerations, appropriate interim compensatory measures (e.g., fire watches, fire patrols, enhanced hazards control procedures, temporary fire protection features) shall be implemented to minimize the fire risk."

12.1.2.4 Operability Specifications

REQUIREMENT SOURCE: DOE5480.7A Section 9.c.(4)

"Operability Specifications. Minimum requirements to establish "operability" shall be developed for fire protection features such as: fire doors, fire dampers, fire detection and suppression systems, fire protection water supplies, etc. Periodic tests, conducted to satisfy the applicable NFPA codes and standards or other DOE criteria shall confirm that these features are operable. If fire protection will be inoperable for a significant period of time, interim compensatory measures shall be implemented until operability is restored."

12.1.2.5 Emergency Planning

REQUIREMENT SOURCE: DOE5480.7A Section 9.c.(5)

"Emergency Planning. Information from the fire protection program shall be incorporated in the Emergency Plan. The facility fire protection organization shall be involved in the development of the Emergency Plan and in all related training and drills."

12.1.2.6 Training

Author's Note: Refer to the WHC Site Fire Protection Functional Area document for requirements pertaining to Fire Protection.

12.1.2.7 Communications

REQUIREMENT SOURCE: DOE5480.7A Section 9.c.(7)

"Communications. Emergency communications shall be outlined in the emergency plan. The communications capability among potential responders to an emergency shall be coordinated to avoid confusion and interference. This capability shall be tested on a frequency established by the authority having jurisdiction in accordance with DOE criteria."

12.2 FIRE PROTECTION PROGRAM

Author's Note: Per DOE 5480.7A, this order has primacy over all other DOE Orders with respect to matters concerning Fire Protection.

REQUIREMENT SOURCE: DOE5480.7A Section 5 Introduction, and 5.a thru 5.h

"5. MANDATORY FIRE PROTECTION CRITERIA. Fire protection criteria, delineated in the following codes, standards and other documents are the minimum requirements for the implementation of the DOE Fire Protection Program. These criteria are mandatory as a result

of statutory requirements or DOE policy requirements. Where conflicts in the application of these codes and standards arise, the more restrictive requirements apply.

a. Code of Federal Regulations (CFR) 29, Part 1910.

b. CFR 29, Part 1926.

c. National Fire Protection Association (NFPA) Codes and Standards.

d. DOE 5480.4, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION STANDARDS, of 5-15-84, which specifies requirements for the application of environmental protection, safety, and health standards.

e. DOE 6430.1A, GENERAL DESIGN CRITERIA, of 4-6-89, which provides general design criteria for use in the acquisition of the Department's facilities.

f. DOE/EP-0108, "Standard for Fire Protection of AEC Electronic Computer Data Processing Systems".

g. DOE/EV-0043, 8-79, "Standard on Fire Protection for Portable Structures".

h. Other DOE Orders and statutory requirements, not listed above, that contain requirements of a more limited extent relating to the DOE Fire Protection Program."

12.2.1 Fire Protection

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(5)

"Testing and Maintenance - Fire protection systems shall be tested and maintained in accordance with the applicable NFPA standards and as supplemented by criteria in the DOE Fire Protection Resource Manual."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 2.d

"Gloveboxes handling hazardous or radioactive materials shall be protected from the effects of fire. The level of protection required shall be determined using the Glovebox Fire Protection Criteria contained in the DOE Fire Protection Resource Manual."

12.2.1.1 Fire Hose and Standpipe

REQUIREMENT SOURCE: RLID5480.7 Section 8. 1.e

"Nuclear facility containment/confinement structures shall be provided with fire department standpipe connections, to help maintain the integrity of the confinement structure during manual fire fighting efforts."

12.2.2 Fire Protection Suppression Systems

REQUIREMENT SOURCE: WAC-212-80 Section 010

"Definitions. The following definitions shall apply to this regulation:

(1) "Authority having jurisdiction (AHJ)" means the organization, office, or individual responsible for approving layout drawings, equipment, an installation or a procedure. Usually the AHJ is the building and/or fire official of the city or county in which the job site is located. In certain cases, such as health care facilities, transient accommodations and day care facilities, the AHJ is the city or county building and/or fire official and the director of fire protection.

(2) "Director of fire protection" means the state fire marshal or his/her authorized representative.

(3) "Fire protection sprinkler system" means an assembly of underground and/or overhead piping beginning at the connection to the primary water supply, whether public or private, that conveys water with or without other agents to dispersal openings or devices to extinguish, control, or contain fire or other products of combustion. The fire protection sprinkler system should start at the point where the last nonfire water use is taken from the supply mains. This should be the point just down stream of the last tap for domestic or process water, the last water control valve that is required by a city or other authority, or the point where the water can be considered nonflowing. The water source such as a fire pump and suction tank that is dedicated to supplying water for the fire protection sprinkler system shall be under the control of the fire protection sprinkler system contractor. This would also be the case where the water supply is entirely dedicated to the fire protection sprinkler system.

(4) "NFPA" means the National Fire Protection Association.

(5) "NFPA 13D" means, in addition to the definition contained in chapter 18.160 RCW, the inclusion of minor accessory uses such as garages normally found in residential occupancies.

(6) "NICET" means the National Institute for Certification in Engineering Technologies.

(7) "State fire marshal" means the director of fire protection or his/her authorized representative.

(8) "State Level I certification" means a certificate of competency holder who is qualified to prepare layout drawings, install, inspect, maintain, or service an NFPA 13D fire protection sprinkler system or any part of such a system.

(9) "State Level II certification" means a certificate of competency holder who is qualified to prepare layout drawings, install, inspect, maintain, or service an NFPA 13D and/or NFPA 13R fire protection sprinkler system or any part of such a system.

(10) "State Level III certification" means a certificate of competency holder who is qualified to prepare layout drawings, install, inspect, maintain, or service an NFPA 13D, NFPA 13R, NFPA 13, or all other systems per the definition of fire protection sprinkler system in chapter 18.160 RCW.

(11) "State Level U certification" means a certificate of competency holder who is qualified to certify the installation of the underground portions of fire protection sprinkler systems in conformance with recognized standards adopted by the director of fire protection."

REQUIREMENT SOURCE: WAC-212-80 Section 015

"Compliance. All fire sprinkler system contractors, certificate of competency holders, and persons installing, inspecting, maintaining, or servicing fire protection sprinkler systems or any part of such a system shall comply with the provisions of this regulation.
exceptions:

(1) Federal, state, and local government employees, or insurance inspectors when acting in their official capacities.

(2) A person or organization acting under court order.

(3) A person or organization that sells or supplies products or materials to a licensed fire protection sprinkler system contractor.

(4) A registered professional fire protection engineer acting solely in a professional capacity.

(5) An employee of a licensed fire protection sprinkler system contractor performing duties for the contractor.

(6) An owner/occupier of a single-family residence performing his or her own installation in that residence. It is the intent of this subsection that builders or contractors will not install their own sprinkler systems in single-family residences under their ownership which they plan to sell, lease, or rent.

(7) An employee of a licensed electrical contractor testing only the electronic signaling devices of a fire sprinkler system."

12.2.2.1 Automatic Fire Suppression Provisions

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(3)

"Automatic Fire Protection - Complete automatic fire suppression systems designed in accordance with applicable NFPA standards shall be provided as follows:

(a) In all new structures over 5000 square feet

(b) In all structures having an MPFL in excess of $1,000,000. or where the maximum credible fire will result in the loss of use of a vital structures for a period longer than that specified as acceptable by the applicable PSO."

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(4)

"Redundant Fire Protection -

(a) When the MPFL exceeds $50 million, a redundant fire protection system is provided that, despite the failure of the primary fire protection system, will limit the loss to $50 million.

(b) When the MPFL exceeds $150 million, a redundant fire protection system and a 3-hour fire barrier are required to limit the maximum possible fire loss to $150 million."

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(14)

"Halon Usage - Future use of Halon will be governed under the conditions set forth in the DOE memorandum "Interim Position on the Installation of New Halon 1301 Fixed Fire Suppression Systems and Halon 1211 Portable Fire Extinguishers dated September 27, 1990, and superseding documents."

REQUIREMENT SOURCE: DOE6430.1A Division 11, Section 1161-3

"Automatic fire suppression provisions shall comply with DOE 6430.1A, Section 1530-99, Special Features. When an automatic fire suppression system is mandatory and protection against loss from fire originating within the enclosure system is required, a highly reliable, fast-acting system shall be provided. Instead of such a system, an inert atmosphere can be used with in the enclosure, provided its reliability is commensurate with and approved fire suppression system (e.g. dedicated gas supply, component quality and redundancy where appropriate). The oxygen concentration shall be less than the minimum concentration that would allow ignition or combustion of the enclosure contents. Where automatic systems are not required, fire detection shall be installed. Fire detection systems shall be integrated with any central alarm location and any associated automatic fire suppression systems."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[02]

"Fire protection systems shall not:

(1) prevent a facility from achieving and maintaining a safe shutdown condition,

(2) prevent the mitigation of DBA consequences, or

(3) cause an inadvertent nuclear criticality."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[03]

"Total reliance shall not be placed on a single fire suppression system. Appropriate backup capability shall be provided."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[04]

"To ensure that redundant safety class components shall be capable of performing the necessary safety functions, the facility design shall provide appropriate separation against fire, explosion, and failure of fire suppression systems."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[05]

"Fire protection systems, or portions of them, that must function to control effects of a DBA event (as determined by safety analysis accident scenarios) shall be designed to be functional for all conditions included in the accident scenario. This shall include both the event initial cause and its consequences."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[07]

"The operation or failure of a fire protection system that interfaces with a safety class system, such as a safety class water system, shall not prevent the safety class system from completing its safety functions when required. Wherever practical, special facilities shall be designed and constructed using building components of fire-resistant and noncombustible material, particularly in locations vital to the functioning of confinement systems. To the extent practicable, combustible materials shall not be used in the construction of process system confinement barriers."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[09]

"When the use of water sprinkler coverage is precluded because of nuclear criticality or other hazards, nonaqueous extinguishing systems (i.e., inert gas, carbon dioxide, high-expansion foam, or halogenated organics) shall be used."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[10]

"Fire protection systems shall be designed so that the failure of any active component (equipment or control device) shall not disable the fire protection system. Fire protection systems and components shall have fail-safe features and audible and visual alarms for operability and trouble indications."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[16]

"Automatic water sprinkler coverage shall be provided throughout the facility except in areas where nuclear criticality or other hazards specifically preclude its use or where Halon systems are required to reduce equipment damage."

12.2.2.1.1 *Automatic Sprinkler Systems*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530- 9[08]

"Sprinkler risers should be located at an exterior wall. Sprinkler supply lead-ins should run under buildings the minimum distance possible. Where a riser must be located in a potentially contaminated area, consideration should be given to locating the riser exterior to the building in a heated enclosure."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-3.1

"Total volume, pressure, and design flow rate of water necessary to provide fire protection for facilities shall be determined by the methods described in the following paragraphs. All sprinkler or other automatic fire suppression system components shall be UL- or FM-approved for the particular application chosen."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-3.2

"NFPA 13 shall be used to determine the Occupancy Hazard Classification for any facility. Light hazard occupancy rules are prohibited."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-3.3.1, Paragraph 2

"Precautions shall be taken to ensure that adequate residual pressure exists at full demand flow rate to fulfill the density and coverage requirements for schedule-designed systems. If water supply or pressure is marginal the pressure loss from the base of the riser to the most remote head should be calculated to confirm that the schedule designed-system will meet requirements, or the system shall be hydraulically designed."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-3.3.2

"NFPA 13 shall be used to determine water supply requirements for hose streams (gpm) and duration (min). Density curves presented in NFPA 13 shall be used for calculating sprinkler demand for hydraulically designed systems. For hazard classifications not covered in NFPA

13 and certain other special occupancies or hazards, design density and area of coverage shall be as specified by other more appropriate standards referenced in NFPA 13 or project-specific requirements as determined by the cognizant DOE fire protection engineer. For ordinary hazard occupancies and above, hose stream requirements shall be a minimum of 500 gpm regardless of the hose stream demands listed in the above references unless otherwise specified by the DOE project criteria.

Determination of adequacy of water supply shall be made on the basis of actual flow test data gathered using the methods in NFPA 13, Appendix B."

12.2.2.1.2 ***Wet Pipe Systems***

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-4.2.1

"Sprinkler systems shall normally be wet pipe using pipe schedule sizes listed in NFPA 13 for ordinary installations. Hydraulic designs shall be considered for all systems. The system shall be hydraulically designed where residual pressure is marginal, water application rate is high, response time is critical, or special risks are involved."

12.2.2.1.3 ***Dry Pipe Systems***

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-4.2.2

"In unheated areas or other areas subject to freezing temperatures, dry pipe systems shall be provided. Because of the time delays associated with release of the air in the system, water demands for dry pipe systems shall be computed over areas 30 percent greater than for comparable wet pipe systems. Where the unheated area is small it may be cost effective to install an antifreeze system or small dry pipe system supplied from the wet pipe system in the main heated area."

12.2.2.1.4 ***Preaction***

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-4.2.3

"A preaction system shall be used where it is particularly important to prevent the accidental discharge of water. Need for a preaction system shall be based on review by and recommendation of a professional fire protection engineer. The detection system chosen to activate the preaction valve shall have high reliability and a separate alarm/supervisory signal to indicate status. The detection system must be designed to be more sensitive than the closed sprinklers in the preaction system, but should not be so sensitive as to cause false alarms and unnecessary actuation of the preaction valve."

12.2.2.1.5 ***Deluge***

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-4.2.4

"For extra hazard areas and specific hard-to-extinguish fuels such as explosives and pyrophoric metals, a deluge system with open sprinkler heads may be used to set down the entire protected area simultaneously. Deluge systems shall comply with NFPA 13. If quick response is required, deluge system piping may be primed with water. The nozzles must be provided with blow-off caps for water-filled deluge systems."

12.2.2.1.6 *Self-Restoring*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-4.2.5

"Self-restoring sprinkler systems, such as the on-off multicycle system or systems using individual on-off sprinkler heads, shall be considered where the water from sprinklers will become contaminated by contact with room contents, where there is a concern for water damage, or where water supply or storage volume is marginal."

12.2.2.1.7 *Quick-Response Sprinklers*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-4.2.6

"Where there are high-value concentrations (values per square foot), quick-response sprinklers shall be considered in lieu of conventional sprinklers."

12.2.2.2 Special Fire Suppression Systems

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(13)

"Special Hazard Protection - Hazards unique to DOE and not addressed by mandatory codes and standards listed in Paragraph 5 shall be protected by isolation, segregation or use of special fire control systems (inert gas, explosion suppression, etc) as determined by the AHJ. In addition devices for limiting or controlling the effects of a fire (relief valves, filters, blast walls, emergency shutdown systems, scuppers, etc.) shall be provided."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-5.1[1]

"Special protection systems may be used to extinguish or control fire in easily ignited, fast-burning substances such as flammable liquids, some gases, and chemicals. They shall also be used to protect ordinary combustibles in certain high-value occupancies especially susceptible to damage. Special protection systems supplement automatic sprinklers as described by NFPA and shall not be used to substitute for them except where water is not available for sprinkler protection. The added expense of the supplementary system shall be supported by documented justification."

12.2.2.3 Control of Liquid Runoff

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(10)

"Liquid Run-off Control - Natural or artificial means of controlling liquid run offs from a maximum credible fire shall be provided so that contaminated or polluting liquids will not escape the site, including potentially contaminated water resulting from fire fighting operations. The amount of fire water that must be controlled and the design of the containment system shall be determined based on consultations with the cognizant DOE fire protection engineer."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1540-99.0.2[1]

"Collection systems shall be provided for water runoff, such as from firefighting activities, from areas within special facilities containing radioactive material. Nuclear criticality prevention (if necessary) confinement, sampling, volume determination, and retrievability of liquids and solids shall be provided for in the design of collection systems. The size of the collection system for firefighting water shall be based on the maximum amount of water that would be collected in fighting the DBF. The configuration of the system components shall be

based on conservative assumptions as to the concentration of fissile or other materials capable of sustaining a chain reaction that might collect in the system. Recirculating systems shall also be considered when there is no possibility of contamination."

12.2.3 Water Supply and Distribution Systems

12.2.3.1 Water Supply Systems

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1540-99.0.5

Author's Note: The requirement is the joint responsibility of the site and facility.

"On-site water supplies and other utilities shall be provided as necessary for emergency use. The design of each utility service or cooling water system shall consider the demands for normal operations, anticipated operational occurrences, and DBA conditions."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 9

"The Fire Protection Program must include a fire protection system winterization program to ensure that fire protection systems are protected against cold weather effects. The winterization program shall require that:

a. Each operation or facility with fire protection systems is inspected annually, prior to the month of November, to ensure that freeze protection systems are provided where fire suppression systems, subject to damage by freezing, are located.

b. As a minimum, fire protection system auxiliary drains, drip lines, fire pump test headers, and fire department connections are adequately drained to prevent fire system freeze up. The program shall also ensure that dry pipe system air pressures are normal, and air compressors and air maintenance devices for dry systems are operational.

c. Heating systems utilizing fuel systems have an adequate supply of fuel and a strategy to replenish fuel supply during cold weather periods.

d. Freeze protection systems are properly functioning throughout the freezing weather period."

12.2.3.1.1 Fire Hydrant Capacity

Author's Note: This requirement is the joint responsibility of the site and facility.

REQUIREMENT SOURCE: DOE6430.1A Division 2, Section 0266-4[03]

"Each fire hydrant within the distribution system must be capable of delivering 1000 gpm at a residual pressure of not less than 10 psi. Where domestic water distribution systems are to serve internal fire protection systems (i.e. sprinklers or foamite systems), adequate residual pressures shall be maintained for proper operation of such fire protection systems."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-3.3.3

"Where reliance is placed on fire department response, either for protection of unsprinklered buildings or where the fire department will serve as redundant (backup) protection, as a general rule the water supply should be adequate to supply at least 0.03 gpm per cubic foot of fuel (building and contents) in the largest fire area (for high-BTU-content fuels, convert to

equivalent ordinary BTU loads). This water supply should be available at 20 psig residual pressure at the hydrants."

12.2.3.1.2 *Fire Hydrant Spacing and Location*

REQUIREMENT SOURCE: DOE6430.1A Division 2, Section 0266-4[09]

"Fire hydrants shall be installed at a maximum spacing of 400 feet. Fire hydrants shall not be located more than 300 feet from the building to be protected. Each building shall be protected by a minimum of two hydrants."

12.2.3.1.3 *Air Release and Vacuum Valves*

REQUIREMENT SOURCE: DOE6430.1A Division 2, Section 0266-4[10]

"Air release and vacuum valves shall be installed, as necessary at high points within the distribution system and long supply mains."

12.2.3.1.4 *Distribution Systems Mains Depth*

REQUIREMENT SOURCE: DOE6430.1A Division 2, Section 0266-4[11]

"Distribution system mains shall have a minimum depth of cover of 2-1/2 feet, Additional cover shall be provided to prevent freezing in cold climates, at roadway crossings in high traffic areas, and at railroad crossings."

12.2.3.1.5 *Water Distribution Loop Systems*

REQUIREMENT SOURCE: RLID5480.7 Section 8. 1.b

"Sectional valves shall be installed in the following manner for new installations and water distribution main upgrades:

(1) Multiple sectional isolation valves shall be provided at each intersection between a supply source and a main loop (one valve for each leg).

(2) Sectional valves shall be installed in accordance with a point system, such that no more than six points accumulate between sectional valves. The points for this arrangement are: one point for a fire hydrant, and two points for a automatic sprinkler system."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 1.c

"Water supplies for fire protection shall be of the looped grid type, providing two points of supply and two-way flow with sectional valving arranged to provide alternate water flow paths from the source to any point in the distribution system, where MPFL exceeds $1 million."

12.2.3.1.6 *Sprinkler Supply Lead-Ins*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-9[06]

"Sprinkler supply lead-ins should be at least 6 inches, except lead-ins of 4 inches may be used for very small sprinkler systems when substantiated by hydraulic calculations. In no case shall the lead-in be smaller than the sprinkler riser."

12.2.3.1.7 *Combined Fire and Domestic Process Water Systems*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530- 9[07]

"Where combined fire and domestic-process water systems are used, the supplies to each building shall be arranged and valved so that the domestic and process systems can be shut down without shutting off the fire system supply."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1540-1.1[2]

"Domestic water shall be supplied by a separate service line and not be a combined fire protection and potable water service or a combined process water and potable water system within the building."

12.2.3.1.8 *Key Operated Buried Valves*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530- 9[10]

"Key-operated buried valves shall not be used for sprinkler control valves. In no case shall there be more than one valve controlling a sprinkler supply lead-in."

12.2.3.1.9 *Sprinkler Systems Lead-Ins and Fire Hydrants*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530- 9[11]

"All lead-ins shall be connected with the sprinkler system at the base of the riser. Alarm valves shall be located as close as practical to the building entry point. Hydrants shall be provided so that hose lays from hydrants to all exterior portions of a protected building are no more than 300 feet. Hydrants shall not be closer to buildings than 50 feet."

12.2.3.1.10 *Piping Protection Against Differential Settlements*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1540-1.3.1[7]

"Where domestic or fire water service lines enter buildings, suitable flexibility shall be provided to protect against differential settlement or seismic activity in accordance either the NSPC or NFPA 13, respectively."

12.2.4 **Passive Fire Protection**

REQUIREMENT SOURCE: RLID5480.7 Section 8. 2.b

"A program for the inspection and/or testing and maintenance of fire doors, fire dampers, and fire walls or separations shall be developed and implemented for each contractor."

12.2.4.1 Fire Barrier Design Requirements

Author's Note: Additional Fire Barrier Design requirements can be located in Section 12.2.2.1 Automatic Fire Suppression Provisions.

REQUIREMENT SOURCE: DOE6430.1A Division 7, Section 0727

"Firestopping shall comply with NFPA 101, Chapter 6.

Firestopping materials and assemblies shall be tested for their fire resistance and listed by UL or similar nationally accredited testing laboratories, or shall be listed for their resistance as approved by FM or similar national insurance organizations. Unrated and unapproved assemblies shall be tested and approved before being considered for use in a DOE facility.

Where fire-rated assemblies (walls, floor-ceilings, roof-ceilings) are either partially or fully penetrated by pipes, ducts, conduits, or other such building elements, firestopping material shall be placed in and around the penetrations to maintain the fire resistance rating of the assembly."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[19]

"Where fire barriers are penetrated by the confinement system's ventilation ducting, fire dampers shall be appropriately used to maintain the barrier integrity. However, the closure of such dampers shall not compromise the functions of the confinement system where the loss of confinement might pose a greater threat than the spread of fire. In such cases, alternative fire protection means (e.g., duct wrapping) shall be used as a substitute for fire barrier closure. In no case shall a sprinkler system (including safety class sprinklers) be considered a fire barrier substitute."

REQUIREMENT SOURCE: DOE6430.1A Division 16, Section 1605-2.1.1

"Raceways that penetrate fire-assemblies shall be noncombustible. The complete installation shall be suitably sealed to maintain the established fire ratings as defined in UL Building Material Directory and UL 1479. Raceways shall be 1/2 inch minimum in diameter. Raceways embedded in concrete or masonry shall be 3/4 inch minimum and shall be adequate in number and capacity for the initial and projected facility requirements."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 2.a

"Fire rated assemblies shall be installed, as required in DOE 6430.1 version in effect and other applicable standards, to reduce loss potentials."

12.2.5 Life Safety

12.2.5.1 Facility Buildings

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(2)

"Life Safety - Life safety provisions shall be provided for all facilities in accordance with the Life Safety Code (LSC), NFPA Standard 101. The methods outlined in NFPA 101M may be used to obtain an equivalent level of life safety where strict compliance is not possible. Exit requirements for toxic and explosive environments shall be as determined by the AHJ. In addition, for explosive environments, exits shall reflect the criteria contained in the DOE Explosives Safety Manual, (DOE/EV 06194). Where noncompliance with some Life Safety Code provisions may be required for public safety, as in some containment structures, additional protective systems and personnel limits should be maintained. Compliance with the Life Safety Code shall be considered to satisfy the exit requirements of the applicable building code and OSHA 29 CFR 1910."

12.2.5.1.1 *Life Safety for Laboratories*

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-99.0.4[02]

"A minimum number of entrances shall be provided for security areas. However, exits shall comply with NFPA 101. Some exits shall be provided for emergency use only, and equipped with alarm devices and seals. At least two exits shall be provided in rooms where hazardous materials are handled."

12.2.5.1.2 *Egress*

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-99.0.4[03]

"In those areas where an accidental breach of a primary confinement system could expose personnel to radioactive material, a distance of 75 feet as measured by the method in the NFPA 101 shall be the maximum travel distance to ensure that personnel can exit through the next confinement..."

12.2.5.1.3 *Corridor Widths*

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-99.0.4[12]

"Corridor width(s) can be a controlling factor in the overall building size, and corridors shall be no wider than required for facility functions. All Corridors and door openings, shall meet NFPA 101 or more stringent requirements based on the hazards of materials to be handled or operations to be performed, as established by the cognizant DOE health and safety authority. The size and arrangement of interior corridors shall accommodate the following:

- Personnel traffic flow patterns

- Safety of building occupants

- Movement of equipment (including initial equipment installations, facility operations and future replacement or removal)

- Ultimate decontamination and decommissioning of the facility including equipment required during decontamination."

12.2.5.1.4 *Door Encroachment*

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-99.04[13]

"Where room doors open into corridors, frames shall be recessed to prevent the open doors from encroaching on clear corridor spaces."

12.2.5.1.5 *Security Areas*

REQUIREMENT SOURCE: DOE6430.1A Division 8,Section 0800-1.3(4)

"Doors that serve as exits from security areas shall comply with NFPA 101, Chapter 5, and with DOE security requirements, except the use of panic hardware on doors from security area shall be limited to assembly, educational, and hazardous occupancy classifications of UBC as determined by the cognizant DOE authority."

12.2.5.1.6 *Zoning for Automatic Control*

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1595-2

"Zoning for automatic control of space temperatures, static pressures, humidities, ventilation, smoke and fire detection, security and lighting shall satisfy health and safety requirements as indicated in DOE project criteria, NFPA 101, space operational and occupancy requirements, and zoning exposure with relation to building size, orientation and configuration.

Zoning requirements are as follows:

o Each HVAC system shall have a separate thermostat for space temperature regulation and a separate humidistat if humidity control is provided.

o No zone shall contain more than a single building floor regardless of floor space.

o Automatic controls shall be provided to shut off heating or cooling to any individual zone.

o Interior zones shall not be combined with external zones.

o Interior space zones shall be placed on separate air handling systems from external, if cost effective. External space zones shall be selected for each individual exposure.

o For office facilities and similar occupancies, each major orientation shall be zoned to have no more than 2,000 square feet of floor area with exterior exposure, and no more than 3,000 square feet of floor area with no exterior exposure."

12.2.5.1.7 *Life Safety in Hazardous Areas*

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.4[1]

"When exemptions are granted to specific DOE fire protection standards for reasons unique to DOE facilities, as in the case of some containment structures, fire protection shall be provided so as to assure the life safety of facility occupants as required by the cognizant DOE fire protection authority."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.4[2]

"Hazardous areas, such as radioactive spaces with inert atmospheres, shall have sufficient alarms and interlocks to assure that access by emergency personnel will not endanger such personnel or result in a public hazard."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.4[3]

"The design of hazardous areas shall facilitate access by emergency personnel from the exterior and, at the same time, shall maintain any required confinement or containment using air locks or other features."

12.2.6 Improved Risk Facilities

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(17)

"Higher Standard of Protection - A higher standard of protection,which includes fire protection features beyond those stipulated above, may be warranted under certain circumstances. These features shall be determined by the PSO. The following factors shall be considered:

(a) importance
(b) effect on production
(c) costs versus benefits
(d) future conditions"

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-2.1

"Fire protection design shall incorporate an "improved risk" level of fire protection as directed in DOE Order 5480.7 as well as Section 0110-5, Health and Safety."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-2.2

"Fire protection systems for vital programs shall incorporate a "higher standard of protection" than the "improved risk" level as directed by DOE Order 5480.7."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-2.3.1

"The "improved risk" level of protection requires that the "maximum possible fire loss" shall be the basis for determining the need to provide automatic fire suppression systems and for additional fire protection systems and features. "Maximum possible fire loss" is defined in DOE Order 5480.7, Criteria I through V as discussed in DOE Order 5480.7 correspond with Section 1530.2.3.2, Criterion I, through Section 1530.2.3.6, Criterion V. The application of these criteria shall be considered by an experienced fire protection engineer."

12.2.7 Decommissioning Planning

REQUIREMENT SOURCE: RLID5480.7 Section 8. 3

"Required fire protection features (includes fire department emergency response capabilities) shall be maintained throughout the life of a facility or operation. When a facility is no longer required for a DOE mission and is scheduled for shutdown, decommissioning, and demolition, all of the following must be completed before any fire protection feature is deactivated, no longer maintained, and/or removed from service:

a. Property book value of the facility or operations (includes building and building contents) must be devaluated below levels, which would require certain fire protection features. Even if property has no inherent value but property is shown to have record value, fire protection must be maintained until recorded value is lowered below protection requirements.

b. An analysis must be performed to demonstrate that a radiological or hazardous material release, beyond DOE guidelines, is not possible. The analysis must be performed or reviewed by a qualified Fire Protection Engineer. If fire protection feature(s) are determined necessary to prevent a radiological or hazardous release, then fire protection feature(s) must remain in place until radiological or hazardous materials are removed.

c. For life safety purposes, fire protection features may only be deactivated after personnel are no longer occupying the facility. For purpose of this section, a facility is considered to be occupied, as defined by NFPA 101, Life Safety Code.

d. Decommission and demolition activities must be coordinated with the Hanford Fire Department for fire and emergency medical response services."

12.2.8 Construction

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(6)

"Quality Construction - New Permanent structures in excess of 5000 square feet of area shall be of noncombustible or fire resistive construction."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.1[3 and 4]

"Definitions, fire resistance ratings, and types of construction shall be as contained in the UBC.

Any materials with unusual fire characteristics, such as urethane foams, and any materials that develop significant quantities of toxic or harmful products of combustion, shall not be used as interior finishes or other interior applications without the approval of the cognizant DOE fire protection authority. The use of foam plastics in construction shall be prohibited unless it fully complies with FM 1-57."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.3[3]

"Wall, floor and ceiling, and roof and ceiling assemblies shall be tested and rated for their fire resistance by UL or similar nationally accredited testing laboratories, or shall be listed for their fire resistance as approved by FM or similar national insurance organizations. Untested, unrated or unapproved assemblies shall be approved by the cognizant DOE fire protection authority before being considered for use in a facility."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-99.0.6

"Development of the DBF shall include consideration of conditions that may exist during normal operations and special situations (e.g., during periods of decontamination, renovation, modification, repair, and maintenance). The structural shell surrounding critical areas and their supporting members shall remain standing and continue to act as a confinement structure during the DBF under conditions of failure of any fire suppression system not designed as a safety class item. Fire resistance of this shell shall be attained by an integral part of the structure (concrete slabs, walls, beams, and columns) and not by composite assembly (membrane fireproofing). In no event shall the fire resistance rating be less than two hours under conditions of failure of any fire suppression system not designed as a safety class item. Penetrations in this shell shall incorporate, as a minimum, protection against DBF exposures unless greater protection is required by other sections of these criteria."

REQUIREMENT SOURCE: DOE6430.1A Division 11, Section 1161-2[1], Sentences 1 thru 4

"Noncombustible or fire-resistant and corrosion-resistant materials shall be used for enclosures and, to the maximum extent practicable, for any required radiation shielding. In no ease shall the total combustible loading located in a fire area exceed the fire resistance rating of the structural envelope (see Section 0110-99.0.6, Fire Resistance). This shall be documented in a

fire risk analysis performed according to a methodology approved by the DOE Fire Protection Authority. This analysis should include estimated fire area combustible loadings, ventilation parameters, room dimensions, maximum average gas temperature, fire duration, maximum average heat flux, and the calculational method used."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[01]

"Nonreactor Nuclear Facilities--General - An assessment shall be made early in the design or modification to determine the facility structures, systems, and components that shall be protected against the effects of a DBF and explosion. A fire protection engineer or person knowledgeable in applying the principles of fire protection shall develop the fire protection system. To maximize the protection against fire, the system shall contain an appropriate integration of fire prevention, detection, and suppression features."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 4.a

"Fire protection must be provided on all construction sites, as required by applicable sections of NFPA 241, Safeguarding Construction, Alteration, And Demolition Operations, and NFPA 1141, Fire Protection In Planned Building Groups."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 4.b

"Where underground water mains and hydrants are to be provided, they shall be installed, completed, and in service, prior to accumulation of combustible materials on the project site, and prior to the completion of any project structure."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 4.c

"Construction sites shall provide and maintain fire department vehicle access. The access roads shall have an unobstructed driving surface width of at least 20 feet during all weather conditions, and be able to withstand the live loads of fire department apparatus."

12.2.9 Fire Alarm Systems

Author's Note: NFPA 71, 72A, B, C, D, E, F, G, H, and 74 have been consolidated into NFPA 72.

Signals from detection systems are fed to fire alarm panels which in turn are transmitted to local fire alarms and the Central Alarm Stations.

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(11)

"Fire Alarm Systems - Where fire suppression or fire alarm systems are provided local alarms in the protected area and alarm transmission to an acceptable re-mote attended location shall be provided."

12.2.9.1 Fire Detection and Alarm Systems Design, Installation, Inspection, and Testing

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.8[4 and 5]

"The detection system shall perform the following functions:

- Initiate an alarm to the building alarm system and to the local fire alarm control center.

• Shut off electric power to computer-electronic data processing equipment in those areas where fire may operate sprinkler heads before manual power shutdown could be accomplished.

• Activate the appropriate HVAC system control sequence to provide smoke evacuation.

A manual reset shall be provided to reenergize the interrupted electrical systems."

12.2.9.2 Fire Alarm System Features

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-8.2.1[1]

"Fire alarm systems shall have the following basic features:

• Transmission of signals to the DOE facility fire department alarm center and other constantly attended locations in accordance with the appropriate NFPA Signaling Systems Standard.

• Local alarms for the building or zone in alarm.

• Trouble signals as required by the appropriate NFPA Signalling Systems Standard.

• Emergency battery backup for system operation.

• Electric supervision of all circuits as required by the appropriate NFPA standard.

• Supervisory devices for all critical functions (valve position switches, water level, temperature).

• Capability of annunciating at least three separate conditions:

1) a fire alarm,

2) a supervisory alarm, and

3) a trouble signal indicating a fault in either of the first two. Annunciation of each condition shall be separate and distinct from the other two."

12.2.9.3 Compatibility of Alarm Systems

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-8.2.1[2]

"Fire alarm systems for new DOE buildings shall be compatible with those for the DOE complex where the new building is to be located."

12.2.9.4 Fire Watch and Alarm Systems

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-8.2.2

"Alarm Actuating Devices -

• Alarms that respond to flow of water shall be provided wherever a sprinkler system is installed and shall comply with requirements of the NFPA standard for the type of signaling system used.

- A manual fire notification method such as manual fire alarm boxes shall be provided and located in accordance with the appropriate NFPA standard.

- Combined watch reporting and fire alarm systems, if used, shall be in accordance with the appropriate NFPA standard."

12.2.9.5 Underground Cables for Alarm Systems

REQUIREMENT SOURCE: DOE6430.1A Division 16, Section 1670-2

"Fire alarm and supervisory systems shall comply with NFPA 71, NFPA 72A, NFPA 72B, NFPA 72C, NFPA 72D, NFPA 72E, NFPA 72F, NFPA 72G, NFPA 72H, NFPA 1221, and ANSI C2 as appropriate for the location. Outside cable plant for the alarm and supervisory systems shall comply with the standards for telephone cable plant. In the joint use of poles for electric power distribution and for supporting fire alarm and telephone cables, separate fire alarm cable shall be placed below the telephone cable.

Fire alarm cables installed in underground ducts shall be distinctively marked within manholes and handholes that are shared with other communication cables and shall be kept physical separated from all power conductors.

Exterior fire alarm pull boxes and emergency-reporting telephones shall be installed in weatherproof housings manufactured specifically for the mechanism."

12.2.10 Fire Detection Systems

REQUIREMENT SOURCE: DOE6430.1A Division 16, Section 1660-99.0.2[2 and 4]

"A protection system is a system that initiates corrective action, e.g., fire detection/Halon.

The protection system shall provide automatic initiation of protective actions that require rapid response and automatic control of interlocks that prevent unsafe operator action.

The protection system shall be designed to sense potentially hazardous conditions and to initiate actions to ensure that specific acceptable design limits are not exceeded as a result of anticipated operational occurrences."

12.3 FIRE HAZARD ANALYSIS

Author's Note: DOE Order 5480.7A Section 9.a(3) has omitted the letter (k) when identifying the 15 elements of a fire hazards analysis. The text provided below identifies the same 15 elements in the same order as the source document.

REQUIREMENT SOURCE: DOE5480.7A Section 9.a.(3)

"Fire Hazards Analyses. The purpose of a fire hazards analysis (FHA) is to comprehensively assess the risk from fire within individual fire areas in a DOE facility in relation to existing or proposed fire protection so as to ascertain whether the objectives of paragraph 4, are met. A graded FHA, that reflects the risks from fire in a facility, shall be performed for new facilities as directed by DOE 6430.1A, for nuclear facilities where safety analyses are required by DOE 5480.23, and as directed by the PSO. A Safety Analysis Report (SAR) that addresses the following elements will satisfy the requirements for an FHA. A graded FHA shall contain, but not be limited to, the following elements:

(a) Description of construction
(b) Protection of essential safety class equipment
(c) Fire protection features
(d) Description of fire hazards
(e) Life safety considerations
(f) Critical process equipment
(g) High value property
(h) Damage potential: Maximum Credible Fire Loss (MCFL) and Maximum Possible Fire Loss (MPFL)
(i) Fire Department/Brigade response
(j) Recovery potential
(l) Potential for a toxic, biological and/or radiation incident due to a fire
(m) Emergency planning
(n) Security considerations related to fire protection
(o) Natural hazards (earthquake, flood, wind) impact on fire safety
(p) Exposure fire potential, including the potential for fire spread between fire areas.

An FHA shall be performed under the direction of a qualified fire protection engineer."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.2[5]

"Fire protection design analysis shall be done as soon as possible and included as a portion of the Title I Design Summary document required by DOE 4700.1."

REQUIREMENT SOURCE: RLID5480.7 Section 6.2.e

"Perform FHA of facilities in accordance with DOE 5480.7A and EH-31.3, Guidance on Performance of Fire Hazard Analyses, memorandum dated 11-07-91. FHA shall be completed for all new facilities, as required by DOE 6430.1 version in effect, and all existing nuclear facilities, where safety analyses are required by DOE 5480.23. The development of a facility design basis fire in accordance with DOE 6430.1 version in effect, as required in safety analysis documentation, must be consistent with the MPFL event and documented in the facility FHA.

The FHA shall be referenced by the safety analysis documentation. MCFL and MPFL values described in the FHA shall be as required by DOE 5480.7A, utilizing the property valuation and loss estimation guidelines found in DOE 5484.1. New facility and nuclear facility FHA shall be reviewed and approved by QSH. When directed by the PSO, the FHA shall also follow the same review and approval process as safety analysis documentation for DOE 5480.23. A copy of the current FHA shall be retained by the contractor and be kept readily accessible on file."

12.4 FIRE PREVENTION (BUILDING DESIGN)

This element when worked with Section 12.2.4, Life Safety, identifies the requirements for building design, materials, furnishings, etc.

12.4.1 Performance Objectives in the Design of DOE Facilities

Author's Note: Requirements for Performance Objectives in the design of DOE Facilities can be found in Section 12.2.8 Construction.

12.4.2 Exterior Fire Protection Systems and Features

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.4[4]

"The design of the exteriors of facilities shall follow the recommendations of NFPA 80A. Facilities that are not separated as recommended by NFPA 80A shall have fire protection systems such as exterior sprinklers or barrier walls."

12.4.3 Fire Resistance for Materials and Construction

Author's Note: Requirements for Fire Resistance for Materials and Construction can be found in Section 12.2.8 Construction.

12.4.4 Control of Combustibles

12.4.4.1 Interior Finish Materials

REQUIREMENT SOURCE: RLID5480.7 Section 8. 2.e

"Nuclear facilities and laboratories shall have interior finish materials (decorations, furnishings, and exposed wall or insulating materials) that have an Underwriters Laboratories (ASTM E-84/NFPA 255) flame spread rating of 25 or less, and smoke developed rating of 50 or less, except for acoustical materials, which shall have a smoke developed rating of 100 or less. The minimum average critical radiant flux for floor covering material shall be 0.45 watts pre square centimeter, when tested in accordance with ASTM E-648 (NFPA 253)."

12.4.4.2 Interior Floor Coverings

REQUIREMENT SOURCE: DOE6430.1A Division 12, Section 1260-4[1 and 2]

"Rugs and Mats shall comply as furnishings with NFPA 101, Chapter 31 (sections concerning furnishings, decorations and treated finishes), in all occupancy classifications except those of storage and industrial.

Rugs and mats used in storage or industrial occupancies shall have a critical radiant flux not less than the following:

* 0.45 watts per square centimeter where there are no sprinklers complying with NFPA13;

* 0.22 watts per square centimeter where there are sprinklers complying with NFPA 13"

12.4.4.3 Control of Combustible Materials by Building Design

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-99.0.4[04]

"The facility design shall provide space to accommodate all planned activities, operations, and maintenance (e.g., processing, research and development, scrap and waste handling, sample analysis, shipping and receiving and material staging required for equipment installation and modifications). The design shall minimize the hazard of handling flammable and other hazardous materials. In addition to the usual industrial safety features required in a nuclear facility, the design shall also include the following safety features as appropriate:

- Layout of the facility shall provide specific control and isolation, if possible, of quantities of flammable, toxic and explosive gases, chemicals, and other hazardous materials admitted to the facility.

- The provision of additional space shall be considered for temporary shielding of for additional shielding in the event radiation levels are higher than anticipated."

12.4.4.4 Quantities of Stored Materials

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-99.0.4[08]

"Suitable physical compartmentalization shall be provided, as determined from the safety analysis,to limit the quantities of stored materials in each compartment to safety levels; ensure the necessary access features and controls; and satisfy the loss limitation criteria in Section 0110-99.0.7, Loss Limitations."

12.4.4.5 Fire and Explosion Potential of the Materials

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[12]

"The designers of the fire protection system shall consider the fire and explosion potential of the materials being processed and the solvents used during processing. In addition, the design shall include facility-specific fire protection systems to mitigate the damage from pyrophoric and other materials that are fire hazards, (e.g., magnesium, ion exchange resins, nitrate solvent and nitrate reduction reactions, and zirconium fuel element cladding hulls)."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 5

"The generation, treatment, storage, and disposal of ignitable and reactive wastes, defined in Dangerous Waste Regulations, WAC 173-303, that are utilized in the facilities and operations covered under the Tri-Party Agreement shall comply with this directive and shall:

a. Comply with the fire protection provisions of WAC 173-303.

b. Be located in areas that are designed, operated, and maintained in a manner equivalent to the Uniform Code (UFC), when ignitable and reactive wastes are stored in containers.

c. Be inspected on an annual basis by a person familiar with the UFC, where wastes are stored."

12.4.5 Electrical Systems

12.4.5.1 Ignition Source by Electrical Equipment

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[21]

"Because of flammable or potentially flammable atmospheres, electrical installations in hazardous process locations shall be designed to preclude the introduction of any ignition source by the electrical equipment."

12.4.5.2 Conduits

REQUIREMENT SOURCE: DOE6430.1A Division 16, Section 1605-2.1.4
"Rigid steel conduit shall be used in locations classified as hazardous by NFPA 70.

Only rigid steel conduit or intermediate metal conduit shall be used to route secure circuits through nonsecured areas. Such circuits shall be capable of detecting tamper with the line."

12.4.5.3 Redundant Electric Circuits

REQUIREMENT SOURCE: DOE6430.1A Division 16, Section 1630-1.3

"Facilities designated by the cognizant DOE authority as critical shall be served by dedicated, redundant electric circuits. The two services shall be separated by a 4-hour fire-rated barrier and shall be served from separate sources. In lieu of providing two separate services, a single service supplied from a loop-type transmission or distribution system having sectionalizing features may be provided when the reliably of the single service proves adequate when considered in conformance with IEEE 399 and IEEE 493."

12.4.6 Exhaust and Ventilation Systems

12.4.6.1 Ductwork and Air Ventilation Systems

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(12)

"Containment Systems for Ventilation - Facilities which require ventilation containment systems shall be protected from the effects from fire to preclude release of radioactive, toxic, or other hazardous materials."

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1550-2.5.6[3], Introduction and Bullet 7

"Ductwork, accessories, and support systems shall be designed to comply with the following:

- NFPA 45"

12.4.6.2 Smoke Pressurization and Evacuation Systems

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1595-6.5[1]

"Engineered smoke pressurization and evacuation systems shall comply with the following:

- NFPA 90A
- NFPA 72E
- ASHRAE Manual, Design of Smoke Control Systems for Buildings
- ASHRAE Systems Handbook"

12.4.6.3 Confinement Systems Function During the DBF

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[08]

"Confinement systems, particularly the building structural shell and its associated ventilation system, shall be designed with the capability of retaining the confinement function during the DBF."

12.4.6.4 Confinement Systems and Fire Protection

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[18]

"To protect the integrity of process confinement systems, fire protection systems shall include the following features:

- Automatic and redundant fire detection devices.

- A fire-extinguishing system to rapidly remove heat produced by fire to prevent or minimize the Pressurization of a process confinement and to rapidly extinguish a fire to minimize the loading of ventilation system filters with combustion products.

- The introduction of the extinguishing agent in a way that does not result in over-pressurization of the confinement barriers."

12.4.6.5 Design Features for Lower Flammability Limit

REQUIREMENT SOURCE: DOE6430.1A Division 15, Section 1530-99.0[13]

"When the process uses or produces combustible gases or vapors, the design shall include features such as inert gas purging, premixing hydrogen to a nonflammable percent with inert gas, and increasing the air flow within process confinement barriers to provide the dilution required to maintain the concentration of gases or vapors below the lower limit for flammability."

12.4.6.6 HEPA Filters

REQUIREMENT SOURCE: RLID5480.7 Section 8. 2.c

"Nuclear facility final exhaust/confinement high efficiency particulate air filters shall be protected for failure due to a fire. The level of protection required shall be determined using the Filter Plenum Fire Protection Criteria contained in the DOE Fire Protection Resource Manual."

12.4.7 Lightning Protection

REQUIREMENT SOURCE: DOE6430.1A Division 16, Section 1630-5[1]

Author's Note: NFPA 78 has been changed to NFPA 780.

"Lightning protection systems shall comply with NFPA 78. Lightning protection systems shall be considered for buildings containing facilities for the use, processing, and storage of radioactive, explosive and similarly hazardous materials; for buildings over 50 feet in height; and for buildings containing valuable equipment. A risk assessment using the guide in Appendix I of NFPA 78 shall be made of these buildings to determine the risk of loss due to lightning."

12.4.8 Seismic Requirements

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(15)

"Seismic Criteria - The design of fire protection systems to withstand seismic events shall be in accordance with the criteria developed by the National Fire Protection Association, except as required by other DOE criteria."

12.4.9 Safety Class Equipment

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(1)

"Safety Class Equipment - In areas where a fire could cause damage to safety class equipment and where no redundant safety capability exists, a redundant fire protection system shall be provided for the safety class equipment. For new facilities, redundant Safety Class equipment shall be located in separate fire areas. Fire suppression systems shall be designed such that their actuation will not damage safety class equipment or cause a criticality incident."

12.5 FIRE, HAZMAT AND MEDICAL SUPPORT

Requirements for this section are covered in the WHC Fire Protection Functional Area.

12.6 ASSESSMENT

REQUIREMENT SOURCE: DOE5480.7A Section 9.a.(2)

"Assessments. Documented evaluations of the fire protection program, including field walkdowns of facilities, shall be performed as follows:

(a) Facilities/contractors shall be assessed to establish that they conform with DOE fire protection criteria.

(b) Minimum Frequency

Headquarters:

- PSO assessment of field offices — 3 years
- EH assessment of program offices — 3 years

Field Office:

- Field office assessment of the fire protection program of each contractor — 2 years

Contractors/Facility Managers:

- Annual fire protection assessments shall be made of facilities valued in excess of $50 million; where considered to be a moderate (Category 2 Hazard) or high hazard (Category 1 Hazard) as defined in DOE 5481.1B, SAFETY ANALYSIS AND REVIEW SYSTEM, for nonnuclear facilities and in DOE 5480.23, NUCLEAR SAFETY ANALYSIS REPORTS, for nuclear facilities; or in which vital programs are involved.

- Fire protection assessments shall be made at least every two years of facilities plus equipment valued at $10 million to $50 million.

- Remaining facilities shall be assessed at least every three years or at frequencies determined by the AHJ.

- Comprehensive assessments of fire protection program elements shall be made every two years.

- Copies of the two most recent assessment reports shall be kept on file.

(c) Nature and Scope - Assessments shall include an evaluation of the following elements of the fire protection program:

Program-Related:

- Comprehensiveness of the fire protection program.
- Procedures for engineering design and review.
- Procedures for maintenance, testing and inspection.
- Fire protection engineering staff (number, qualifications, training).
- Fire suppression organization (personnel and training).
- Fire suppression mutual aid agreements.
- Management support.
- Exemptions and documented equivalencies.

Facility-Related:

- Fire protection of safety class equipment.
- Life safety considerations.
- Fire protection of vital programs.
- Fire protection of high value property.
- Fire suppression equipment.
- Water runoff.
- Pre-fire plans.
- Fire apparatus accessibility.
- Completeness of fire hazards analyses.
- Fire barrier integrity.
- Completeness of fire loss potential (MPFL/MCFL) determinations.
- Fire safety training.

Combined Aspects (Program & Facility):

- Inspection, testing, and maintenance reports.
- Adequacy of facility appraisal reports.
- Tests of fire suppression systems, water supplies, and procedures for maintaining these in working order.
- Administrative controls.
- Temporary protection and compensatory measures.
- Status of findings from previous assessments.
- Conformance with applicable Orders, codes and standards."

REQUIREMENT SOURCE: DOE6430.1A Division 1, Section 0110-6.2[2]

"As part of determining the "improved risk" level, the analysis shall address those conditions in a facility where:

- Large or unusual fire potential exists.

- There are special life-safety hazards.

- Toxic chemicals or biological agents exist.

- The consequences of a fire include radioactive contamination of the facility, the site, or the public environment.

- National security is adversely affected by fire."

REQUIREMENT SOURCE: RLID5480.7 Section 6.2

Author's Note: With the exception of section (e), which can be found in 12.3 Fire Hazard Analysis, and section (m) which is applicable at the company level, the remainder of RLID 5480.7 Section 6.2 applies to the facility in this 12.6 Assessment section.

"RL Contractors shall assure that facilities and programs under their jurisdiction provide a level of fire protection adequate to meet the objectives of DOE 5480.7A for protection of the public, personnel, environment, and property. RL Contractors shall also:

a. Submit the "Annual Industrial Summary of Fire and Other Property Damage Experience" report (three copies) for the previous calendar year to the RL Director of QSH by February 1st of each year, as required by DOE 5484.1 and as supplemented by RL direction.

b. Report fires to QSH and losses, in accordance with paragraph 8.8 of this directive.

c. Property loss valuation shall be determined by utilizing the property valuation and loss estimation guidelines found in DOE 5484.1.

d. Schedule and preform fire protection assessments for all facilities, including those for which the contractor has only landlord or lessee responsibility. Assure that the fire protection program elements, described in DOE 5480.7A and this directive, are being implemented.

(1) Annual fire protection assessments shall be made of facilities valued in excess of $50 million; where considered to be moderate (Category 2 Hazard) or high hazard (Category 1 Hazard), as defined in DOE 5481.1B, for non-nuclear facilities and in DOE 5480.23, for nuclear facilities; or in which vital programs are involved.

(2) Fire protection assessments shall be made at least every two years of facilities valued at $10 million to $50 million.

(3) Fire protection assessments shall be made at least every three years of facilities valued and $1 million to $10 million.

(4) Except for paragraph 6.2d.(5) of this directive, fire protection facility assessments shall contain the required nature and scope elements contained in DOE 5480.7A. Facility assessments shall also contain findings and observations of fire protection deficiencies identified.

(5) Facilities, where property is less than $1 million, shall not require a fire protection facility assessment that contains the required nature and scope elements contained in DOE 5480.7A, unless significant programmatic impacts, hazardous materials, or radioactive materials are involved. Such facility assessments shall be made at least every three years.

Exception: A fire protection assessment shall be made at least every three years of facilities valued at $250,000 to $ 1 million. The documented assessment for these facilities only needs to include findings, observations, and recommendations. Where applicable, these assessments should include, as a minimum, findings and observations and supporting documentation that identify fire hazards that could cause facility loss or life safety concerns.

(6) Fire protection facility assessments shall retained by the contractor, and made available to RL representatives upon request. Copies of the two most recent assessment reports shall be kept readily accessible on file.

(7) Facility assessments findings, observations, and/or recommendations shall be entered into data base tracking system and assigned and appropriate prioritization, to ensure that effective actions are being taken to correct deficiencies identified in accordance with RLID 1000.1.

(8) MCFL and MPFL values described in the assessments shall be as required by DOE 5480.7A utilizing the property valuation and loss estimation guidelines found in DOE 5484.1.

(9) Maintain a list of facilities which require assessment, indicating the assessment frequency.

e. Perform FHA of facilities in accordance with DOE 5480.7A and EH-31.3, Guidance on Performance of Fire Hazard Analyses, memorandum dated 11-07-91. FHA shall be completed for all new facilities, as required by DOE 6430.1 version in effect, and all existing nuclear facilities, where safety analyses are required by DOE 5480.23. The development of a facility design basis fire in accordance with DOE 6430.1 version in effect, as required in safety analysis documentation, must be consistent with the MPFL event and documented in the facility FHA.

The FHA shall be referenced by the safety analysis documentation. MCFL and MPFL values described in the FHA shall be as required by DOE 5480.7A, utilizing the property valuation and loss estimation guidelines found in DOE 5484.1. New facility and nuclear facility FHA shall be reviewed and approved by QSH. When directed by the PSO, the FHA shall also follow the same review and approval process as safety analysis documentation for DOE 5480.23. A copy of the current FHA shall be retained by the contractor and be kept readily accessible on file.

f. Provide fire protection overview and assistance for subcontractor activities and facilities.

g. Carry out those responsibilities assigned by DOE 5480.7A, paragraphs 8i(1) through 8i(8), and comply with the applicable provisions of DOE 6430.1 versions in effect.

h. Establish a written and documented fire protection program for facilities and operations managed, including:

(1) A statement of management commitment to achieve the above stated objectives.

(2) A policy statement that implements DOE 5480.7A, other DOE fire protection related mandatory codes and standards, and requirements contained in this directive.

(3) Fire protection criteria that reflect site-specific aspects of the fire protection program, including the organization and responsibilities of the fire protection staff, administrative aspects of the Fire Protection Program, and requirements for physical fire protection features.

(4) See paragraph 8.12 of this directive for guidance on developing the documented fire protection program.

i. Maintain a current statement of programmatic impact on every vital program, as determined by RL or the PSO. The statement of programmatic impact will be updated every three years. The statement will include facilities, material, and equipment that are vital to the operation of that program.

j. Each prime contractor shall have on staff at least one qualified Fire Protection Engineer (see paragraph 5.2).

k. Provide and maintain a system to ensure that the requirements of the DOE Fire Protection Program are documented and incorporated in the plans and specifications for all new facilities, and for major modifications of existing facilities. This includes review and comment by the fire protection engineering group of design documentation and testing of fire protection features.

l. Provide fire protection representation at the Hanford Fire Protection Forum meeting, as described in the Hanford Fire Protection Forum Charter.

m. Attend and provide representation at the monthly program interface meetings with the RL fire protection representative."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 8

Author's Note: Occurrence Reporting requirements are located in the PFP Management Systems Functional Area.

"Fire investigations and reports shall be performed and prepared, in accordance with DOE 5000.3B and DOE 5485.1."

12.6.1 **Control of Fire Protection Impairments**

REQUIREMENT SOURCE: DOE5480.7A Section 9.b.(16)

"Impairment Control - A fire protection system impairment program shall be provided for control of operation and tracking of impairments during periods when fire protection systems are out of service."

REQUIREMENT SOURCE: RLID5480.7 Section 8. 6

"The Fire Protection Program must include a fire protection system impairment strategy to minimize the duration and impact of fire protection system impairments. Elements of the fire protection impairment strategy must provide that:

a. Fire protection system impairments are identified, assigned priority, and promptly corrected in a reasonable amount of time.

b. A documented impairment program is administrated by trained personnel.

c. Fire protection staff and fire department personnel are advised and updated on impairments.

d. A policy is established for immediate and expedient repair of impairments.

e. Compensatory measures are implemented until the impaired system is restored."

12.7 KEY INTERFACES

12.7.1 Configuration Management

The Configuration Management Functional Area maintains the technical baseline of the installed fire protection systems and related equipment, construction services, and temporary modifications to existing and new facilities.

12.7.2 Engineering Program

The Engineering Program ensures that design features needed to mitigate fire hazards identified by the Fire Protection Functional Area are incorporated into the design. The Engineering Program provides the necessary facility support services required by fire protection systems. Specific requirements for the Fire Protection Functional Area should include the following subelements:

a. Design and operability standards for fire protection features;

b. Test of fire protection features to ensure operability and compliance with applicable codes and standards;

c. Interim compensatory measures; and

d. Design control of procurement and construction.

12.7.3 Emergency Management

The Emergency Management Functional Area addresses the general requirements applicable to the Fire Protection Functional Area for fire-related HAZMAT, medical or other emergency responses. Development of specific Fire Protection requirements should be coordinated with, and supported by, the Emergency Management Functional Area which includes the following subelements:

a. Coordination of off-site fire department emergency responses and training;

b. Fire drill criteria development;

c. Emergency medical, search, and rescue operations;

d. Emergency Plan Development; and

e. Emergency communications.

12.7.4 Training and Qualification

Training requirements are addressed in the PFP Training and Qualification Functional Area document.

12.7.5 Nuclear Safety

The Nuclear Safety Functional Area details the provisions for the preparation of Safety Analysis Reports (SARs) and preparation of Technical Safety Requirements (TSRs). SARs and TSRs may be used as a basis for creation of a Fire Hazards Analysis for activities or as a

source of Fire Protection information elements which may satisfy the need for an Fire Hazards Analysis (FHA).

12.7.6 Occupational Safety and Health

An integrated approach should be taken by Occupational Safety and Health Act (OSHA) and the Fire Protection Functional Area to ensure both are current in standards and guidelines associated with the National Fire Protection Association and OSHA.

12.7.7 Management Systems

The Management Systems Functional Area establishes organizational responsibilities and structure and the creation of appropriate implementing policies and procedures to develop and implement a Fire Protection Program. Additionally the Management Systems Functional Area ensures adequate guidance and oversight for the implementation of these policies and procedures, and maintains a commitment of resources to perform the required functions.

12.8 REFERENCES

12.8.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this S/RID:

29 CFR 1926, Code of Federal Regulations, 7-1-92

DOE 5480.7A, Fire Protection, 2-17-93

DOE 6430.1A, General Design Criteria, 4-6-89

RLID 5480.7, Fire Protection, 1-17-94

WAC-212, Fire Protection, 12-31-90

12.8.2 Reviewed Documents Not Used as Requirement Sources

The following documents were reviewed as requirement sources but were not used in the development of this S/RID:

DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards, 1-7-93

DOE 5480.19, Conduct of Operations Requirements For DOE Facilities, 7-7-90 Page Change 1: 5-18-92

DOE 5700.6C, Quality Assurance, 8-21-91

DOE EP/0108, Standard For Fire Protection Of AEC Electronic Computer Data Processing Systems, 1-84

DOE EV-0043, Standard On Fire Protection For Portable Structures, 8-79

WAC-173-303, Dangerous Waste Regulations, 12-8-93

NFPA Codes and Standards

Uniform Fire Code

Uniform Building Code

DOE/RL-91-28 Rev 1, Hanford Facility Dangerous Waste Permit Application, General Information, Appendix 7A, Hanford Facility Contingency Plan, May 93

DOE EH0135 Performance Objectives and Criteria For Technical Safety Appraisals at Department of Energy Facilities and Sites, 6-90

TABLE OF CONTENTS

13.0 PACKAGING AND TRANSPORTATION 1

13.1 MANAGEMENT AND ADMINISTRATION 3

13.2 PACKAGING AND TRANSPORTATION OPERATIONS 3

13.2.1 Packaging 3

13.2.1.1 Type A Packaging 7
13.2.1.2 Type B Packaging 7
13.2.1.3 Low Specific Activity Packaging 8
13.2.1.4 Limited Quantity Packaging 8
13.2.1.5 Fissile Packaging 11
13.2.1.6 Empty Packaging 16
13.2.1.7 Hazardous Materials 18

13.2.1.7.1 Multiple Hazard Classification 19
13.2.1.7.2 Non-Bulk Packagings 20

13.2.1.8 Packaging Limitations 22

13.2.1.8.1 Activity Limitations 22
13.2.1.8.2 Radiation Levels 23
13.2.1.8.3 Contamination Levels 24
13.2.1.8.4 Thermal Levels 25

13.2.2 Coordination and Planning of Base Technology 25
13.2.3 Vehicle and Equipment Control and Maintenance 25
13.2.4 Onsite Material Tracking 25
13.2.5 Offsite Transportation Management 25
13.2.6 Marking, Labeling and Placarding 25

13.2.6.1 Marking Requirements 25

13.2.6.1.1 Hazardous Materials 30
13.2.6.1.2 Radioactive Materials 32
13.2.6.1.3 Hazardous Substances 32

13.2.6.2 Labeling Requirements 32

13.2.6.2.1 Hazardous Materials 32

13.2.6.3 Placarding Requirements 39

13.2.7 Shipping Papers, Bills of Lading and Manifests 43

13.2.7.1 Waste Manifests 43
13.2.7.2 Shipping Papers 45

13.2.8 Shipment Plans 50
13.2.9 Notification of State Authorities of Shipments of High-Hazard Materials 50
13.2.10 Emergency Response Information 50
13.2.11 Receipt Inspection 53
13.2.12 Loading Operations 53
13.2.12.1 General Loading Requirements 53
13.2.12.2 Hazardous Materials Loading 54
13.2.12.3 Segregation 55
13.2.12.4 Bracing 56
13.2.12.5 Lifting and Tie Downs 56
13.2.12.6 Weight Limitations 56
13.2.13 Transportation Operations 57
13.2.13.1 Dangerous Waste Transportation 57
13.2.13.2 Quality Assurance/Quality Control 58
13.3 OFFSITE SAFETY 58
13.3.1 Package Standards and Certifications 58
13.3.2 Safety Analyses 59
13.3.3 Design, Fabrication, Assembly and Testing QA for OffSite Shipping Containers 59
13.3.4 Physical Protection for Security 59
13.3.5 Nuclear Explosives, Components, and Assemblies 59
13.4 ONSITE SAFETY 59
13.5 KEY INTERFACES 60
13.5.1 Training and Qualification 60
13.5.2 Safeguards and Security 60
13.5.3 Nuclear Safety 61
13.5.4 Emergency Management 61
13.5.5 Radiation Protection 61
13.5.6 Waste Management 61
13.6 REFERENCES 61
13.6.1 Requirement Source Documents 61
13.6.2 Reviewed Documents Not Used as Requirement Sources 62

13.0 PACKAGING AND TRANSPORTATION

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Packaging and Transportation Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Packaging and Transportation activities, as such activities are included in the current mission of the facility.

This S/RID describes the PFP Packaging and Transportation Program as defined through the relevant U.S. Department of Energy (DOE) Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practice. The definition of a Packaging and Transportation Program as specified by this document is intended to address Defense Nuclear Facilities Safety Board Recommendations 90-2 and 91-1, which call for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders.

The Packaging and Transportation Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. Additional subelements and sub-subelements were added to the basic format for further definition and clarity. Subelement 13.2.1, Packaging, was augmented with the addition of the following sub-subelements: Type A Packaging (13.2.1.1), Type B Packaging (13.2.1.2), Low-Specific Activity Packaging (13.2.1.3), Limited Quantity Packaging (13.2.1.4), Fissile Packaging (13.2.1.5), Empty Packaging (13.2.1.6), hazardous Materials (13.2.1.8). Subelement 13.2.6, Marking, Labeling, and Placarding, was augmented with the addition of the following sub-subelements: Marking Requirements (13.2.6.1). Labeling Requirements (13.2.6.2), and Placarding Requirements (13.2.6.3). Loading Operations (13.2.12), and Transportation Operations (13.2.13) were added as additional subelements to address those related topics.

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare the PFPTP to implement the Record of Decision (ROD) resulting from the PFP Cleanup Environment Impact Statement, to provide interim storage for all SNM materials currently at PFP and deactivate all portions of the PFP not required for the storage of SNM or to implement the ROD.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

The terms "onsite" and "offsite" will be used to describe shipments throughout this document. Onsite refers to any shipment made north of the wye barricade. Offsite refers to shipments made south of the wye barricade which are considered public roads and highways. It is DOE guidance that all shipments of hazardous and/or radioactive materials are to be performed in accordance with all federal, and state regulations and that Department of Transportation (DOT) regulations will be applied.

Onsite shipment activities include the shipment of hazardous waste, radioactive materials/waste and mixed waste. Radioactive materials/waste is shipped as either limited quantity, low specific activity (LSA), type A, type B, or Highway Route Control Quantity. These radioactive material/wastes are prepared and shipped to the appropriate onsite facility within the Hanford Site.

All offsite shipment activities will be in full compliance of Department of Transportation Regulations.

This PFP P&T S/RID is based upon the WHC P&T S/RID, and outlines those areas of P&T that are PFP specific. All general P&T requirements are outlined in the WHC P&T S/RID. Self assessments by the applicable organizations will verify compliance to these requirements.

The P&T Functional Area includes program elements that are necessary to assure that operations at DOE facilities are conducted safely, effectively, and in accordance with specified DOE requirements and selected industry codes, standards, and guidelines.

13.1 MANAGEMENT AND ADMINISTRATION

Author's Note: Management and Administration requirements are addressed in the Management Systems Functional Area.

13.2 PACKAGING AND TRANSPORTATION OPERATIONS

13.2.1 Packaging

REQUIREMENT SOURCE: 49CFR171 Part 1(c)

"Any person who, under contract with any department, agency, or instrumentality of the executive, legislative, or judicial branch of the Federal Government, transports, or causes to material or manufactures, fabricates, marks, maintains, reconditions, repairs, or tests a package or container which is represented, marked, certified, or sold by such person as qualified for use in the transportation of hazardous materials shall be subject to and comply with all provisions of the Federal hazardous material transportation law and all orders and regulations issued thereunder and all other substantive and procedural requirements of Federal, State, and local governments and Indian tribes (except any such requirements that have been preempted by the Federal hazardous material transportation law or any other Federal law) in the same manner and to the same extent as any person engaged in such activities that are in or affect commerce is subject to such provisions, orders, regulations, and requirements."

REQUIREMENT SOURCE: 49CFR173 Part 12

"Exceptions for shipment of waste materials.

(a) Open head drums. If a hazardous material that is a hazardous waste is required by this subchapter to be shipped in a closed head drum (i.e., a drum with a 7.0 cm (3 inches) or less bung opening) and the hazardous waste contains solids or semisolids that make its placement in a closed head drum impracticable, an equivalent (except for closure) open head drum may be used for the hazardous waste.

(b) Lab packs.

(1) Waste materials classed as Class or Division 3, 4.1, 4.2, 4.3, 5.1, 6.1, 8, or 9 are excepted from the specification packaging requirements of this subchapter for combination packagings if packaged in accordance with this paragraph and transported for disposal or recovery by highway only. In addition, a generic description from the 172.101 Table may be used in place of specific chemical names, when two or more chemically compatible waste materials in the same hazard class are packaged in the same outside packaging.

(2) Additional packaging requirements are as follows:

(i) The outer packaging must be a UN 1A2 or UN 1B2 metal drum, a UN 1D plywood drum, a UN 1G fiber drum or a UN 1H2 plastic drum tested and marked at least for the Packing Group III performance level for liquids or solids;

(ii) The inner packagings must be either glass, not exceeding 4 L (1 gallon) rated capacity, or metal or plastic, not exceeding 20 L (5.3 gallons) rated capacity;

(iii) Each outer packaging may contain only one class of hazardous material;

(iv) Inner packagings containing liquid must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents; and

(v) Gross weight of the complete package may not exceed 205 kg (452 lbs).

(3) Prohibited materials. Materials meeting the definition of Division 6.1, Packing Group I, or Division 4.2, Packing Group I, and bromine pentafluoride; bromine trifluoride; chloric acid; and oleum (fuming sulfuric acid) may not be packaged or described under the provisions of this paragraph.

(c) Reuse of packagings. A previously used packaging may be reused for the shipment of hazardous waste to designated facilities, not subject to the reconditioning and reuse provisions contained in 173.28 and part 178 of this subchapter, under the following conditions:

(1) Except as authorized by this paragraph, the waste must be packaged in accordance with this part and offered for transportation in accordance with the requirements of this subchapter.

(2) Transportation is performed by highway only.

(3) A package is not offered for transportation less than 24 hours after it is finally closed for transportation, and each package is inspected for leakage and is found to be free from leaks immediately prior to being offered for transportation.

(4) Each package is loaded by the shipper and unloaded by the consignee, unless the motor carrier is a private or contract carrier.

(5) The packaging may be used only once under this paragraph and may not be used again for shipment of hazardous materials except in accordance with 173.28.

(d) Technical names for n.o.s. descriptions. The requirements for the inclusion of technical names for n.o.s. descriptions on shipping papers and package markings, 172.203 and 172.301 of this subchapter, respectively, do not apply to packagings prepared in accordance with paragraph (b) of this section, except as follows:

(1) Packages containing materials meeting the definition of a hazardous substance must be described as required in 172.203(c) of this subchapter and marked as required in 172.324 of this subchapter; and

(2) Packages containing hazardous materials subject to the provisions of 172.203(m) of this subchapter must be described in accordance with 172.203(m) of this subchapter."

REQUIREMENT SOURCE: 49CFR173 Part 24

Author's Note: Only sections A thru D are applicable to the PFP. Sections E thru I are covered in the Company Level P&T Functional Area.

"(a) Applicability. Except as otherwise provided in this subchapter, the provisions of this section apply to-

(1) Bulk and non-bulk packagings;

(2) New packagings and packagings which are reused; and

(3) Specification and non-specification packagings.

(b) Each package used for the shipment of hazardous materials under this subchapter shall be designed, constructed, maintained, filled, its contents so limited, and closed, so that under conditions normally incident to transportation-

(1) Except as otherwise provided in this subchapter, there will be no identifiable (without the use of instruments) release of hazardous materials to the environment;

(2) The effectiveness of the package will not be substantially reduced; for example, impact resistance, strength, packaging compatibility, etc. must be maintained for the minimum and maximum temperatures encountered during transportation;

(3) There will be no mixture of gases or vapors in the package which could, through any credible spontaneous increase of heat or pressure, significantly reduce the effectiveness of the packaging.

(c) Authorized packagings. A packaging is authorized for a hazardous material only if-

(1) The packaging is prescribed or permitted for the hazardous material in a packaging section specified for that material in Column 8 of the 172.101 Table and conforms to applicable requirements in the special provisions of Column 7 of the 172.101 Table and, for specification packagings (including U.N. standard packagings), the specification requirements in parts 178 and 179 of this subchapter; or

(2) The packaging is permitted under, and conforms to, provisions contained in 171.11, 171.12, 171.12a, 173.3, 173.4, 173.5, 173.7, 173.27, or 176.11 of this subchapter.

(d) DOT specification and U.N. standard packagings. For DOT specification packagings (including U.N. standard packagings), conformance to the applicable specifications in parts 178 and 179 of this subchapter is required in all details. For performance-oriented packagings covered by subpart L of part 178 of this subchapter, each packaging must be capable of meeting the performance test requirements specified in subpart M of part 178 of this subchapter for the applicable packing group shown in Column 5 of the 172.101 Table.

(e) Compatibility.

(1) Even though certain packagings are specified in this part, it is, nevertheless, the responsibility of the person offering a hazardous material for transportation to ensure that such packagings are compatible with their lading. This particularly applies to corrosivity, permeability, softening, premature aging and embrittlement.

(2) Packaging materials and contents must be such that there will be no significant chemical or galvanic reaction between the materials and contents of the package.

(3) Plastic packagings and receptacles.

(i) Plastic used in packagings and receptacles must be of a type compatible with the lading and may not be permeable to an extent that a hazardous condition is likely to occur during transportation, handling or refilling.

(ii) Each plastic packaging or receptacle which is used for liquid hazardous materials must be capable of withstanding without failure the procedure specified in appendix B of this part (''Procedure for Testing Chemical Compatibility and Rate of Permeation in Plastic Packagings and Receptacles''). The procedure specified in appendix B of this part must be performed on each plastic packaging or receptacle used for Packing Group I materials. The maximum rate of permeation of hazardous lading through or into the plastic packaging or receptacles may not

exceed 0.5 percent for materials meeting the definition of a Division 6.1 material according to 173.132 and 2.0 percent for other hazardous materials, when subjected to a temperature no lower than-

(A) 18°C (64°F) for 180 days in accordance with Test Method 1 in appendix B of this part;

(B) 50°C (122°F) for 28 days in accordance with Test Method 2 in appendix B of this part; or

(C) 60°C (140°F) for 14 days in accordance with Test Method 3 in appendix B of this part.

(iii) Alternative procedures or rates of permeation are permitted if they yield a level of safety equivalent to or greater than that provided by paragraph (e)(3)(ii) of this section and are specifically approved by the Associate Administrator for Hazardous Materials Safety.

(4) Mixed contents. Hazardous materials may not be packed or mixed together in the same outer packaging with other hazardous or nonhazardous materials if such materials are capable of reacting dangerously with each other and causing-

(i) Combustion or dangerous evolution of heat;

(ii) Evolution of flammable or poisonous gases; or

(iii) Formation of unstable or corrosive materials.

(5) Packagings used for solids, which may become liquid at temperatures likely to be encountered during transportation, must be capable of containing the hazardous material in the liquid state.

(f) Closures.

(1) Closures on packagings shall be so designed and closed that under conditions (including the effects of temperature and vibration) normally incident to transportation-

(i) Except as provided in paragraph (g) of this section, there is no identifiable release of hazardous materials to the environment from the opening to which the closure is applied; and

(ii) The closure is secure and leakproof.

(2) Except as otherwise provided in this subchapter, a closure (including gaskets or other closure components, if any) used on a specification packaging must conform to all applicable requirements of the specification.

(g) Venting. Venting of packagings, to reduce internal pressure which may develop by the evolution of gas from the contents, is permitted only when-

(1) Transportation by aircraft is not involved;

(2) Except as otherwise provided in this subchapter, the evolved gases are not poisonous, likely to create a flammable mixture with air or be an asphyxiant under normal conditions of transportation;

(3) The packaging is designed so as to preclude an unintentional release of hazardous materials from the receptacle; and

(4) For shipments in bulk packagings, venting is authorized for the specific hazardous material by a special provision in the 172.101 Table or by the applicable bulk packaging specification in part 178 of this subchapter.

(h) Outage and filling limits-

(1) General. When filling packagings and receptacles for liquids, sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the packaging or receptacle will occur as a result of an expansion of the liquid caused by temperatures likely to be encountered during transportation. Requirements for outage and filling limits for non-bulk and bulk packagings are specified in 173.24a(d) and 173.24b(a), respectively.

(2) Compressed gases and cryogenic liquids. Filling limits for compressed gases and cryogenic liquids are specified in 173.301 through 173.306 for cylinders and 173.314 through 173.319 for bulk packagings.

(i) Air transportation. Packages offered or intended for transportation by aircraft must conform to the general requirements for transportation by aircraft in 173.27, except as provided in 171.11 of this subchapter."

13.2.1.1 Type A Packaging

REQUIREMENT SOURCE: 49CFR173 Part 415

"Authorized Type A packages.

The following packages are authorized for shipment, if they do not contain quantities exceeding A1 or A2 as appropriate: (a) U.S. Department of Transportation (DOT) Specification 7A (178.350 of this subchapter) Type A general packaging. Each shipper of a Specification 7A package must maintain on file for at least one year after the latest shipment, and shall provide to DOT on request, a complete documentation of tests and an engineering evaluation or comparative data showing that the construction methods, packaging design, and materials of construction comply with that specification. Specification 7A packagings designed in accordance with the requirements of 178.350 in effect on June 30, 1983, and constructed prior to July 1, 1985, may continue to be used. Packagings either designed or constructed after June 30, 1985, must meet the requirements of 178.350 applicable at the time of their design or construction.
(b) DOT Specification 55 metal-encased shielded packaging constructed before April 1, 1975. Such packaging constructed after March 31, 1975 is not authorized unless it is requalified under DOT Specification 7A. Each packaging designed for liquids must also meet the requirements of 173.412 (m) and (n). Use of this packaging as DOT Specification 55 is not authorized after June 30, 1985.
(c) Any Type B, B(U) or B(M) packaging pursuant to 173.416.
(d) Any foreign made packaging that bears the marking "Type A" and which was used for the import of radioactive materials. Such packagings may be subsequently used for domestic and export shipments of radioactive materials. These packagings shall conform with requirements of the country of origin (as indicated by the packaging marking) applicable to Type A packagings. (The information collection requirements contained in paragraph (a) were approved by the Office of Management and Budget under control number 2137 0533)"

13.2.1.2 Type B Packaging

REQUIREMENT SOURCE: 49CFR173 Part 413

"Requirements for Type B packages.

Each Type B(U) or Type B(M) package must be designed and constructed to meet the applicable requirements in 10 CFR part 71."

13.2.1.3 Low Specific Activity Packaging

REQUIREMENT SOURCE: 49CFR173 Part 425 Introduction

"In addition to other applicable requirements specified in this subchapter, low specific activity (LSA) materials shall be transported in accordance with paragraph (a) of this section, or if transported as exclusive-use may be transported in accordance with paragraph (b) or (c) of this section."

REQUIREMENT SOURCE: 49CFR173 Part 425(a)

"(a) DOT Specification 7A (178.350 of this subchapter) Type A package. The requirements of 173.412 (a), (b), (d), and (n) do not apply."

REQUIREMENT SOURCE: 49CFR173 Part 425(b)(1) thru (9)

"(b) Packaged shipments of LSA material consigned as exclusive use shall either be in accordance with paragraph (a) of this section or shall comply with the following in which case they are excepted from specification packaging, marking and labeling:
(1) Materials must be packaged in strong, tight packages so that there will be no leakage of radioactive material under conditions normally incident to transportation.
(2) Packages must not have any significant removable surface contamination (see 173.443).
(3) External radiation levels must comply with 173.441.
(4) Shipments must be loaded by consignor and unloaded by consignee from the conveyance or freight contained in which originally loaded.
(5) There must be no loose radioactive material in the conveyance.
(6) Shipment must be braced so as to prevent shifting of lading under conditions normally incident to transportation.
(7) Except for shipments of unconcentrated uranium or thorium ores, the transport vehicle must be placarded with the placards prescribed in accordance with subpart F of part 172 of this subchapter, as appropriate.
(8) The exterior of each package must be stenciled or otherwise marked "Radioactive_LSA". Packages, with a capacity of 110 gallons or less, that contain a hazardous substance, must be stenciled or otherwise marked with the letters "RQ" in association with the above description.
(9) Specific instructions for maintenance of exclusive use shipment controls must be provided by the shipper to the carrier. Such instructions must be included with the shipping paper information."

REQUIREMENT SOURCE: 49CFR173 Part 425(d)

"Except for transportation by aircraft, low specific activity material that conforms with the provisions specified in 10 CFR 20.306 is excepted from all requirements of this subchapter pertaining to radioactive materials when offered for transportation for disposal or recovery. A material which meets the definition of another hazard class is subject to the provisions of this subchapter relating to that hazard class."

13.2.1.4 Limited Quantity Packaging

REQUIREMENT SOURCE: 49CFR173 Part 421

"Limited quantities of radioactive materials.

Radioactive materials whose activity per package does not exceed the limits specified in 173.423 are excepted from the specification packaging, shipping paper and certification, marking, and labeling requirements of this subchapter and requirements of this subpart if:
(a) The materials are packaged in strong, tight packages that will not leak any of the radioactive materials during conditions normally incident to transportation;
(b) The radiation level at any point on the external surface of the package does not exceed 0.5 millirem per hour;
(c) The nonfixed (removable) radioactive surface contamination on the external surface of the package does not exceed the limits specified in 173.443(a);
(d) The outside of the inner packaging or if there is no inner packaging, the outside of the packaging itself bears the marking "Radioactive";
(e) Except as provided in 173.424, the package does not contain more than 15 grams of uranium-235; and
(f) The material is otherwise prepared for shipment as specified in 173.421 1."

REQUIREMENT SOURCE: 49CFR173 Part 421(2)(a)

"Requirements for multiple hazard limited quantity radioactive materials.
Except as provided in paragraph (b) of this section or in 173.4 of this subchapter, when a limited quantity Class 7 material meets the definition of another hazard class or division, it shall be:
(1) Classed for the additional hazard;
(2) Packaged to conform with the requirements specified in 173.421 (a) through (e) or 173.422 (a) through (g), as appropriate; and
(3) Offered for transportation in accordance with the requirements applicable to the hazard for which it is classed."

REQUIREMENT SOURCE: 49CFR173 Part 421(2)(b)

"When a limited quantity Class 7 material meets the definition of Class 9 or is a combustible liquid in a non-bulk packaging, it shall be:
(1) Classed as a Class 7 material if:
(i) The material is not a hazardous waste or hazardous substance; and
(ii) The material is offered for transportation in a mode to which requirements of this subchapter pertaining to the specific material do not apply;
(2) Classed combustible liquid or Class 9, as appropriate, if:
(i) The material is a hazardous waste or hazardous substance; or
(ii) The material is offered for transportation in a mode to which requirements of this subchapter pertaining to the specific material do apply;
(3) Packaged to conform with requirements specified in 173.421 (a) through (e) or 173.422 (a) through (g), as appropriate; and
(4) Offered for transportation in accordance with requirements applicable to the hazard for which it is classed."

REQUIREMENT SOURCE: 49CFR173 Part 421(2)(c)

"A limited quantity Class 7 material which is classed other than Class 7 under the provisions of paragraph (a) or (b) of this section is excepted from the requirements of 173.421 1(a), 172.203(d), and 172.204(c)(4) of this subchapter if the entry "Limited quantity radioactive material" appears on the shipping paper in association with the basic description."

REQUIREMENT SOURCE: 49CFR173 Part 421-1

"Additional requirements for excepted packages containing Class 7 (radioactive) materials.

(a) Excepted packages prepared for shipment under the provisions of §§ 173.421, 173.422, 173.424, or 173.427 of this subpart must be certified as being acceptable for transportation by having a notice enclosed in or on the package, included with the packing list, or otherwise forwarded with the package. This notice must include the name of the consignor or consignee and the statement "This package conforms to the conditions and limitations specified in 49 CFR 173.421 for radioactive material, excepted package-limited quantity of material, UN2910; 49 CFR 173.422 for radioactive for radioactive material, excepted package--articles manufactured from natural or depleted uranium or natural thorium, UN2910; or 49 CFR 173.427 for radioactive material, excepted package--empty packages, UN2908", as appropriate.

(b) An excepted radioactive material classed radioactive material and prepared for shipment under the provisions of §173.421, §173.422, §173.424, §173.427 or §173.421-2 is not subject to the requirements of this subchapter, except for:

(1) Sections 171.15, 171.16, 174.750, 176.710 and 177.861 of this subchapter pertaining to the reporting of incidents and decontamination when transported by a mode other than air; or

(2) Sections 171.15, 171.16, 175.45, and 175.700(b) of this subchapter pertaining to the reporting of incidents and decontamination if transported by aircraft."

REQUIREMENT SOURCE: 49CFR173 Part 421-2

"Requirements for multiple hazard limited quantity radioactive materials.

(a) Except as provided in paragraph (b) of this section or in 173.4 of this subchapter, when a limited quantity Class 7 material meets the definition of another hazard class or division it shall be:

(1) Classed for the additional hazard;

(2) Packaged to conform with the requirements specified in 173.421 (a) through (e) or 173.422 (a) through (g), as appropriate; and

(3) Offered for transportation in accordance with the requirements applicable to the hazard for which it is classed.

(b) When a limited quantity Class 7 material meets the definition of Class 9 or is a combustible liquid in a non-bulk packaging it shall be:

(1) Classed as a Class 7 material if:

(i) The material is not a hazardous waste hazardous substance, or a marine pollutant; and

(ii) The material is offered for transportation in a mode to which requirements of this subchapter pertaining to the specific material do not apply;

(2) Classed combustible liquid or Class 9 as appropriate, if:

(i) The material is a hazardous waste or hazardous substance; or

(ii) The material is offered for transportation in a mode to which requirements of this subchapter pertaining to the specific material do apply;

(3) Packaged to conform with requirements specified in 173.421 (a) through (e) or 173.422 (a) through (g), as appropriate; and

(4) Offered for transportation in accordance with requirements applicable to the hazard for which it is classed.

(c) A limited quantity Class 7 material which is classed other than Class 7 under the provisions of paragraph (a) or (b) of this section is excepted from the requirements of 173.421-1(a) 172.203(d), and 172.204(c)(4) of this subchapter if the entry "Limited quantity radioactive material" appears on the shipping paper in association with the basic description.

[Amdt. 173-224 55 FR 52670, Dec. 21, 1990, as amended by Amdt. 173-226 56 FR 8624, Feb. 28, 1991; Amdt. 173-224, 56 FR 66279, Dec. 20 1991]"

13.2.1.5 Fissile Packaging

REQUIREMENT SOURCE: 10CFR71 Part 61(a)

"Specific Standards for a Fissile Class II Shipment. A package for Fissile Class III shipment must be so designed and constructed and its contents so limited, and number of packages in a Fissile Class III shipment must be so limited, that:

Twice this number of undamaged packages would be subcritical if stacked together in any arrangement, assuming close reflection on all sides of the stack by water; and"

REQUIREMENT SOURCE: 10CFR71 Part 61(b)

"This number of packages would be subcritical if stacked together in any arrangement, closely reflected on all sides of the stack by water, and with optimum interspersed hydrogenous moderation. Except as permitted under 10 CFR 71.41, each package must be considered to have been subjected to the tests specified in 10 CFR 71.73 (Hypothetical Accident Conditions)."

REQUIREMENT SOURCE: 49CFR173 Part 417

"Authorized packaging-fissile materials.

(a) Except as provided in 173.453, fissile materials containing not more than A1 or A2 as appropriate, shall be packaged in one of the following packagings:

(1) DOT Specification 6L (178.352 of this subchapter), metal packaging, for materials prescribed in paragraph (b)(1) of this section.

(2) DOT Specification 6M (178.354 of this subchapter), metal packaging, for materials prescribed in paragraph (b)(2) of this section.

(3) Any packaging listed in 173.415, limited to the following radioactive materials:

(i) 500 grams of uranium-235 in a single shipment as Fissile Class III or not more than 40 grams of uranium-235 per package as Fissile Class II. For Fissile Class II shipments, the transport index assigned to each package shall not be less than 0.4 for each gram of uranium-235 above 15 grams up to the maximum of 40 grams (transport index of 10).

(ii) 320 grams of plutonium-239 as plutonium-beryllium neutron sources in special form. Total radioactivity content may not exceed 20 curies. The transport index to be assigned to each package must be 0.5 for each 20 grams, or fraction thereof, of fissile plutonium.

(4) Any other Type A or Type B, Type B(U), or Type B(M) packaging for fissile radioactive materials that also meets the applicable standards for fissile materials in the regulations of the U.S. Nuclear Regulatory Commission (10 CFR part 71), and is used in accordance with 173.471.

(5) Any other Type A or Type B, Type B(U), or Type B(M) packaging that also meets the applicable requirements for fissile material packaging in Section V of the International Atomic Energy Agency "Regulations for the Safe Transport of Radioactive Materials, Safety Series No. 6," and for which the foreign competent authority certificate has been revalidated by the U.S. Competent Authority, in accordance with 173.473. These packages are authorized only for export and import shipments.

(6) A 55-gallon 1A2 steel drum, subject to the following conditions:

(i) The quantity may not exceed 350 grams of uranium-235 in any non-pyrophoric form, enriched to any degree in the uranium-235 isotope.

(ii) Each drum must have a minimum 18 gauge body and bottom head and 16 gauge removable top head with one or more corrugations in the cover near the periphery.

(iii) Closure must conform to 178.352 of this subchapter.

(iv) At least four equally spaced 12 millimeter (0.5 inch) diameter vent holes shall be provided on the sides of the drum near the top, each covered with weatherproof tape; or equivalent device.

(v) Appropriate primary inner containment of the contents and sufficient packaging material, such as plastic or metal jars or cans shall be provided such that Specification 7A (178.350 of this subchapter) provisions are satisfied by the inner packaging.

(vi) Each inner container shall be capable of venting if subjected to the thermal test described in 10 CFR part 71.

(vii) Liquid contents shall be packaged in accordance with 173.412(m) and (n).

(viii) The maximum weight of contents including internal packaging may not exceed 91 kilograms (200 pounds) with fissile material content limited as shown in Table 2: HAZDOCS-2 Table No. 78

(7) Any metal cylinder that meets the performance requirements of 173.415 and 178.350 of this subchapter for Specification 7A Type A packaging may be used as a Fissile Class I package for the transport of residual "heels" of enriched solid uranium hexafluoride without a protective overpack in accordance with Table 3: HAZDOCS-2 Table No. 79

(8) Packagings as prescribed in paragraph (b)(5) of this section, for materials, quantities and conditions as authorized and prescribed therein.

(b) Fissile radioactive materials with radioactive content exceeding A1 or A2 shall be packaged in one of the following packagings:

(1) DOT Specification 6L (178.352 of this subchapter), metal packaging. Authorized only for uranium-235, plutonium-239 or plutonium-241, as metal, oxide, or compounds that do not decompose at temperatures up to 149C (300F). Radioactive decay heat output may not exceed 5 watts. Radioactive materials in normal form shall be packaged in one or more tightly sealed metal cans or polyethylene bottles within a DOT Specification 2R (178.360 of this subchapter) containment vessel. Packages are authorized as Fissile Class II and III with materials limited in accordance with Table 4: HAZDOCS-2 Table No. 80

(2) DOT Specification 6M (178.354 of this subchapter), metal packaging. Authorized only for solid radioactive materials that will not decompose at temperatures up to 121C(250F). Radioactive decay heat output may not exceed 10 watts. Radioactive materials in other than special form shall be packaged in one or more tightly sealed metal cans or polyethylene bottles within a DOT Specification 2R (178.360 of this subchapter) containment vessel. For fissile materials:

(i) Fissile Class I packages are limited to the following amounts of fissile radioactive materials: 1.6 kilograms of uranium-235; 0.9 kilograms of plutonium (except that due to the 10-watt thermal decay heat limitation, the limit for plutonium-238 is 0.02 kilograms); and 0.5 kilograms of uranium-233. The maximum ratio of hydrogen to fissile material must not exceed three, including all of the sources of hydrogen within the DOT Specification 2R containment vessel.

(ii) Maximum quantities of fissile material for Fissile Class II and Fissile Class III, and other restrictions are given in Table 5. For a Fissile Class II package, the minimum transport index to be assigned is shown in Table 5 and for a Fissile Class III shipment, the allowable number of similar packages per conveyance and per transport vehicle is shown. Each Fissile Class III shipment is also subject to the requirements in 173.457. Where a maximum ratio of hydrogen to fissile material is specified in Table 5, only the hydrogen interspersed with the fissile material need be considered. For a uranium-233 shipment, the maximum inside diameter of the inner containment vessel must not exceed 12.1 centimeters (4.75 inches). Where necessary, a tight fitting steel insert shall be used to reduce a larger diameter inner containment vessel specified in 178.104 3(b) of this subchapter to the 12 centimeter (4.75 inch) limit. HAZDOCS-2 Table No. 81

(3) Type B, or Type B(U) or B(M) packaging that meets the standards for packaging of fissile materials in 10 CFR part 71, and is approved by the U.S. Nuclear Regulatory Commission in accordance with 173.471.

(4) Type B(U) or B(M) packaging that meets the applicable requirements for fissile radioactive materials in Section V of the IAEA "Regulations for the Safe Transport of Radioactive Materials, Safety Series No. 6" and for which the foreign competent authority certificate has been revalidated by the U.S. Competent Authority in accordance with 173.473. These packagings are authorized only for import and export shipments.

(5) DOT Specifications 20PF 1, 20PF 2, or 20PF 3 (178.356 of this subchapter), or Specifications 21PF 1, 21PF 1A, 21PF 1B, or 21PF 2 (178.358 of this subchapter) phenolic-foam insulated overpack with snug fitting inner metal cylinders, meeting all requirements of 173.24, 173.411, and 173.412, and the following:

(i) Handling procedures and packaging criteria must be in accordance with DOE Report ORO 651 or ANSI N14.1.

(ii) DOT Specification 21PF 1 overpacks in use or under construction before April 1, 1989, must be modified to DOT Specification 21PF 1A before April 1, 1991. Use of unmodified

DOT 21PF 1 overpacks is prohibited after March 31, 1991. All new construction to DOT Specification 21PF 1 beginning after March 31, 1989, must meet DOT Specification 21PF 1B.

(iii) Quantities of uranium hexafluoride are authorized as shown in Table 6, with each package to be shipped as Fissile Class II, and assigned a minimum transport index as also shown: HAZDOCS-2 Table No. 82"

REQUIREMENT SOURCE: 49CFR173 Part 433

"Requirements for determination of A1 and A2 values for radionuclides.

(a) Single radionuclides.

(1) For single radionuclides of known identity, the values of A1 and A2 are those given in the table in 173.435. The values of A1 and A2 are also applicable for radionuclides contained in (a,n) or (,n) neutron sources.

(2) For any single radionuclide of known identity, which is not listed in 173.435, the values of A1 and A2 shall be determined in accordance with the following:

(i) If the radionuclide emits only one type of radiation, A1 is determined in accordance with paragraphs (a)(2)(i) (A), (B), (C), and (D) of this section. For radionuclides emitting different kinds of radiation, A1 is the most restrictive value of those determined for each kind of radiation. However, in both cases, A1 is restricted to a maximum of 1000 curies. If a parent nuclide decays into a shorter lived daughter, of a half-life not greater than 10 days, A1 is calculated for both the parent and the daughter, and the more limiting of the two values is assigned to the parent nuclide.

(A) For gamma emitters, A1 is determined by the expression: A1=9/G curie where G is the gamma-ray constant, corresponding to the dose in roentgens per hour at 1 meter per curie; the number 9 results from the choice of 1 rem per hour at a distance of 3 meters as the reference dose-equivalent rate.

(B) For x-ray emitters, A1 is determined by the atomic number (Z) of the nuclide:

Z55 A1=1000 curies for Z 55 A1=200 curies

(C) For beta emitters, A1 is determined by the maximum beta energy (Emax) according to Table 8:

HAZDOCS-2 Table No. 85

(D) For alpha emitters, A1 is determined by the expression:

A1=1000 A3 where A3 is the value listed in Table 9:

HAZDOCS-2 Table No. 86

(ii) For assignment of A2 values, A2 is the more restrictive of the following values:

(A) The corresponding A1.
(B) The value A3 obtained from Table 9.

(3) For any single radionuclide whose identity is unknown, the value of A1 is 2 curies and the value of A2 is 0.002 curies. However, if the atomic number of the radionuclide is less than 82, the value of A1 is 10 curies and the value of A2 is 0.4 curies.

(b) Mixture of radionuclides, including radioactive decay chains.

(1) For mixed fission products, where a detailed analysis of the mixture is not carried out, the following activity limits apply:

(i) A1=10 curies.
(ii) A2=0.4 curies.

(2) A single radioactive decay chain is considered to be a single radionuclide when the radionuclides are present in their naturally occurring portions and no daughter nuclide has a half-life either longer than 10 days or longer than that of the parent nuclide. The activity to be taken into account and the A1 or A2 value to be applied are those corresponding to the parent nuclide of that chain. When calculating A1 or A2 values, radiation emitted by daughters must be taken into account. However, in the case of radioactive decay chains in which any daughter nuclide has a half-life either longer than 10 days or greater than that of the parent nuclide, the parent and daughter nuclides are considered to be mixtures of different nuclides.

(3) In the case of a mixture of different radionuclides, where the identity and activity of each radionuclide is known, the permissible activity of each radionuclide R1, R2,... Rn must be such that F1 + F2 +... Fn is not greater than unity, when_

HAZDOCS-2 Table No. 87

Where Ai (R1, R2... Rn) is the value of A1 or A2 as appropriate for the nuclide R1, R2... Rn.

(4) When the identity of each radionuclide is known but the individual activities of some of the radionuclides are not known, the formula given in subparagraph (3) of this paragraph must be applied to establish the values of A1 or A2 as appropriate. All the radionuclides whose individual activities are not known (but whose total activity is known) must be classed in a single group and the most restrictive value of A1 or A2 applicable to any one of them shall be used as the value of A1 and A2 in the denominator of the fraction.

(5) When the identity of each radionuclide is known but the individual activity of the radionuclides is not known, the most restrictive value of A1 or A2 applicable to any one of the radionuclides present is the applicable value.

(6) When the identity of the radionuclides is not known, the value of A1 is 2 curies and the value of A2 is 0.002 curies. However, if alpha emitters are known to be absent, the value of A2 is 0.4 curies."

REQUIREMENT SOURCE: 49CFR173 Part 455

"Classification of fissile materials packages.

(a) Except as provided in 173.453, each package of fissile materials shall be classified as follows:
(1) Fissile Class I. Packages that may be transported in unlimited number, and in any arrangement, and that require no nuclear criticality safety controls during transportation. A transport index is not assigned to Fissile Class I packages for the purposes of nuclear criticality safety control, although, the external radiation levels may require a transport index number.

(2) Fissile Class II. Packages that may be transported together in any arrangement but in numbers that do not exceed an aggregate transport index of 50. For the purposes of nuclear criticality safety control, individual packages may have a transport index of not less than 0.1 and not more than 10. However, the external radiation levels may require a higher transport index number. These shipments require no nuclear criticality safety control by the shipper during transportation.
(3) Fissile Class III. Shipments of packages of fissile materials that do not meet the requirements of Fissile Class I or Fissile Class II and that are controlled in transportation as prescribed in 173.457 by appropriate arrangements between the shipper and the carrier. (b) The numerical values for package assignments as Fissile Class I, the transport indexes for Fissile Class II packages, and the conveyance and vehicle limitations for Fissile Class III shipments shall be determined in accordance with 10 CFR part 71."

REQUIREMENT SOURCE: 49CFR173 Part 457

"Transportation of Fissile Class III shipments-specific requirements.

(a) Fissile Class III shipments shall incorporate transportation controls which are performed by the shipper or carrier, as appropriate, and which:
(1) Provide nuclear criticality safety;
(2) Protect against loading, storing, or transporting that shipment with any other fissile material; and
(3) Include in the shipping papers the description required by 172.203(d) of this subchapter.
(b) Fissile Class III shipments shall be transported:
(1) In a conveyance (transport vehicle if transported by public highway or rail) assigned to the exclusive use of the shipper with a specific restriction for the exclusive use to be provided in the appropriate arrangements between shipper and carrier and with instructions to that effect issued with the shipping papers;
(2) Except for shipments by aircraft, with an escort in a vehicle having the capability, equipment, authority, and instructions to provide administrative controls necessary to assure compliance with this section;
(3) In a conveyance (transport vehicle if transported by public highway or rail) containing no other packages of radioactive material that are required to bear one of the labels prescribed in 172.403 of this subchapter. Specific arrangements must be made between the shipper and the carrier, with instructions to that effect issued with the shipping papers; or
(4) Under any other procedure specifically authorized by the Associate Administrator for Hazardous Materials Safety in accordance with part 107 of this subchapter. (The information collection requirements contained in paragraph (b) were approved by the Office of Management and Budget under control number 2137 0535)"

REQUIREMENT SOURCE: DOE5480.3 Section 10.b

"Assumptions as to Unknown Properties. When the isotopic abundance, mass, concentration, degree if irradiation, degree of moderation, or other pertinent property of fissile material in any package is not known, the shipper shall package the fissile material as if the unknown properties have such credible values as will cause the maximum nuclear reactivity. Any special instructions needed to safely open the package are to be made available to the consignee."

13.2.1.6 Empty Packaging

REQUIREMENT SOURCE: 49CFR173 Part 29

"Empty packagings.

(a) General. Except as otherwise provided in this section, an empty packaging containing only the residue of a hazardous material shall be offered for transportation and transported in the same manner as when it previously contained a greater quantity of that hazardous material.

(b) Notwithstanding the requirements of paragraph (a) of this section, an empty packaging is not subject to any other requirements of this subchapter if it conforms to the following provisions:

(1) Any hazardous material shipping name and identification number markings, and any hazard warning labels or placards are removed, obliterated, or securely covered in transportation. This provision does not apply to transportation in a transport vehicle or a freight container if the packaging is not visible during transportation and the packaging is loaded by the shipper and unloaded by the shipper or consignee;

(2) The packaging_

(i) Is unused;

(ii) Is sufficiently cleaned of residue and purged of vapors to remove any potential hazard;

(iii) Is refilled with a material which is not hazardous to such an extent that any residue remaining in the packaging no longer poses a hazard; or

(iv) Contains only the residue of-

(A) An ORM D material; or

(B) A non-flammable gas with no subsidiary hazard at an absolute pressure less than 276 kPa (40 psia); at 21 C (70 F); and

(3) Any material contained in the packaging does not meet the definitions in 171.8 of this subchapter for either a hazardous substance or a hazardous waste.

(c) A non-bulk packaging containing only the residue of a hazardous material covered by Table 2 of 172.504 of this subchapter-

(1) Does not have to be included in determining the applicability of the placarding requirements of subpart F of part 172 of this subchapter; and

(2) Is not subject to the shipping paper requirements of this subchapter when collected and transported by a contract or private carrier for reconditioning, remanufacture or reuse.

(d) Notwithstanding the stowage requirements in Column 10a of the 172.101 Table for transportation by vessel, an empty drum or cylinder may be stowed on deck or under deck.

(e) Specific provisions for describing an empty packaging on a shipping paper appear in 172.203(e) of this subchapter.

(f) An empty tank car must conform to the placarding requirements specified in 172.510(c) of this subchapter.

(g) A package which contains a residue of an elevated temperature material may remain marked in the same manner as when it contained a greater quantity of the material even though it no longer meets the definition in 171.8 of this subchapter for an elevated temperature material."

REQUIREMENT SOURCE: 49CFR173 Part 427

"Empty radioactive materials packaging.

A packaging which previously contained radioactive materials and has been emptied of contents as far as practical, is excepted from the shipping paper and certification, marking and labeling requirements of this subchapter, and from requirements of this subpart, provided that:
(a) It complies with the requirements of 173.421 (b), (c), and (e);
(b) The packaging is in unimpaired condition and is securely closed so that there will be no leakage of radioactive material under conditions normally incident to transportation;
(c) Internal contamination does not exceed 100 times the limits in 173.443;
(d) Any labels previously applied in conformance with Subpart E of Part 172 of this subchapter are removed, obliterated or covered and the "Empty" label prescribed in 172.450 is affixed to the packaging; and
(e) The packaging is prepared for shipment as specified in 173.421 1."

13.2.1.7 Hazardous Materials

REQUIREMENT SOURCE: 49CFR173 Part 22

"Shipper's responsibility.

(a) Except as otherwise provided in this part, a person may offer a hazardous material for transportation in a packaging or container required by this part only in accordance with the following:

(1) The person shall class and describe the hazardous material in accordance with parts 172 and 173 of this subchapter, and

(2) The person shall determine that the packaging or container is an authorized packaging, including part 173 requirements, and that it has been manufactured, assembled, and marked in accordance with:

(i) Section 173.7(a) and parts 173, 178, or 179 of this subchapter;

(ii) A specification of the Department in effect at the date of manufacture of the packaging or container;

(iii) An approval issued under this subchapter; or

(iv) An exemption issued under subchapter B of this chapter.

(3) In making the determination under paragraph (a)(2) of this section, the person may accept:

(i) The manufacturer's certification, specification, approval, or exemption marking (see 178.0 2 and 179.1 of this subchapter); or

(ii) With respect to cargo tanks provided by a carrier, the manufacturer's identification plate or a written certification of specification or exemption provided by the carrier.

(4) For a DOT specification or UN Standard packaging, a person shall perform all functions necessary to bring that package into compliance with part 178 of this subchapter, as identified by the packaging manufacturer or subsequent distributor, in accordance with 178.2(c) of this subchapter.

(b) [Reserved]

(c) Prior to each shipment of fissile radioactive materials, and Type B or highway route controlled quantity packages of radioactive materials (see 173.403), the shipper shall notify the consignee of the dates of shipment and expected arrival. The shipper shall also notify each consignee of any special loading/unloading instructions prior to his first shipment. For any shipment of irradiated reactor fuel, the shipper shall provide physical protection in compliance with a plan established under:

(1) Requirements prescribed by the U.S. Nuclear Regulatory Commission, or

(2) Equivalent requirements approved by the Associate Administrator for Hazardous Materials Safety, RSPA.

(49 U.S.C. 1803, 1804, 1808, and 1809; 49 CFR 1.53, app. A to part 1)"

13.2.1.7.1 *Multiple Hazard Classification*

REQUIREMENT SOURCE: 49CFR173 Part 2(a)

"Classification of a material having more than one hazard.

(a) Classification of a material having more than one hazard. Except as provided in paragraph (c) of this section, a material not specifically listed in the 172.101 Table that meets the definition of more than one hazard class or division as defined in this part, shall be classed according to the following hazard classes, which are listed in descending order of hazard:

(1) Class 7 (radioactive materials, other than limited quantities).

(2) Division 2.3 (poisonous gases).

(3) Division 2.1 (flammable gases).

(4) Division 2.2 (nonflammable gases).

(5) Division 6.1 (poisonous liquids), Packing Group I, poisonous-by-inhalation only.

(6) A material that meets the definition of a pyrophoric material in 173.124(b)(1) of this subchapter (Division 4.2).

(7) A material that meets the definition of a self-reactive material in 173.124(a)(2) of this subchapter (Division 4.1).

(8) Class 3 (flammable liquids), Class 8 (corrosive materials), Division 4.1 (flammable solids), Division 4.2 (spontaneously combustible materials), Division 4.3 (dangerous when wet materials), Division 5.1 (oxidizers) or Division 6.1 (poisonous liquids or solids other than Packing Group I, poisonous-by-inhalation). The hazard class and packing group for a material meeting more than one of these hazards shall be determined using the precedence table in paragraph (b) of this section.

(9) Combustible liquids.

(10) Class 9 (miscellaneous hazardous materials).

(b) Precedence of hazard table for Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1. The following table ranks those materials that meet the definition of Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1: HAZDOCS-2 Table No. 25

(c) The following materials are not subject to the provisions of paragraph (a) of this section because of their unique properties:

(1) A Class 1 (explosive) material that meets any other hazard class or division as defined in this part shall be assigned a division in Class 1. Class 1 materials shall be classed and approved in accordance with 173.56 of this part;

(2) A Division 5.2 (organic peroxide) material that meets the definition of any other hazard class or division as defined in this part, shall be classed as Division 5.2;

(3) A Division 6.2 (infectious substance) material that meets the definition of any other hazard class or division as defined in this part shall be classed as Division 6.2;

(4) A material that meets the definition of a wetted explosive in 173.124(a)(1) of this subchapter (Division 4.1). Wetted explosives are either specifically listed in the 172.101 Table or are approved by the Associate Administrator for Hazardous Materials Safety (see 173.124(a)(1) of this subchapter); and

(5) A limited quantity of a Class 7 (radioactive) material that meets the definition for more than one hazard class or division shall be classed in accordance with 173.421 2."

13.2.1.7.2 ***Non-Bulk Packagings***

REQUIREMENT SOURCE: 49CFR173 Part 12

"Exceptions for shipment of waste materials.

(a) Open head drums. If a hazardous material that is a hazardous waste is required by this subchapter to be shipped in a closed head drum (i.e., a drum with a 7.0 cm (3 inches) or less bung opening) and the hazardous waste contains solids or semisolids that make its placement in a closed head drum impracticable, an equivalent (except for closure) open head drum may be used for the hazardous waste.

(b) Lab packs.

(1) Waste materials classed as Class or Division 3, 4.1, 4.2, 4.3, 5.1, 6.1, 8, or 9 are excepted from the specification packaging requirements of this subchapter for combination packagings if packaged in accordance with this paragraph and transported for disposal or recovery by highway only. In addition, a generic description from the 172.101 Table may be used in place of specific chemical names, when two or more chemically compatible waste materials in the same hazard class are packaged in the same outside packaging.

(2) Additional packaging requirements are as follows:

(i) The outer packaging must be a UN 1A2 or UN 1B2 metal drum, a UN 1D plywood drum, a UN 1G fiber drum or a UN 1H2 plastic drum tested and marked at least for the Packing Group III performance level for liquids or solids;

(ii) The inner packagings must be either glass, not exceeding 4 L (1 gallon) rated capacity, or metal or plastic, not exceeding 20 L (5.3 gallons) rated capacity;

(iii) Each outer packaging may contain only one class of hazardous material;

(iv) Inner packagings containing liquid must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents; and

(v) Gross weight of the complete package may not exceed 205 kg (452 lbs).

(3) Prohibited materials. Materials meeting the definition of Division 6.1, Packing Group I, or Division 4.2, Packing Group I, and bromine pentafluoride; bromine trifluoride; chloric acid; and oleum (fuming sulfuric acid) may not be packaged or described under the provisions of this paragraph.

(c) Reuse of packagings. A previously used packaging may be reused for the shipment of hazardous waste to designated facilities, not subject to the reconditioning and reuse provisions contained in 173.28 and part 178 of this subchapter, under the following conditions:

(1) Except as authorized by this paragraph, the waste must be packaged in accordance with this part and offered for transportation in accordance with the requirements of this subchapter.

(2) Transportation is performed by highway only.

(3) A package is not offered for transportation less than 24 hours after it is finally closed for transportation, and each package is inspected for leakage and is found to be free from leaks immediately prior to being offered for transportation.

(4) Each package is loaded by the shipper and unloaded by the consignee, unless the motor carrier is a private or contract carrier.

(5) The packaging may be used only once under this paragraph and may not be used again for shipment of hazardous materials except in accordance with 173.28.

(d) Technical names for n.o.s. descriptions. The requirements for the inclusion of technical names for n.o.s. descriptions on shipping papers and package markings, 172.203 and 172.301 of this subchapter, respectively, do not apply to packagings prepared in accordance with paragraph (b) of this section, except as follows:

(1) Packages containing materials meeting the definition of a hazardous substance must be described as required in 172.203(c) of this subchapter and marked as required in 172.324 of this subchapter; and

(2) Packages containing hazardous materials subject to the provisions of 172.203(m) of this subchapter must be described in accordance with 172.203(m) of this subchapter."

REQUIREMENT SOURCE: 49CFR173 Part 211(a)

"Non-bulk packagings for solid hazardous materials in Packing Group I.
When 172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I performance level, and to the requirements of the special provisions of Column 7 of the 172.101 Table."

REQUIREMENT SOURCE: 49CFR173 Part 212(a)

"Non-bulk packagings for solid hazardous materials in Packing Group II.
When 172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I or II performance level, and to the requirements of the special provisions of Column 7 of the 172.101 Table."

REQUIREMENT SOURCE: 49CFR173 Part 213(a)

"Non-bulk packagings for solid hazardous materials in Packing Group III.
When 172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I, II or III performance level, and to the requirements of the special provisions of Column 7 of the 172.101 Table."

13.2.1.8 Packaging Limitations

13.2.1.8.1 *Activity Limitations*

REQUIREMENT SOURCE: 49CFR173 Part 431

"Activity limits for Type A and Type B packages.

(a) A Type A package shall not contain a quantity of radioactivity greater than A1 (for special form radioactive material) or A2 (for normal form radioactive material) as listed in 173.435, or for radioactive materials not listed in 173.435, as determined in accordance with 173.433.
(b) The limits on activity contained in a Type B, Type B(U), or Type B(M) package are those prescribed in 173.416 or in the applicable approval certificate under 173.471 or 173.473."

REQUIREMENT SOURCE: DOE5480.3 Section 7

"REQUIREMENTS.
a. Federal Regulations. When offered to the carrier, each shipment of hazardous materials, hazardous substances, or hazardous wastes shall be in compliance with this Order and the applicable safety regulations of the Department of Transportation, and follow the applicable packaging standards of the Nuclear Regulatory Commission (10 CFR 71).
b. Special Packaging Requirements for Plutonium and Plutonium Bearing Wastes (in addition to other packaging requirements in this Order).
(1) Solid plutonium or plutonium bearing wastes in greater than A2 quantities for normal form or greater than A1 quantities for special form must be packaged in accordance with a specified DOE Certificate of Compliance, an NRC Certificate of Compliance, a DOE exempt packaging system, or a DOE Specification package.
(2) Plutonium (for air transport) in greater than A2 quantities for normal form or greater than A1 quantities for special form must be in DOE or NRC certified packaging (equivalent to, or meeting the criteria of NUREG-0360), e.g., USA/0361/BF, USA/9150/B(U) or USA/9509/B(U) (DOE-A1). The packaging approval shall authorize specifically the air transport of plutonium.
(3) Plutonium packaging requirements for any surface mode of transportation.

(a) Plutonium in excess of 20 curies per package must be shipped as a solid.

(b) Plutonium in excess of 20 curies per package must be packaged in a separate inner container placed within outer packaging that meets the requirements of a Type B package for material in normal form. In addition, the following tests must be performed on the package design:

1 If the entire package is subjected to the design tests specified in paragraph 11, "Normal Conditions of Transport," the separate inner container must restrict the loss of plutonium to no more than 10-6 A2/hour.

2 If the entire package is subjected to the design tests specified in paragraph 12, "Hypothetical Accident Conditions," the separate inner container must restrict the loss of plutonium to not more than an A2 quantity in 1 week.

(4) Solid plutonium in excess of 20 curies per package in the following forms is not subject to the requirements of paragraph 7b(3):

(a) Reactor fuel elements;

(b) Metal or metal alloy;

(c) Special Form materials; or

(d) Other forms of plutonium-bearing materials, e.g., wastes or contaminated equipment, as approved by the office of Operational Safety."

13.2.1.8.2 ***Radiation Levels***

REQUIREMENT SOURCE: 49CFR173 Part 441

"Radiation level limitations.

(a) Except as provided in paragraph (b) of this section, each package of radioactive materials offered for transportation shall be designed and prepared for shipment so that under conditions normally incident to transportation the radiation level does not exceed 200 millirem per hour at any point on the external surface of the package, and the transport index does not exceed 10.
(b) A package which exceeds the radiation level limits specified in paragraph (a) of this section shall be transported by exclusive use shipment only and the radiation levels for such shipment must not exceed the following during transportation:
(1) 200 millirem per hour (2 millisievert per hour) on the external surface of the package unless the following conditions are met, in which case the limit is 1000 millirem per hour (10 millisievert per hour).
(i) The shipment is made in a closed transport vehicle;
(ii) The package is secured within the vehicle so that its position remains fixed during transportation; and
(iii) There are no loading or unloading operations between the beginning and end of the transportation;
(2) 200 millirem per hour (2 millisievert per hour) at any point on the outer surfaces of the vehicle, including the top and underside of the vehicle; or in the case of a flat-bed style vehicle, at any point on the vertical planes projected from the outer edges of the vehicle, on the upper surface of the load (or enclosure is used), and on the lower external surface of the vehicle;
(3) 10 millirem per hour (0.1 millisievert per hour) at any point 2 meters (6.6 feet) from the outer lateral surfaces of the vehicle (excluding the top and underside of the vehicle); or in the case of a flat-bed style vehicle, at any point 2 meters (6.6 feet) from the vertical planes projected by the outer edges of the vehicle (excluding the top and underside of the vehicle); and
(4) 2 millirem per hour (0.02 millisievert per hour) in any normally occupied space, except that this provision does not apply to private carriers if exposed personnel under their control wear radiation dosimetry devices and operate under provisions of a State or Federally regulated radiation protection program.

(c) For shipments made under the provisions of paragraph (b) of this section, the shipper shall provide specific written instructions for maintenance of the exclusive use shipment controls to the carrier. The instructions shall be included with the shipping paper information.
(d) Packages exceeding the radiation level or transport index prescribed in paragraph (a) of this section shall not be transported by aircraft.
(e) The written instructions required for exclusive use shipments must be sufficient so that, when followed, they will cause the carrier to avoid actions which will unnecessarily delay delivery or unnecessarily result in increased radiation levels or radiation exposures. (The information collection requirements contained in paragraph (c) were approved by the Office of Management and Budget under control number 2137 0536)"

13.2.1.8.3 *Contamination Levels*

REQUIREMENT SOURCE: 49CFR173 Part 443

"Contamination control.

(a) The level of non-fixed (removable) radioactive contamination on the external surfaces of each package offered for shipment shall be kept as low as practicable. The level of non-fixed radioactive contamination may be determined by wiping an area of 300 square centimeters of the surface concerned with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. Sufficient measurements shall be taken in the most appropriate locations to yield a representative assessment of the non-fixed contamination levels. Except as provided in paragraph (b) of this section, the amount of radioactivity measured on any single wiping material when averaged over the surface wiped shall not exceed the limits given in Table 10 at any time during transport. Other methods of assessment of equal or greater efficiency may be used. When other methods are used the detection efficiency of the method used shall be taken into account and in no case shall the non-fixed contamination on the external surfaces of the package exceed ten times the limits listed in Table 10. HAZDOCS-2 Table No. 90

(b) Except as provided in paragraph (d) of this section, in the case of packages transported as exclusive use shipments by rail or public highway only, the removable (non-fixed) radioactive contamination on any package at any time during transport shall not exceed ten times the levels prescribed in paragraph (a) of this section. The levels at the beginning of transport shall not exceed the levels prescribed in paragraph (a) of this section.
(c) Except as provided in paragraph (d) of this section, each transport vehicle used for transporting radioactive materials as an exclusive use shipment which utilizes the provisions of paragraph (b) of this section shall be surveyed with appropriate radiation detection instruments after each use. A vehicle shall not be returned to service until the radiation dose rate at each accessible surface is 0.5 millirem per hour or less, and there is no significant removable (non-fixed) radioactive surface contamination as specified in paragraph (a) of this section.
(d) Paragraph (b) and (c) of this section do not apply to any closed transport vehicle used solely for the transportation by public highway of radioactive material packages with contamination levels that do not exceed 10 times the levels prescribed in paragraph (a) of this section if:
(1) A survey of the interior surfaces of the empty vehicle shows that the radiation dose rate at any point does not exceed 10 millirem per hour at the surface or 2 millirem per hour at 1 meter (3.3. feet) from the surface;
(2) Each vehicle is stenciled with the words "For Radioactive Materials Use Only" in letters at least 76 millimeters (3 inches) high in a conspicuous place on both sides of the exterior of the vehicle; and
(3) Each vehicle is kept closed except for loading or unloading."

13.2.1.8.4 *Thermal Levels*

REQUIREMENT SOURCE: 49CFR173 Part 442

"Thermal limitations.

Each package of radioactive material shall be designed, constructed, and loaded so that:

(a) The heat generated within the package because of the radioactive contents will not, at any time during transportation, affect the integrity of the package under conditions normally incident to transportation; and

(b) The temperature of the accessible external surfaces of the loaded package will not, assuming still air in the shade at an ambient temperature of 38° C (100° F), exceed either:

(1) 50° C (122F) in other than an exclusive use shipment; or

(2) 82° C (180F) in an exclusive use shipment."

13.2.2 Coordination and Planning of Base Technology

No requirements applicable to the PFP were identified within this subelement.

13.2.3 Vehicle and Equipment Control and Maintenance

No requirements pertaining to vehicle and equipment control and maintenance are applicable to the PFP, as this is the responsibility of another site organization. The applicable requirements are delineated in the Westinghouse Hanford Company (WHC) Company S/RID.

13.2.4 Onsite Material Tracking

No requirements applicable to PFP were identified under this subelement.

13.2.5 Offsite Transportation Management

The requirements applicable to Offsite Transportation Management are the responsibility of the WHC Company PT Organization and are delineated within the WHC Company S/RID.

13.2.6 Marking, Labeling and Placarding

13.2.6.1 Marking Requirements

REQUIREMENT SOURCE: 40CFR761 Part 40(b)

"As of October 1, 1978, each transport vehicle shall be marked on each end and side with ML as described in 761.45(a) if it is loaded with PCB Containers that contain more than 45 kg (99.4 lbs.) of PCBs in the liquid phase or with one or more PCB Transformers (See also paragraph (e) of this section)."

REQUIREMENT SOURCE: 40CFR761 Part 40(e)

"(e) As of October 1, 1979, applicable PCB Items in paragraph (a)(1), (6), (7), and (8) of this section containing PCBs in concentrations of 50 to 500 ppm and applicable transport vehicles in paragraph (b) of this section loaded with PCB Containers that contain more than 45 kg (99.4

lbs.) of liquid PCBs in concentrations of 50 ppm to 500 ppm shall be marked with mark ML as described in §61.45(a)."

REQUIREMENT SOURCE: 49CFR172 Part 300

"Applicability.

(a) Each person who offers a hazardous material for transportation shall mark each package, freight container, and transport vehicle containing the hazardous material in the manner required by this subpart.

(b) When assigned the function by this subpart, each carrier that transports a hazardous material shall mark each package, freight container, and transport vehicle containing the hazardous material in the manner required by this subpart."

REQUIREMENT SOURCE: 49CFR172 Part 302

"General marking requirements for bulk packagings.

(a) Identification numbers. Except as otherwise provided in this subpart, no person may offer for transportation or transport a hazardous material in a bulk packaging unless the packaging is marked as required by 172.332 with the identification number specified for the material in the 172.101 Table

(1) On each side and each end, if the packaging has a capacity of 3,785 L (1,000 gallons) or more;

(2) On two opposing sides, if the packaging has a capacity of less than 3,785 L (1,000 gallons); or

(3) For cylinders permanently installed on a tube trailer motor vehicle, on each side and each end of the motor vehicle.

(b) Size of markings. Except as otherwise provided, markings required by this subpart on bulk packagings must have a width of at least 6.0 mm (0.24 inch) and a height of at least

(1) 100 mm (3.9 inches) for rail cars;

(2) 25 mm (one inch) for portable tanks with capacities of less than 3,785 L (1,000 gallons); and

(3) 50 mm (2.0 inches) for cargo tanks and other bulk packages.

(c) Exemption packagings. The outside of each bulk package used under the terms of an exemption shall be plainly and durably marked "DOT E" followed by the exemption number assigned.

(d) Each bulk packaging marked with a proper shipping name, common name or identification number as required by this subpart must remain marked when it is emptied unless it is

(1) Sufficiently cleaned of residue and purged of vapors to remove any potential hazard; or

(2) Refilled, with a material requiring different markings or no markings, to such an extent that any residue remaining in the packaging is no longer hazardous.

(e) Additional requirements for marking portable tanks, cargo tanks, tank cars, multi-unit tank car tanks, and other bulk packagings are prescribed in 172.326, 172.328, 172.330, and 172.331, respectively, of this subpart.

(f) A bulk packaging marked prior to October 1, 1991, in conformance to the regulations of this subchapter in effect on September 30, 1991, need not be remarked if the key words of the proper shipping name are identical to those currently specified in the 172.101 Table. For example, a tank car marked "ANHYDROUS AMMONIA" need not be remarked "ANHYDROUS AMMONIA, LIQUEFIED".

REQUIREMENT SOURCE: 49CFR172 Part 303

"Prohibited marking.

(a) No person may offer for transportation or transport a package which is marked with the proper shipping name or identification number of a hazardous material unless the package contains the identified hazardous material or its residue.

(b) This section does not apply to_

(1) Transportation of a package in a transport vehicle or freight container if the package is not visible during transportation and is loaded by the shipper and unloaded by the shipper or consignee.

(2) Markings on a package which are securely covered in transportation.

(3) The marking of a shipping name on a package when the name describes a material not regulated under this subchapter."

REQUIREMENT SOURCE: 49CFR172 Part 312

"Liquid hazardous materials in non-bulk packagings.

(a) Except as provided in this section, each non-bulk combination package having inner packagings containing liquid hazardous materials must be:

(1) Packed with closures upward, and

(2) Legibly marked, with package orientation markings that conform pictorially to ISO Standard 780 1985, on two opposite vertical sides of the package with the arrows pointing in the correct upright direction. Depicting a rectangular border around the arrows is optional.

(b) Arrows for purposes other than indicating proper package orientation may not be displayed on a package containing a liquid hazardous material.

(c) The requirements of paragraph (a) of this section do not apply to

(1) A non-bulk package with inner packagings which are cylinders.

(2) Except when offered or intended for transportation by aircraft, packages containing flammable liquids in inner packagings of one liter or less prepared in accordance with 173.150 (b) or (c) of this subchapter.

(3) When offered or intended for transportation by aircraft, packages containing flammable liquids in inner packagings of 120 ml (4 fluid oz.) or less prepared in accordance with 173.150

(b) or (c) of this subchapter when packed with sufficient absorption material between the inner and outer packagings to completely absorb the liquid contents.

(4) Liquids contained in manufactured articles (e.g., alcohol or mercury in thermometers) which are leak-tight in all orientations.

(5) A non-bulk package with hermetically-sealed inner packagings."

REQUIREMENT SOURCE: 49CFR172 Part 332

"Identification number markings.

(a) General. When required by 172.302, 172.326, 172.328, 172.330, or 172.331 of this subpart, identification numbers shall be displayed on orange panels or placards as specified in this section or, when appropriate, on white square-on-point configurations as prescribed in 172.336(b).

(b) Orange panels. Display of an identification number on an orange panel shall be in conformance with the following:

(1) The orange panel must be 160 mm (6.3 inches) high by 400 mm (15.7 inches) wide with a 15 mm (0.6 inches) black outer border. The identification number shall be displayed in 100 mm (3.9 inches) black Helvetica Medium numerals on the orange panel. Measurements may vary from those specified plus or minus 5 mm (0.2 inches).

(2) The orange panel may be made of any durable material prescribed for placards in 172.519, and shall be of the orange color specified for labels or placards in appendix A to this part.

(3) The name and hazard class of a material may be shown in the upper left border of the orange panel in letters not more than 18 points high.

(4) Except for size and color, the orange panel and identification numbers shall be as illustrated for Liquefied petroleum gas:

(c) Placards. Display of an identification number on a hazard warning placard shall be in conformance with the following:

(1) The identification number shall be displayed across the center area of the placard in 88 mm (3.5 inches) black Alpine Gothic or Alternate Gothic No. 3 numerals on a white background 100 mm (3.9 inches) high and approximately 215 mm (8.5 inches) wide and may be outlined with a solid or dotted line border.

(2) The top of the 100 mm (3.9 inches) high white background shall be approximately 40 mm (1.6 inches) above the placard horizontal center line.

(3) An identification number may be displayed only on a placard corresponding to the primary hazard class of the hazardous material.

(4) For a COMBUSTIBLE placard used to display an identification number, the entire background below the white background for the identification number must be white during transportation by rail and may be white during transportation by highway.

(5) The name of the hazardous material and the hazard class may be shown in letters not more than 18 points high immediately within the upper border of the space on the placard bearing the identification number of the material.

(6) If an identification number is placed over the word(s) on a placard, the word(s) should be substantially covered to maximize the effectiveness of the identification number.

(d) Except for size and color, the display of an identification number on a placard shall be as illustrated for Acetone:

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, app. A to part 1)"

REQUIREMENT SOURCE: 49CFR172 Part 334

"Identification numbers; prohibited display.

(a) No person may display an identification number on a RADIOACTIVE, EXPLOSIVES 1.1, 1.2, 1.3, 1.4, 1.5 or 1.6, DANGEROUS, or subsidiary hazard placard.

(b) No person may display an identification number on a placard, orange panel or white square-on-point display configuration unless-

(1) The identification number is specified for the material in 172.101;

(2) The identification number is displayed on the placard, orange panel or white square-on-point configuration authorized by 172.332 or 172.336(b), as appropriate, and any placard used for display of the identification number corresponds to the hazard class of the material specified in 172.504;

(3) Except as provided under 172.336 (c)(4) or (c)(5) the package, freight container, or transport vehicle on which the number is displayed contains the hazardous material associated with that identification number in 172.101.

(c) Except as required by 172.332(c)(4) for a combustible liquid, the identification number of a material may be displayed only on the placards required by the tables in 172.504.

(d) Except as provided in 172.336, a placard bearing an identification number may not be used to meet the requirements of subpart F of this part unless it is the correct identification number for all hazardous materials of the same class in the transport vehicle or freight container on which it is displayed.

(e) Except as specified in 172.338, an identification number may not be displayed on an orange panel on a cargo tank unless affixed to the cargo tank by the person offering the hazardous material for transportation in the cargo tank.

(f) If a placard is required by 172.504, an identification number may not be displayed on an orange panel unless it is displayed in proximity to the placard.

(g) No person shall add any color, number, letter, symbol, or word other than as specified in this subchapter, to any identification number marking display which is required or authorized by this subchapter."

REQUIREMENT SOURCE: 49CFR172 Part 336

"Identification numbers; special provisions.

(a) When not required or prohibited by this subpart, identification numbers may be displayed on a transport vehicle or a freight container in the manner prescribed by this subpart.

(b) For hazardous materials in hazard classes for which hazard warning placards are not specified, identification numbers, when required, must be displayed on either orange panels (see 172.332(b)) or on a plain white square-on-point display configuration having the same outside dimensions as a placard. In addition, for materials in hazard classes for which placards are specified and identification number displays are required, but for which identification numbers may not be displayed on the placards authorized for the material (see 172.334(a)), identification numbers must be displayed on orange panels or on the plain white square-on-point display configuration in association with the required placards. An identification number displayed on a white square-on-point display configuration is not considered to be a placard.

(1) The 100 mm (3.9 inch) by 215 mm (8.5 inches) area containing the identification number shall be located as prescribed by 172.332 (c)(1) and (c)(2) and may be outlined with a solid or dotted line border.

(2) [Reserved]

(c) Identification numbers are not required:

(1) On the ends of a portable tank, cargo tank or tank car having more than one compartment if hazardous materials having different identification numbers are being transported therein. In such a circumstance, the identification numbers on the sides of the tank shall be displayed in the same sequence as the compartments containing the materials they identify.

(2) On a cargo tank containing only gasoline, if the cargo tank is marked "Gasoline" on each side and rear in letters no less than 50 mm (2 inches) high, or is placarded in accordance with 172.542(c).

(3) On a cargo tank containing only fuel oil, if the cargo tank is marked "Fuel Oil" on each side and rear in letters no less than 50 mm (2 inches) high, or is placarded in accordance with 172.544(c).

(4) For each of the different liquid petroleum distillate fuels, including gasoline and gasohol in a compartmented cargo tank or tank car, if the identification number is displayed for the distillate fuel having the lowest flash point.

(5) For each of the different liquid petroleum distillate fuels, including gasoline and gasohol transported in a cargo tank, if the identification number is displayed for the liquid petroleum distillate fuel having the lowest flash point.
(6) On nurse tanks meeting the provisions of 173.315(m) of this subchapter."

13.2.6.1.1 ***Hazardous Materials***

REQUIREMENT SOURCE: 49CFR172 Part 301

"General marking requirements for non-bulk packagings.

(a) Proper shipping name and identification number.

(1) Except as otherwise provided by this subchapter, each person who offers for transportation a hazardous material in a non-bulk packaging shall mark the package with the proper shipping name and identification number (preceded by "UN" or "NA", as appropriate) for the material as shown in the 172.101 table.

(2) The proper shipping name for a hazardous waste (as defined in 171.8 of this subchapter) is not required to include the word "waste" if the package bears the EPA marking prescribed by 40 CFR 262.32.

(b) Technical names. In addition to the marking required by paragraph (a) of this section, each non-bulk packaging containing hazardous materials subject to the provisions of §172.203(k) of this part shall be marked with the technical name in parentheses in association with the proper shipping name in accordance with the requirements and exceptions specified for display of technical descriptions on shipping papers in §172.203(k) of this part.

(c) Exemption packagings. The outside of each package authorized by an exemption shall be plainly and durably marked "DOT E" followed by the exemption number assigned.

(d) Consignee's or consignor's name and address. Each person who offers for transportation a hazardous material in a non-bulk package shall mark that package with the name and address of the consignor or consignee except when the package is--

(1) Transported by highway only and will not be transferred from one motor carrier to another; or

(2) Part of a carload lot, truckload lot or freight container load, and the entire contents of the rail car, truck or freight container are shipped from one consignor to one consignee.

(e) Previously marked packagings. A package which has been previously marked as required for the material it contains and on which the marking remains legible, need not be remarked. (For empty packagings, see §173.29 of this subchapter.)

(f) Marking exceptions.

(1) Identification numbers are not required on packages which contain only limited quantities, as defined in §171.8 of this subchapter, or ORM-D materials.

(2) The marking of technical names on non-bulk packagings filled for shipment prior to December 31, 1990 is not required until December 31, 1991."

REQUIREMENT SOURCE: 49CFR172 Part 304

"Marking requirements.

(a) The marking required in this subpart

(1) Must be durable, in English and printed on or affixed to the surface of a package or on a label, tag, or sign.

(2) Must be displayed on a background of sharply contrasting color;

(3) Must be unobscured by labels or attachments; and

(4) Must be located away from any other marking (such as advertising) that could substantially reduce its effectiveness."

13.2.6.1.2 *Radioactive Materials*

REQUIREMENT SOURCE: 49CFR172 Part 310

"Radioactive materials.

(a) In addition to any other markings required by this subpart, each package containing radioactive materials must be marked as follows:

(1) Each package of radioactive materials in excess of 110 pounds (50 kilograms) must have its gross weight plainly and durably marked on the outside of the package.

(2) Each package of radioactive materials which conforms to the requirements for Type A or Type B packaging (173.403 of this subchapter) must be plainly and durably marked on the outside of the package in letters at least -inch (13 mm.) high, with the words "TYPE A" or "TYPE B" as appropriate. A packaging which is not in compliance with these requirements may not be so marked.

(3) Each package of radioactive material destined for export shipment must also be marked "USA" in conjunction with the specification marking, or other package certificate identification. (See 173.471 173.472, and 173.473 of this subchapter.) (49 U.S.C. 1803, 1804, 1808, 49 CFR 1.53, app. A to part 1)"

13.2.6.1.3 *Hazardous Substances*

REQUIREMENT SOURCE: 49CFR172 Part 324

"Hazardous substances in non-bulk packagings.

For each non-bulk package that contains a hazardous substance

(a) Except for radioactive material in packages labeled in accordance with 172.403 of this subchapter, if the proper shipping name does not identify the hazardous substance by name, one of the following descriptions shall be marked on the package, in parentheses, in association with the proper shipping name:

(1) The name of the hazardous substance as shown in the appendix to 172.101; or

(2) For waste streams, the waste stream number; or

(3) For wastes which exhibit an EPA characteristic of ignitability, corrosivity, reactivity, or Toxicity, the letters "EPA" followed by the word "ignitability", or "corrosivity", or "reactivity", or "Toxicity", as appropriate or the corresponding "D" number, as appropriate.

(b) The letters "RQ" shall be marked on the package in association with the proper shipping name."

13.2.6.2 Labeling Requirements

13.2.6.2.1 *Hazardous Materials*

REQUIREMENT SOURCE: 49CFR172 Part 400

"General labeling requirements.

(a) Except as specified in 172.400a, each person who offers for transportation or transports a hazardous material in any of the following packages or containment devices, shall label the package or containment device with labels specified for the material in the 172.101 Table and in this subpart:

(1) A non-bulk package;

(2) A bulk packaging, other than a cargo tank, portable tank, or tank car, with a volumetric capacity of less than 18m3 (640 cubic feet), unless placarded in accordance with subpart F of this part;

(3) A portable tank of less than 3785 L (1000 gallons) capacity, unless placarded in accordance with subpart F of this part;

(4) A DOT Specification 106 or 110 multi-unit tank car tank, unless placarded in accordance with subpart F of this part; and

(5) An overpack, freight container or unit load device, of less than 18 m3 (640 cubic feet), which contains a package for which labels are required, unless placarded or marked in accordance with 172.512 of this part.

(b) Labeling is required for a hazardous material which meets one or more hazard class definitions, in accordance with Column 6 of the 172.101 Table and the following table: HAZDOCS-2 Table No. 16"

REQUIREMENT SOURCE: 49CFR172 Part 400(a)

"Exceptions from labeling.

(a) Notwithstanding the provisions of 172.400, a label is not required on_

(1) A cylinder containing a Division 2.1 or Division 2.2 gas that is

(i) Not poisonous;

(ii) Carried by a private or contract motor carrier;

(iii) Not overpacked; and

(iv) Durably and legibly marked in accordance with CGA Pamphlet C 7, appendix A.

(2) A package or unit of military explosives (including ammunition) shipped by or on behalf of the DOD when in_

(i) Freight containerload, carload or truckload shipments, if loaded and unloaded by the shipper or DOD; or

(ii) Unitized or palletized break-bulk shipments by cargo vessel under charter to DOD if at least one required label is displayed on each unitized or palletized load.

(3) A package containing a hazardous material other than ammunition that is_

(i) Loaded and unloaded under the supervision of DOD personnel, and

(ii) Escorted by DOD personnel in a separate vehicle.

(4) A compressed gas cylinder permanently mounted in or on a transport vehicle.

(5) A freight container, aircraft unit load device or portable tank, which_

(i) Is placarded in accordance with subpart F of this part, or

(ii) Conforms to paragraph (a)(3) or (b)(3) of 172.512.

(6) An overpack or unit load device in or on which labels representative of each hazardous material in the overpack or unit load device is visible.

(7) A package of low specific activity radioactive material, when transported under 173.425(b) of this subchapter.

(b) Certain exceptions to labeling requirements are provided for small quantities and limited quantities in applicable sections in part 173 of this subchapter. [Amdt. 172 123, 55 FR 52594, Dec. 21, 1990]"

REQUIREMENT SOURCE: 49CFR172 Part 401

"Prohibited labeling.

(a) Except as provided in paragraph (c) of this section, no person may offer for transportation and no carrier may transport any package bearing a label specified in this subpart unless:

(1) The package contains a material that is a hazardous material, and

(2) The label represents a hazard of the hazardous material in the package.

(b) No person may offer for transportation and no carrier may transport a package bearing any marking or label which by its color, design, or shape could be confused with or conflict with a label prescribed by this part.

(c) The restrictions in paragraphs (a) and (b) of this section, do not apply to packages labeled in conformance with:

(1) Any United Nations recommendation, including the class number (see 172.407), in the document entitled "Transport of Dangerous Goods.";

(2) The International Maritime Organization (IMO) requirements, including the class number (see 172.407), in the document entitled "International Maritime Dangerous Goods Code";

(3) The ICAO Technical Instructions; or

(4) The TDG Regulations.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, app. A to part 1)"

REQUIREMENT SOURCE: 49CFR172 Part 402

"Additional labeling requirements.

(a) Subsidiary hazard labels. Each package containing a hazardous material

(1) Shall be labeled with primary and subsidiary hazard labels as specified in Column 6 of the 172.101 Table; and

(2) For other than Class 2 or Class 1 materials (for subsidiary labeling requirements for Class 1 materials see paragraph (e) of this section), if not already labeled under paragraph (a)(1) of this section, shall be labeled with subsidiary hazard labels in accordance with the following table: HAZDOCS-2 Table No. 17

(b) Display of hazard class on labels. The appropriate hazard class or, for Division 5.1 or 5.2 the division number, shall be displayed in the lower corner of a primary hazard label and may not be displayed on a subsidiary label.

(c) Cargo Aircraft Only label. Each person who offers for transportation or transports by aircraft a package containing a hazardous material which is authorized on cargo aircraft only shall label the package with a CARGO AIRCRAFT ONLY label specified in 172.448 of this subpart.

(d) Radioactive Materials. Each package containing a radioactive material that also meets the definition of one or more additional hazards, except Class 9, shall be labeled as a radioactive material as required by 172.403 of this subpart and for each additional hazard.

(e) Class 1 (explosive) Materials. In addition to the label specified in Column 6 of the 172.101 Table, each package of Class 1 material that also meets the definition for:

(1) Division 6.1, Packing Groups I or II, shall be labeled POISON; or

(2) Class 7, shall be labeled in accordance with 172.403 of this subpart."

REQUIREMENT SOURCE: 49CFR172 Part 403

"Radioactive material.

(a) Unless excepted from labeling by 173.421 through 173.425 of this subchapter, each package of radioactive material must be labeled as provided in this section.

(b) The proper label to affix to a package of radioactive material is based on the radiation level at the surface of the package, the transport index (173.403 of this subchapter) and, if appropriate, the fissile characteristics of the package. The proper category of label shall be determined in accordance with paragraph (c) of this section. The label to be applied shall be the highest category required for any of the three determining conditions for the package. Radioactive White-I is the lowest category and Radioactive Yellow-III is the highest. For example: a package with a transport index of 0.8 and a maximum surface radiation level of 60 millirem per hour which contains no fissile material must bear a Radioactive Yellow-III label.

(c) Category of Label to be Applied to Radioactive Materials Packages: HAZDOCS-2 Table No. 18

(d) EMPTY label. See 173.427(d) of this subchapter for EMPTY labeling requirements.

(e) [Reserved]

(f) Each package required by this section to be labeled with a RADIOACTIVE label must have two of these labels, affixed to opposite sides of the package. (See 172.406(e)(3) for freight container label requirements).

(g) The following applicable items of information must be entered in the blank spaces on the RADIOACTIVE label by legible printing (manual or mechanical), using a durable weather resistant means of marking:

(1) Contents. The name of the radionuclides as taken from the listing of radionuclides in 173.435, of this subchapter (symbols which conform to established radiation protection terminology are authorized, i.e., 99Mo, 60Co, etc.). For mixtures of radionuclides, the most restrictive radionuclides on the basis of radiotoxicity must be listed as space on the label allows.

(2) Activity. Units shall be expressed in appropriate curie units, i.e., curies (Ci), millicuries (mCi) or microcuries (uCi) (abbreviations are authorized). For a fissile material, the weight in grams or kilograms of the fissile radioisotope also may be inserted.

(3) Transport index. (See 173.403 of this subchapter.) (49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, app. A to part 1)"

REQUIREMENT SOURCE: 49CFR172 Part 404

"Labels for mixed and consolidated packaging.

(a) Mixed packaging. When hazardous materials having different hazard classes are packed within the same packaging, or within the same outside container or overpack as described in 173.25 and authorized by 173.21 of this subchapter, the packaging, outside container or overpack must be labeled as required for each class of hazardous material contained therein.

(b) Consolidated packaging. When two or more packages containing compatible hazardous material (see 173.21 of this subchapter) are placed within the same outside container or overpack, the outside container or overpack must be labeled as required for each class of hazardous material contained therein."

REQUIREMENT SOURCE: 49CFR172 Part 405

"Authorized label modifications.

(a) For Classes 1, 2, 3, 4, 5, 6, and 8, text indicating a hazard (for example FLAMMABLE LIQUID) is not required on a primary or subsidiary label when_

(1) The label otherwise conforms to the provisions of this subpart, and

(2) The hazard class or, for Division 5.1 or 5.2 the division number, is displayed in the lower corner of the label, if the label corresponds to the primary hazard class of the hazardous material.

(b) For a package containing Oxygen, compressed, or Oxygen, refrigerated liquid, the OXIDIZER label specified in 172.426 of this subpart, modified to display the word "OXYGEN" instead of "OXIDIZER", and the class number "2" instead of "5.1", may be used in place of the NON-FLAMMABLE GAS and OXIDIZER labels. Notwithstanding the provisions of paragraph (a) of this section, the word "OXYGEN" must appear on the label."

REQUIREMENT SOURCE: 49CFR172 Part 406

"Placement of labels.

(a) General.

(1) Except as provided in paragraphs (b) and (e) of this section, each label required by this subpart must—

(i) Be printed on or affixed to a surface (other than the bottom) of the package or containment device containing the hazardous material; and

(ii) Be located on the same surface of the package and near the proper shipping name marking, if the package dimensions are adequate.

(2) Except as provided in paragraph (e) of this section, duplicate labeling not required on a package or containment device (such as to satisfy redundant labeling requirements).

(b) Exceptions. A label may be printed on or placed on a securely affixed tag, or may be affixed by other suitable means to:

(1) A package that contains no radioactive material and which has dimensions less than those of the required label;

(2) A cylinder; and

(3) A package which has such an irregular surface that a label cannot be satisfactorily affixed.

(c) Placement of multiple labels. When primary and subsidiary hazard labels are required, they must be displayed next to each other. Placement conforms to this requirement if labels are within 150 mm (6 inches) of one another.

(d) Contrast with background. Each label must be printed on or affixed to a background of contrasting color, or must have a dotted or solid line outer border.

(e) Duplicate labeling. Generally, only one of each different required label must be displayed on a package. However, duplicate labels must be displayed on at least two sides or two ends (other than the bottom) of

(1) Each non-bulk package or overpack having a volume of 1.8 m\3\ (64 cubic feet) or more;

(2) Each non-bulk package containing a radioactive material;

(3) Each DOT 106 or 110 multi-unit tank car tank. Labels must be displayed on each end;

(4) Each portable tank of less than 3,785 L (1000 gallons) capacity; and

(5) Each freight container or aircraft unit load device having a volume of 1.8 m\3\ (64 cubic feet) or more, but less than 18 m\3\ (640 cubic feet). One of each required label must be displayed on or near the closure.

(f) Visibility. A label must be clearly visible and may not be obscured by markings or attachments."

REQUIREMENT SOURCE: 49CFR172 Part 407

"Label specifications.

(a) Durability Each label, whether printed on or affixed to a package, must be durable and weather resistant. A label on a package must be able to withstand, without deterioration or a

substantial change in color, a 30-day exposure to conditions incident to transportation that reasonably could be expected to be encountered by the labeled package.

(b) Design.

(1) Except for size and color, the printing, inner border, and symbol on each label must be as shown in 172.411 through 172.448 of this subpart, as appropriate.

(2) The dotted line border shown on each label is not part of the label specification, except when used as an alternative for the solid line outer border to meet the requirements of 172.406(d) of this subpart.

(c) Size.

(1) Each diamond (square-on-point) label prescribed in this subpart must be at least 100 mm (3.9 inches) on each side with each side having a solid line inner border 5.0 to 6.3 mm (0.2 to 0.25 inches) from the edge.

(2) The CARGO AIRCRAFT ONLY label must be a rectangle measuring at least 110 mm (4.3 inches) in height by 120 mm (4.7 inches) in width. The word "DANGER" must be shown in letters measuring at least 12.7 mm (0.5 inches) in height.

(3) Except as otherwise provided in this subpart, the hazard class number, or division number, as appropriate, must be at least 6.3 mm (0.25 inches) and not greater than 12.7 mm (0.5 inches).

(4) When text indicating a hazard is displayed on a label, the label name must be shown in letters measuring at least 7.6 mm (0.3 inches) in height except that-

(i) For a SPONTANEOUSLY COMBUSTIBLE or DANGEROUS WHEN WET label, respectively, the words "Spontaneously" and "When Wet" must be shown in letters measuring at least 5.1 mm (0.2 inches) in height.

(ii) For a KEEP AWAY FROM FOOD label, the word "HARMFUL" must be shown in letters measuring at least 7.6 mm (0.3 inches) in height.

(5) The symbol on each label must be proportionate in size to that shown in the appropriate section of this subpart.

(d) Color.

(1) The background color on each label must be as prescribed in 172.411 through 172.448 of this subpart, as appropriate.

(2) The symbol, text, numbers, and border must be shown in black on a label except that-

(i) White may be used on a label with a one color background of green, red or blue; and

(ii) White must be used for the text and class number for the CORROSIVE label.

(3) Black and any color on a label must be able to withstand, without substantial change, a 72-hour fadeometer test (for a description of equipment designed for this purpose, see ASTM G 23 69 (1975) or ASTM G 26 70).

(4) (i) A color on a label, upon visual examination, must fall within the color tolerances-

(A) Displayed on color charts conforming to the technical specifications for charts set forth in Table 1 or 2 in appendix A to this part; or

(B) For labels printed on packaging surfaces, specified in Table 3 in appendix A to this part.

(ii) Color charts conforming to appendix A to this part are on display in Room 8421, Nassif Building, 400 Seventh Street, SW., Washington DC 20590- 0001.

(5) The specified label color must extend to the edge of the label in the area designated on each label except the CORROSIVE, RADIOACTIVE YELLOW II AND RADIOACTIVE YELLOW III labels on which the color must extend only to the inner border.

(e) Form identification. A label may contain form identification information, including the name of its maker, provided that information is printed outside the solid line inner border in no larger than 10-point type.

(f) Exceptions. A label conforming to specifications in the UN Recommendations may be used in place of a corresponding label which conforms to the requirements of this subpart."

13.2.6.3 Placarding Requirements

REQUIREMENT SOURCE: 49CFR172 Part 500

"Applicability of placarding requirements.

(a) Each person who offers for transportation or transports any hazardous material subject to this subchapter shall comply with the applicable placarding requirements of this subpart.

(b) This subpart does not apply to-

(1) Infectious substances;

(2) Hazardous materials classed as ORM D;

(3) Hazardous materials authorized by this subchapter to be offered for transportation as Limited Quantities when identified as such on shipping papers in accordance with 172.203(b);

(4) Hazardous materials which are packaged as small quantities under the provisions of 173.4 of this subchapter; and

(5) Combustible liquids in non-bulk packagings."

REQUIREMENT SOURCE: 49CFR172 Part 502

"Prohibited and permissive placarding.

(a) Prohibited placarding. Except as provided in paragraph (b) of this section, no person may affix or display on a packaging, freight container, unit load device, motor vehicle or rail car-

(1) Any placard described in this subpart unless

(i) The material being offered or transported is a hazardous material;

(ii) The placard represents a hazard of the hazardous material being offered or transported; and

(iii) Any placarding conforms to the requirements of this subpart.

(2) Any sign or other device that, by its color, design, shape or content, could be confused with any placard prescribed in this subpart..

(b) Exceptions.

(1) The restrictions in paragraph (a) of this section do not apply to a bulk packaging, freight container, unit load device, transport vehicle or rail car which is placarded in conformance with the TDG Regulations, the IMDG Code or the UN Recommendations.

(2) The restrictions of paragraph (a) of this section do not apply to the display of an identification number on a white square-on-point configuration in accordance with 172.336(b) of this part.

(c) Permissive placarding. Placards may be displayed for a hazardous material, even when not required, if the placarding otherwise conforms to the requirements of this subpart."

REQUIREMENT SOURCE: 49CFR172 Part 504

"General placarding requirements.

(a) General. Except as otherwise provided in this subchapter, each bulk packaging, freight container, unit load device, transport vehicle or rail car containing any quantity of a hazardous material must be placarded on each side and each end with the type of placards specified in Tables 1 and 2 of this section and in accordance with other placarding requirements of this subpart, including the specifications for the placards named in the tables and described in detail in 172.519 through 172.560.

(b) DANGEROUS placard. A freight container, unit load device, transport vehicle or rail car which contains non-bulk packagings with two or more categories of hazardous materials that require different placards specified in Table 2 may be placarded with DANGEROUS placards instead of the separate placarding specified for each of the materials in Table 2. However, when 2,268 kg (5,000 pounds) or more of one category of material is loaded therein at one loading facility, the placard specified in Table 2 of paragraph (e) of this section for that category must be applied.

(c) Exception for less than 454 kg (1,001 pounds). Except for bulk packagings and hazardous materials subject to 172.505, when hazardous materials covered by Table 2 of this section are transported by highway or rail, placards are not required on—

(1) A transport vehicle or freight container which contains less than 454 kg (1001 pounds) aggregate gross weight of hazardous materials covered by Table 2 of paragraph (e) of this section; or

(2) A rail car loaded with transport vehicles or freight containers, none of which is required to be placarded. The exceptions provided in paragraph (c) of this section do not prohibit the display of placards in the manner prescribed in this subpart, if not otherwise prohibited (see 172.502), on transport vehicles or freight containers which are not required to be placarded.

(d) Exception for empty non-bulk packages. A non-bulk packaging that contains only the residue of a hazardous material covered by Table 2 of paragraph (e) of this section need not be included in determining placarding requirements.

(e) Placarding tables. Placards are specified for hazardous materials in accordance with the following tables:

HAZDOCS-2 Table No. 19

HAZDOCS-2 Table No. 20

(f) Additional placarding exceptions.

(1) When more than one division placard is required for Class 1 materials on a transport vehicle, rail car, freight container or unit load device, only the placard representing the lowest division number must be displayed.

(2) A FLAMMABLE placard may be used in place of a COMBUSTIBLE placard on—

(i) A cargo tank or portable tank.

(ii) A compartmented tank car which contains both flammable and combustible liquids.

(3) A NON-FLAMMABLE GAS placard is not required on a transport vehicle which contains non-flammable gas if the transport vehicle also contains flammable gas or oxygen and it is placarded with FLAMMABLE GAS or OXYGEN placards, as required.

(4) OXIDIZER placards are not required for Division 5.1 materials on freight containers, unit load devices, transport vehicles or rail cars which also contain Division 1.1 or 1.2 materials and which are placarded with EXPLOSIVES 1.1 or 1.2 placards, as required.

(5) For transportation by transport vehicle or rail car only, an OXIDIZER placard is not required for Division 5.1 materials on a transport vehicle, rail car or freight container which also contains Division 1.5 explosives and is placarded with EXPLOSIVES 1.5 placards, as required.

(6) The EXPLOSIVE 1.4 placard is not required for those Division 1.4 Compatibility Group S (1.4S) materials that are not required to be labeled 1.4S.

(7) For domestic transportation of oxygen, compressed or oxygen, refrigerated liquid, the OXYGEN placard in 172.530 of this subpart may be used in place of a NON-FLAMMABLE GAS placard.

(8) Except for a material classed as a combustible liquid that also meets the definition of a Class 9 material, a COMBUSTIBLE placard is not required for a material classed as a combustible liquid when transported in a non-bulk packaging. For a material in a non-bulk packaging classed as a combustible liquid that also meets the definition of a Class 9 material, the CLASS 9 placard may be substituted for the COMBUSTIBLE placard.

(9) For domestic transportation, a Class 9 placard is not required. A bulk packaging containing a Class 9 material must be marked on each side and each end with the appropriate identification number displayed on an orange panel or a white-square-on-point display configuration are required by subpart D of this part.

(10) For domestic transportation of Division 6.1, PG III materials, a POISON placard may be used in place of a KEEP AWAY FROM FOOD placard.

(g) For shipments of Class 1 (explosive) materials by aircraft or vessel, the applicable compatibility group letter must be displayed on the placards required by this section."

REQUIREMENT SOURCE: 49CFR172 Part 505

"Placarding for subsidiary hazards.

(a) Each transport vehicle, freight container, portable tank and unit load device that contains a poisonous material subject to the ''Poison-Inhalation Hazard'' shipping description of 172.203(m)(3) must be placarded with a POISON or POISON GAS placard, as appropriate, on each side and each end, in addition to any other placard required for that material in 172.504. Duplication of the POISON or POISON GAS placard is not required.

(b) In addition to the RADIOACTIVE placard which may be required by 172.504(e) of this subpart, each transport vehicle, portable tank or freight container that contains 454 kg (1001 pounds) or more gross weight of fissile or low specific activity uranium hexafluoride shall be placarded with a CORROSIVE placard on each side and each end.

(c) Each transport vehicle, portable tank, freight container or unit load device that contains a material which has a subsidiary hazard of being dangerous when wet, as defined in 173.124 of this subchapter, shall be placarded with DANGEROUS WHEN WET placards, on each side and each end, in addition to the placards required by 172.504.

(d) Hazardous materials that possess secondary hazards may exhibit subsidiary placards that correspond to the placards described in this part, even when not required by this part (see also 172.519(b) (4) of this subpart)."

REQUIREMENT SOURCE: 49CFR172 Part 506

"Providing and affixing placards:
Highway.

(a) Each person offering a motor carrier a hazardous material for transportation by highway shall provide to the motor carrier the required placards for the material being offered prior to or at the same time the material is offered for transportation, unless the carrier's motor vehicle is already placarded for the material as required by this subpart.

(1) No motor carrier may transport a hazardous material in a motor vehicle, unless the placards required for the hazardous material are affixed thereto as required by this subpart.

(2) [Reserved]

(b) [Reserved]"

REQUIREMENT SOURCE: 49CFR172 Part 507

"Special placarding provisions:
Highway.

(a) Each motor vehicle used to transport a package of highway route controlled quantity radioactive materials (see 173.403(1) of this subchapter) must have the required RADIOACTIVE warning placard placed on a square background as described in 172.527.

(b) A nurse tank, meeting the provisions of 173.315(m) of this subchapter, is not required to be placarded on an end containing valves, fittings, regulators or gauges when those appurtenances prevent the markings and placard from being properly placed and visible."

REQUIREMENT SOURCE: 49CFR172 Part 516

"Visibility and display of placards.

(a) Each placard on a motor vehicle and each placard on a rail car must be readily visible from the direction it faces except from the direction of another motor vehicle or rail car to which the motor vehicle or rail car is coupled. This requirement may be met by the placards displayed on the freight containers or portable tanks loaded on a motor vehicle or rail car.

(b) The required placarding of the front of a motor vehicle may be on the front of a truck-tractor instead of or in addition to the placarding on the front of the cargo body to which a truck-tractor is attached.

(c) Each placard on a transport vehicle, bulk packaging, freight container or aircraft unit load device must

(1) Be securely attached or affixed thereto or placed in a holder thereon. (See appendix C to this part.);

(2) Be located clear of appurtenances and devices such as ladders, pipes, doors, and tarpaulins;

(3) So far as practicable, be located so that dirt or water is not directed to it from the wheels of the transport vehicle;

(4) Be located away from any marking (such as advertising) that could substantially reduce its effectiveness, and in any case at least 3 inches (76.0 mm.) away from such marking;

(5) Have the words or identification number (when authorized) printed on it displayed horizontally, reading from left to right.

(6) Be maintained by the carrier in a condition so that the format, legibility, color, and visibility of the placard will not be substantially reduced due to damage, deterioration, or obscurement by dirt or other matter.

(7) Be affixed to a background of contrasting color, or must have a dotted or solid line outer border which contrasts with the background color.

(d) Recommended specifications for a placard holder are set forth in appendix C of this part. Except for a placard holder similar to that contained in appendix C to this part, the means used to attach a placard may not obscure any part of its surface other than the borders.

(e) A placard or placard holder may be hinged provided the required format, color, and legibility of the placard are maintained."

13.2.7 Shipping Papers, Bills of Lading and Manifests

13.2.7.1 Waste Manifests

REQUIREMENT SOURCE: 49CFR172 Part 205

"Hazardous waste manifest.

(a) No person may offer, transport, transfer, or deliver a hazardous waste (waste) unless an EPA Form 8700 22 and 8700 22A (when necessary) hazardous waste manifest (manifest) is

prepared in accordance with 40 CFR 262.20 and is signed, carried, and given as required of that person by this section.

(b) The shipper (generator) shall prepare the manifest in accordance with 40 CFR part 262.

(c) The original copy of the manifest must be dated by, and bear the handwritten signature of, the person representing:

(1) The shipper (generator) of the waste at the time it is offered for transportation, and

(2) The initial carrier accepting the waste for transportation.

(d) A copy of the manifest must be dated by, and bear the handwritten signature of the person representing:

(1) Each subsequent carrier accepting the waste for transportation, at the time of acceptance, and

(2) The designated facility receiving the waste, upon receipt.

(e) A copy of the manifest bearing all required dates and signatures must be:

(1) Given to a person representing each carrier accepting the waste for transportation,

(2) Carried during transportation in the same manner as required by this subchapter for shipping papers,

(3) Given to a person representing the designated facility receiving the waste,

(4) Returned to the shipper (generator) by the carrier that transported the waste from the United States to a foreign destination with a notation of the date of departure from the United States, and

(5) Retained by the shipper (generator) and by the initial and each subsequent carrier for three years from the date the waste was accepted by the initial carrier. Each retained copy must bear all required signatures and dates up to and including those entered by the next person who received the waste.

(f) The requirements of paragraphs (d) and (e) of this section do not apply to a rail carrier when waste is delivered to a designated facility by railroad if:

(1) All of the information required to be entered on the manifest (except generator and carrier identification numbers and the generator's certification) is entered on the shipping paper carried in accordance with 174.26(c) of this subchapter;

(2) The delivering rail carrier obtains and retains a receipt for the waste that is dated by and bears the handwritten signature of the person representing the designated facility; and

(3) A copy of the shipping paper is retained for three years by each railroad transporting the waste.

(g) The person delivering a hazardous waste to an initial rail carrier shall send a copy of the manifest, dated and signed by a representative of the rail carrier, to the person representing the designated facility.

(h) A hazardous waste manifest required by 40 CFR part 262, containing all of the information required by this subpart, may be used as the shipping paper required by this subpart. (Approved by the Office of Management and Budget under control number 2137 0034) (49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, app. A to part 1)"

13.2.7.2 Shipping Papers

REQUIREMENT SOURCE: 49CFR172 Part 200

"Applicability.

(a) Description of hazardous materials required. Except as otherwise provided in this subpart, each person who offers a hazardous material for transportation shall describe the hazardous material on the shipping paper in the manner required by this subpart.

(b) This subpart does not apply to any material, other than a hazardous waste or a hazardous substance, that is--

(1) Identified by the letter ''A'' in Column 1 of the 172.101 Table, except when the material is offered or intended for transportation by air; or

(2) Identified by the letter ''W'' in Column 1 of the 172.101 Table, except when the material is offered or intended for transportation by water; or

(3) An ORM-D, except when the material is offered or intended for transportation by air."

REQUIREMENT SOURCE: 49CFR172 Part 201

"General entries.

(a) Contents. When a description of hazardous material is required to be included on a shipping paper, that description must conform to the following requirements:

(1) When a hazardous material and a material not subject to the requirements of this subchapter are described on the same shipping paper, the hazardous material description entries required by 172.202 and those additional entries that may be required by 172.203:

(i) Must be entered first, or

(ii) Must be entered in a color that clearly contrasts with any description on the shipping paper of a material not subject to the requirements of this subchapter, except that a description on a reproduction of a shipping paper may be highlighted, rather than printed, in a contrasting color (the provisions of this paragraph apply only to the basic description required by 172.202(a) (1) and (2), and (3)), or

(iii) Must be identified by the entry of an ''X'' placed before the proper shipping name in a column captioned ''HM.'' (The ''X'' may be replaced by ''RQ,'' if appropriate.)

(2) The required shipping description on a shipping paper and all copies thereof used for transportation purposes, must be legible and printed (manually or mechanically) in English.

(3) Unless it is specifically authorized or required in this subchapter, the required shipping description may not contain any code or abbreviation.

(4) A shipping paper may contain additional information concerning the material provided the information is not inconsistent with the required description. Unless otherwise permitted or required by this subpart, additional information must be placed after the basic description required by 172.202(a).

(b) Name of shipper. A shipping paper for a shipment by water must contain the name of the shipper.

(c) Continuation page. A shipping paper may consist of more than one page, if each page is consecutively numbered and the first page bears a notation specifying the total number of pages included in the shipping paper. For example, "Page 1 of 4 pages."

(d) Emergency response telephone number. A shipping paper must contain an emergency response telephone number, as prescribed in subpart G of part 172 of this subchapter. (49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, app. A to part 1)"

REQUIREMENT SOURCE: 49CFR172 Part 202

"Description of hazardous material on shipping papers.

(a) The shipping description of a hazardous material on the shipping paper must include:

(1) The proper shipping name prescribed for the material in Column 2 of the 172.101 Table;

(2) The hazard class or division prescribed for the material as shown in Column 3 of the 172.101 Table (class names or subsidiary hazard class number may be entered following the numerical hazard class, or following the basic description). The hazard class need not be included for the entry "Combustible liquid, n.o.s.";

(3) The identification number prescribed for the material as shown in Column 4 of the 172.101 Table;

(4) The packing group, in Roman numerals, prescribed for the material in Column 5 of the 172.101 Table, if any. The packing group may be preceded by the letters "PG" (e.g., "PG II"); and

(5) Except for empty packagings (see 173.29 of this subchapter), cylinders for Class 2 (compressed gases) materials, and bulk packagings, the total quantity (by net or gross mass, capacity, or as otherwise appropriate), including the unit of measurement, of the hazardous material covered by the description (e.g., "800 lbs", "55 gal.", "3629 kg", or "208 L"). For cylinders for Class 2 (compressed gases) materials and bulk packagings, some indication of total quantity must be shown (e.g., "10 cylinders" or "1 cargo tank").

(b) Except as provided in this subpart, the basic description specified in paragraphs (a) (1), (2), (3) and (4) of this section must be shown in sequence with no additional information interspersed. For example: "Gasoline, 3, UN 1203, PG II".

(c) The total quantity of the material covered by one description must appear before or after, or both before and after, the description required and authorized by this subpart. The type of packaging and destination marks may be entered in any appropriate manner before or after the basic description. Abbreviations may be used to express units of measurement and types of packagings.

(d) Technical and chemical group names may be entered in parentheses between the proper shipping name and hazard class or following the basic description. An appropriate modifier,

such as ''contains'' or ''containing,'' may be used. For example: ''Flammable liquids, n.o.s. (contains Xylene and Benzene), 3, UN 1993, II''.

(e) Except for those materials in the UN Recommendations, the ICAO Technical Instructions, or the IMDG Code, a material that is not a hazardous material according to this subchapter may not be offered for transportation or transported when its description on a shipping paper includes a hazard class or an identification number specified in 172.101. (49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, app. A to part 1)"

REQUIREMENT SOURCE: 49CFR172 Part 203(b)

"Limited quantities. The description for a material offered for transportation as "limited quantity," as authorized by this subchapter, must include the words "Limited Quantity" or "Ltd Qty" following the basic description."

REQUIREMENT SOURCE: 49CFR172 Part 203(c)

"Hazardous substances.

(1) Except for radioactive materials described in accordance with paragraph (d) of this section, if the proper shipping name for a material that is a hazardous substance does not identify the hazardous substance by name, one of the following descriptions shall be entered, in parentheses, in association with the basic description:

(i) The name of the hazardous substance as shown in the Appendix A to 171.101; or

(ii) For wastes which exhibit an EPA characteristic of ignitability, corrosivity, reactivity, or Toxicity, the letters "EPA" followed by the word "ignitability", or "corrosivity", or "reactivity", or "Toxicity", as appropriate or the corresponding "D" number, as appropriate.

(2) The letters "RQ" shall be entered on the shipping paper either before or after, the basic description required by 172.202 for each hazardous substance (see definition in 171.8 of this subchapter). For example: "RQ, Allyl alcohol, 6.1, Un 1098, I"; or "Environmentally hazardous substance, solid, n.o.s., 9, UN 3077, III, RQ (Adipic acid)"."

REQUIREMENT SOURCE: 49CFR172 Part 203(d)

"Radioactive material. The description for a shipment of a Class 7 (radioactive) material must include the following additional entries as appropriate:

(1) The words "RADIOACTIVE MATERIAL" unless these words are contained in the proper shipping name.

(2) The name of each radionuclide in the radioactive material that is listed in 173.435 of this subchapter. Abbreviations, e.g., "99Mo" are authorized.

(3) A description of the physical and chemical form of the material, if the material is not in special form (generic chemical description is acceptable for chemical form).

(4) The activity contained in each package of the shipment in terms of curies, millicuries, or microcuries. Abbreviations are authorized. For the shipment of a package containing a highway route controlled quantity of radioactive materials (see 173.403(1) of this subchapter), the words "Highway route controlled quantity" must be entered in association with the basic description.

(5) The category of label applied to each package in the shipment. For example: "RADIOACTIVE WHITE I."

(6) The transport index assigned to each package in the shipment bearing RADIOACTIVE YELLOW II or RADIOACTIVE YELLOW III labels.

(7) For a shipment of fissile radioactive materials:

(i) The words "Fissile Exempt," if the package is exempt pursuant to 173.453 of this subchapter, or

(ii) If not exempt, the fissile class of each package in the shipment, pursuant to 173.455 of this subchapter; and

(iii) For a Fissile Class III shipment, the additional notation: "Warning-Fissile Class III Shipment. Do not Load More Than *** Packages per Vehicle." (Asterisks to be replaced by appropriate number.) "In loading and Storage Areas, Keep at Least 20 Feet (6 Meters), from Other Packages Bearing Radioactive Labels."

(iv) If a Fissile Class III shipment is to be transported by water, the supplementary notation must also include the following statement. "For shipment by water, only one Fissile Class III shipment is permitted in each hold."

(8) For a package approved by the U.S. Department of Energy (DOE) or U.S. Nuclear Regulatory Commission (USNRC), a notation of the package identification marking as prescribed in the applicable DOE or USNRC approval. (See 173.471 of the subchapter.)

(9) For an export shipment or a shipment in a foreign made package, a notation of the package identification marking as prescribed in the applicable International Atomic Energy Agency (IAEA) Certificate of Competent Authority which has been issued for the package (See 173.473 of the subchapter.)"

REQUIREMENT SOURCE: 49CFR172 Part 203(e)

"Empty packagings.

(1) The description on the shipping paper for a packaging containing the residue of a hazardous material may include the words "RESIDUE: Last Contained ***" in association with the basic description of the hazardous material last contained in the packaging.

(2) For a tank car containing the residue (as defined in 171.8) of a hazardous material, the requirements of 174.25(c) and paragraph (e)(3) of this section apply.

(3) If a packaging, including a tank car contains a residue that is a hazardous substance, the description on the shipping papers must be prefaced with the phrase, "RESIDUE: Last Contained ***" and the letters "RQ" must be entered on the shipping paper either before or after the basic description."

REQUIREMENT SOURCE: 49CFR172 Part 203(f)

"Transportation by air. When a package containing a hazardous material is offered for transportation by air and this subchapter prohibits its transportation aboard passenger-carrying aircraft, the words "Cargo aircraft only" must be entered after the basic description."

REQUIREMENT SOURCE: 49CFR172 Part 203(h)

"Transportation by highway. Following the basic description for a hazardous material in a Specification MC 330 or MC 331 cargo tank, there must be entered for-

(1) Anhydrous ammonia.

(i) The words "0.2 PERCENT WATER" to indicate the suitability for shipping anhydrous ammonia in a cargo tank made of quenched and tempered steel as authorized by 173.315(a), Note 14 of this subchapter, or

(ii) The words "NOT FOR Q and T TANKS" when the anhydrous ammonia does not contain 0.2 percent or more water by weight.

(2) Liquefied petroleum gas.

(i) The word "NONCORROSIVE" or "NONCOR" to indicate the suitability for shipping "Noncorrosive" liquefied petroleum gas in a cargo tank made of quenched and tempered steel as authorized by 173.315(a), Note 15 to this subchapter, or

(ii) The words "NOT FOR Q and T TANKS" for grades of liquefied petroleum gas other than "Noncorrosive.""

REQUIREMENT SOURCE: 49CFR172 Part 204

"Shipper's certification.

(a) General. Except as provided in paragraphs (b) and (c) of this section, each person who offers a hazardous material for transportation shall certify that the material is offered for transportation in accordance with this subchapter by printing (manually or mechanically) on the shipping paper containing the required shipping description the certification contained in paragraph (a)(1) of this section or the certification (declaration) containing the language contained in paragraph (a)(2) of this section.

(1) ''This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.'' Note: In line one of the certification the words ''herein-named'' may be substituted for the words ''above-named''.

(2) ''I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by [*] according to applicable international and national governmental regulations.'' *Additional language indicating the modes of transportation to be used may be inserted at this point in the certification. All modes of transportation may be indicated provided that any mode not applicable to a specific shipment is deleted (lined out).

(b) Exceptions.
(1) Except for a hazardous waste, no certification is required for a hazardous materials offered for transportation by motor vehicle and transported:

(i) In a cargo tank supplied by the carrier, or

(ii) By the shipper as a private carrier except for a hazardous material that is to be reshipped or transferred from one carrier to another.

(2) No certification is required for the return of an empty tank car which previously contained a hazardous material and which has not been cleaned or purged.

(c) Transportation by air

(1) General. Certification containing the following language may be used in place of the certification required by paragraph (a) of this section: I hereby certify that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and in proper condition for carriage by air according to applicable national governmental regulations.

(2) Certificate in duplicate. Each person who offers a hazardous material to an aircraft operator for transportation by air shall provide two copies of the certification required in this section. (See 175.30 of this subchapter.)

(3) Passenger and cargo aircraft. Each person who offers for transportation by air a hazardous material authorized for air transportation shall add to the certification required in this section the following statement: This shipment is within the limitations prescribed for passenger aircraft/cargo aircraft only (delete nonapplicable).

(4) Radioactive material. Each person who offers any radioactive material for transportation aboard a passenger-carrying aircraft shall sign (mechanically or manually) a printed certificate stating that the shipment contains radioactive material intended for use in, or incident to, research, or medical diagnosis or treatment.

(d) Signature. The certifications required by paragraph (a) or (c) of this section:

(1) Must be legibly signed by a principal, officer, partner, or employee of the shipper or his agent; and

(2) May be legibly signed manually, by typewriter, or by other mechanical means.

(49 U.S.C. 1803, 1804, 1806, 1808; 49 CFR 1.53, app. A to part 1) [Amdt. 172 29A, 41 FR 40677, Sept. 20, 1976]

Editorial Note: For Federal Register citations affecting 172.204, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume."

13.2.8 Shipment Plans

The requirements identified under this subelement are the responsibility of the WHC Company PT Organization and are contained in the WHC Company S/RID.

13.2.9 Notification of State Authorities of Shipments of High-Hazard Materials

The requirements identified under this subelement are the responsibility of the WHC Company PT Organization and are contained in the WHC Company S/RID.

13.2.10 Emergency Response Information

REQUIREMENT SOURCE: 49CFR172 Part 600

"Applicability and general requirements.

(a) Scope. Except as provided in paragraph (d) of this section, this subpart prescribes requirements for providing and maintaining emergency response information during transportation and at facilities where hazardous materials are loaded for transportation, stored incidental to transportation or otherwise handled during any phase of transportation.

(b) Applicability. This subpart applies to persons who offer for transportation, accept for transportation, transfer or otherwise handle hazardous materials during transportation.

(c) General requirements. No person to whom this subpart applies may offer for transportation, accept for transportation, transfer, store or otherwise handle during transportation a hazardous material unless:

(1) Emergency response information conforming to this subpart is immediately available for use at all times the hazardous material is present; and

(2) Emergency response information, including the emergency response telephone number, required by this subpart is immediately available to any person who, as a representative of a Federal, state or local government agency, responds to an incident involving a hazardous material, or is conducting an investigation which involves a hazardous material.

(d) Exception. The requirements of this subpart do not apply to hazardous materials which are excepted from the shipping paper requirements of this subchapter."

REQUIREMENT SOURCE: 49CFR172 Part 602

"Emergency response information.

(a) Information required. For purposes of this subpart, the term ''emergency response information'' means information that can be used in the mitigation of an incident involving hazardous materials and, as a minimum, must contain the following information:

(1) The basic description and technical name of the hazardous material as required by 172.202 and 172.203(k), the ICAO Technical Instructions, the IMDG Code, or the TDG Regulations, as appropriate;

(2) Immediate hazards to health;

(3) Risks of fire or explosion;

(4) Immediate precautions to be taken in the event of an accident or incident;

(5) Immediate methods for handling fires;

(6) Initial methods for handling spills or leaks in the absence of fire; and

(7) Preliminary first aid measures.

(b) Form of information. The information required for a hazardous material by paragraph

(a) of this section must be:

(1) Printed legibly in English;

(2) Available for use away from the package containing the hazardous material; and

(3) Presented—

(i) On a shipping paper;

(ii) In a document, other than a shipping paper, that includes both the basic description and technical name of the hazardous material as required by 172.202 and 172.203(k), the ICAO Technical Instructions, the IMDG Code, or the TDG Regulations, as appropriate, and the emergency response information required by this subpart (e.g., a material safety data sheet); or

(iii) Related to the information on a shipping paper, a written notification to pilot-in-command, or a dangerous cargo manifest, in a separate document (e.g., an emergency response guidance document), in a manner that cross-references the description of the hazardous material on the shipping paper with the emergency response information contained in the document. Aboard aircraft, the ICAO "Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods" and, aboard vessels, the IMO "Emergency Procedures for Ships Carrying Dangerous Goods", or equivalent documents, may be used to satisfy the requirements of this section for a separate document.

(c) Maintenance of information. Emergency response information shall be maintained as follows:

(1) Carriers. Each carrier who transports a hazardous material shall maintain the information specified in paragraph (a) of this section in the same manner as prescribed for shipping papers, except that the information must be maintained in the same manner aboard aircraft as the notification to pilot-in-command, and aboard vessels in the same manner as the dangerous cargo manifest. This information must be immediately accessible to train crew personnel, drivers of motor vehicles, flight crew members, and bridge personnel on vessels for use in the event of incidents involving hazardous materials.

(2) Facility operators. Each operator of a facility where a hazardous material is received, stored or handled during transportation, shall maintain the information required by paragraph (a) of this section whenever the hazardous material is present. This information must be in a location that is immediately accessible to facility personnel in the event of an incident involving the hazardous material."

REQUIREMENT SOURCE: 49CFR172 Part 604

"Emergency response telephone number.

(a) A person who offers a hazardous material for transportation must provide a 24-hour emergency response telephone number (including the area code or international access code) for use in the event of an emergency involving the hazardous material. The telephone number must be

(1) Monitored at all times the hazardous material is in transportation, including storage incidental to transportation;

(2) The number of a person who is either knowledgeable of the hazardous material being shipped and has comprehensive emergency response and incident mitigation information for that material, or has immediate access to a person who possesses such knowledge and information; and

(3) Entered on a shipping paper, as follows:

(i) Immediately following the description of the hazardous material required by subpart C of this part 172; or

(ii) Entered once on the shipping paper in a clearly visible location. This provision may be used only if the telephone number applies to each hazardous material entered on the shipping paper, and if it is indicated that the telephone number is for emergency response information (for example: "EMERGENCY CONTACT: ***).

(b) The telephone number required by paragraph (a) of this section must be the number of the person offering the hazardous material for transportation or the number of an agency or organization capable of, and accepting responsibility for, providing the detailed information concerning the hazardous material. A person offering a hazardous material for transportation who lists the telephone number of an agency or organization shall ensure that agency or organization has received current information on the material, as required by paragraph (a)(2) of this section before it is offered for transportation."

13.2.11 Receipt Inspection

The requirements identified under this subelement are the responsibility of the WHC Company PT Organization and are contained in the WHC Company S/RID.

13.2.12 Loading Operations

13.2.12.1 General Loading Requirements

REQUIREMENT SOURCE: 49CFR173 Part 448

"General transportation requirements.

(a) Each shipment of radioactive materials shall be secured in order to prevent shifting during normal transportation conditions.

(b) Except as may be specifically required by the competent authority in the applicable certificate, a package of radioactive materials may be carried among packaged general cargo without special stowage provisions, if:

(1) The heat output in watts does not exceed 0.1 times the minimum package dimension in centimeters; or

(2) The average surface heat flux of the package does not exceed 15 watts per square meter and the immediately surrounding cargo is not in sacks or bags or otherwise in a form that would seriously impede air circulation for heat removal.

(c) Packages bearing labels prescribed in 172.403 of this subchapter may not be carried in compartments occupied by passengers, except in those compartments exclusively reserved for couriers accompanying those packages.

(d) Mixing of different kinds of packages, including Fissile Class I packages with Fissile Class II packages, is authorized in accordance with 173.459.

(e) No person shall offer for transportation aboard a passenger-carrying aircraft any single package with a transport index greater than 3.0 or an overpack with a transport index greater than 3.0.

(f) No person shall offer for transportation aboard a passenger-carrying aircraft any radioactive material unless that material is intended for use in, or incident to, research, medical diagnosis or treatment.

(g) If an overpack is used to consolidate individual packages of radioactive materials, the packages shall comply with the packaging, marking, and labeling requirements of this subchapter, and the following:

(1) The overpack shall be labeled as prescribed in 172.403 of this subchapter except as follows:

(i) The ''contents'' entry on the label may state ''mixed'' unless each inside package contains the same radionuclide(s).

(ii) The ''activity'' entry on the label must be determined by adding together the number of curies of the radioactive materials packages contained therein.

(iii) For a non-rigid overpack, the required label together with required package markings shall be affixed to the overpack by means of a securely attached, durable tag. The transport index shall be determined by adding together the transport indexes of the radioactive materials packages contained therein.

(iv) For a rigid overpack, the transport index shall be determined by:

(A) Adding together the transport indexes of the radioactive materials packages contained in the overpack; or

(B) Except for fissile radioactive materials, direct measurements as prescribed in 173.403(bb) which have been taken by the person initially offering the packages contained within the overpack for shipment.

(2) The overpack shall be marked as prescribed in subpart D of part 172 of this subchapter and 173.25(a).

(3) The transport index of the overpack shall not exceed 3.0 for passenger-carrying aircraft shipments, or 10.0 for cargo-aircraft only shipments."

13.2.12.2 Hazardous Materials Loading

REQUIREMENT SOURCE: 49CFR173 Part 459

"Mixing of fissile material packages.

Shipments of fissile materials packages and the commingling of fissile materials packages with other radioactive materials packages shall be in accordance with the provisions of this section.

(a) Mixing of fissile material packages with other types of radioactive materials, including Fissile Class I with Fissile Class II packages is authorized if the total transport index in any conveyance (transport vehicle if transported by public highway or rail) or storage location does not exceed 50.

(b) For Fissile Class II packages shipped under the exclusive use provisions of 173.441(b), the transport index number which is calculated for nuclear criticality control purposes shall not exceed 10 for any single package nor a total of 50 for the conveyance (transport vehicle if transported by public highway or rail).

(c) Fissile Class II packages may be shipped with an external radiation level greater than 10 millirem per hour at 1 meter (3.3 feet), and combined with other packages of the same or different designs in a Fissile Class III shipment, under the conditions prescribed in 173.457, if:

(1) Each package in the shipment has been assigned a transport index for criticality control purposes in accordance with the Fissile Class II criteria;

(2) The transport index which has been assigned in the package approval for nuclear criticality control purposes does not exceed 10 for any single package;

(3) The total transport index for nuclear criticality control purposes does not exceed 100 for all packages in the shipment;

(4) The shipment complies with 173.441(b); and

(5) The shipment is not transported by vessel. (d) A Fissile Class III shipment of packages may be combined with other packages of the same or different design when each package has been assigned a transport index for nuclear criticality control purposes in accordance with Fissile Class II criteria, and may be combined with Fissile Class II packages into a Fissile Class III shipment under the conditions prescribed in 173.457, if:

(1) The transport index which has been assigned in the package approval for nuclear criticality control purposes does not exceed 50 for any single package;

(2) The total transport index for nuclear criticality control purposes for all packages in the shipment does not exceed 100;

(3) The shipment satisfies the provisions of 173.441(b) if any package has a radiation level exceeding 10 millirem per hour at 1 meter (3.3 feet) from any accessible external surface of the package; and

(4) The shipment is not transported by vessel."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(1)(b)

"Before a shipment is loaded upon a transport vehicle, the shipper shall visually survey the equipment externally to determine its general operating condition, its capability to transport the shipment, the existence of appropriate restraint devices in good condition, and assure the estimated gross weight of the shipment does not exceed the authorized carrying capacity of the conveyance."

13.2.12.3 Segregation

REQUIREMENT SOURCE: 49CFR177 Part 848

"Segregation of hazardous materials

(a) This section applies to materials which meet one or more of the hazard classes defined in this subchapter and are:

(1) In packages which require labels in accordance with part 172 of this subchapter;

(2) In a compartment within a multi-compartmented cargo tank subject to the restrictions in 173.33 of this subchapter; or

(3) In a portable tank loaded in a transport vehicle or freight container.

(b) When a transport vehicle is to be transported by vessel, other than a ferry vessel, hazardous materials on or within that vehicle must be stowed and segregated in accordance with 176.83(b) of this subchapter.

(c) In addition to the provisions of paragraph (d) of this section, cyanides or cyanide mixtures may not be loaded or stored with acids.

(d) Hazardous materials may not be loaded, transported, or stored together, except as provided in this section, and in accordance with the following table:"

13.2.12.4 Bracing

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(2)

"Blocking and Bracing. Packages shall be blocked and braced on or in the conveyance to prevent shifting or changing of position during normal transportation conditions, and to remain stable after the restraints are removed. For motor freight, carriers and shippers shall observe the provision of 49 CFR 393.104."

13.2.12.5 Lifting and Tie Downs

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(3)(j)

"The load shall be inspected thoroughly by the shipper and carrier prior to release of the shipment. The shipper should ensure that the carrier recognizes his or her responsibility to check the tiedowns periodically during transit, and tighten them as necessary."

13.2.12.6 Weight Limitations

REQUIREMENT SOURCE: DOE1540.1 Chapter II, Section 4.b(1)(a)

"Acceptable Practices. The following represents a composite of acceptable practices which should be applied to assure a successful program.

Loading.

The vehicle selected shall be appropriate for the weight, concentration, and center of gravity of the load. This is a joint responsibility of the shipper and carrier."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(1)(d)

"It is the shipper's responsibility to give the carrier prior notification of overweight or overdimensional shipments. The carrier is responsible to ensure that highway weight and clearance restrictions are met."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(1)(f)

"Heavy containers not shipped on specially designed vehicles shall have skids or load spreaders to maintain load distribution within the area load-rating of the vehicle, or to less than 500 pounds per square foot, whichever is less."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(1)(g)

"The shipment must be positioned on the conveyance in such a way that the weight is equally distributed over the width and length of the conveyance. For rail and motor freight shipments, the load should be positioned as equally as possible among the vehicle's axles. The location of attachment points for tiedown members shall be selected accordingly. Proper placement of the load on the vehicle to avoid exceeding maximum allowable axle loadings is the responsibility of the carrier."

13.2.13 Transportation Operations

REQUIREMENT SOURCE: DOE1540.1A Chapter I, Section 4.c

"Motor carrier shipments shall conform to State and local laws, regulations, and ordinances relating to weight and size limitations. No vehicular movement which exceeds any State's legal weight or size limitation shall be undertaken over public highways unless prior permission is formally granted by the state concerned. The Department or Department's contractor support of a carrier requesting such permission may be furnished only after a determination that it is not practical to divide the load into smaller lots or feasible to move the material by other means of transportation."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(3)(a)

"For motor freight, carriers and shippers shall observe the provisions of 49 CFR 393.100-102 to restrain cargo."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(3)(b)

"Elastic properties should be considered when selecting material for use in a tiedown system. For example, wire rope is preferable over chain because it is more flexible and better able to withstand the shocks of transportation."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(3)(c)

"Only tiedown materials with a strength rating (working and/or ultimate) established and documented by the manufacturer shall be used. The following shall not be used as components of a tiedown system:

1 Plastic or fiber rope.
2 Any material with unknown strength.
3 Any damaged material."

REQUIREMENT SOURCE: DOE1540.1A Chapter II, Section 4.b.(3)(d)

"The principal tiedown forces should be transmitted to the vehicle frame and not to the wood or metal decking."

13.2.13.1 Dangerous Waste Transportation

Transportation requirements related to offsite transportation of Dangerous Waste, as defined in WAC 173-303, are delineated within this section. Requirements associated with manifest requirements are contained within subelement 13.2.7.

REQUIREMENT SOURCE: WAC-173-303(940523) Section 060(1)

"Any person who generates, transports, offers for transport, or transfers a dangerous waste, or who owns or operates a dangerous waste TSD facility shall have a current EPA/state identification number (EPA/state ID number). Any person who offers a dangerous waste to a transporter or to a dangerous waste TSD facility which does not have an EPA/state ID number, or whose EPA/state ID number has been cancelled or withdrawn, shall be in violation of this regulation."

13.2.13.2 Quality Assurance/Quality Control

REQUIREMENT SOURCE: 49CFR173 Part 475

"Quality control requirements prior to each shipment of radioactive materials.

Before each shipment of any radioactive materials package, the shipper shall ensure by examination or appropriate tests, that:

(a) The packaging is proper for the contents to be shipped;

(b) The packaging is in unimpaired physical condition, except for superficial marks;

(c) Each closure device of the packaging, including any required gasket, is properly installed, secured, and free of defects;

(d) For fissile material, each moderator and neutron absorber, if required, is present and in proper condition;

(e) Each special instruction for filling, closing, and preparation of the packaging for shipment has been followed;

(f) Each closure, valve, or other opening of the containment system through which the radioactive content might escape is properly closed and sealed;

(g) Each packaging containing liquid in excess of an A2 quantity and intended for air shipment has been tested to show that it will not leak under an ambient atmospheric pressure of not more than 0.25 atmosphere, absolute, (0.25 kilograms per square centimeter or 3.6 psia). The test must be conducted on the entire containment system, or on any receptacle or vessel within the containment system, to determine compliance with this requirement;

(h) The internal pressure of the containment system will not exceed the design pressure during transportation; and

(i) External radiation and contamination levels are within the allowable limits specified in this subchapter."

13.3 OFFSITE SAFETY

13.3.1 Package Standards and Certifications

The requirements identified under this subelement are the responsibility of the WHC Company PT Organization and are contained in the WHC Company S/RID.

13.3.2 Safety Analyses

The requirements identified under this subelement are the responsibility of the WHC Company PT Organization and are contained in the WHC Company S/RID.

13.3.3 Design, Fabrication, Assembly and Testing QA for OffSite Shipping Containers

QA controls should be applied to the development and use of new shipping containers. These controls should ensure that the design and safety bases of the container are documented, reviewed and approved at the appropriate authority level.

No applicable services or requirements were identified within this subelement.

13.3.4 Physical Protection for Security

The requirements identified under this subelement are the responsibility of another WHC Company organization and are contained in the WHC Company S/RID.

13.3.5 Nuclear Explosives, Components, and Assemblies

No applicable requirements for the PFP were identified under this subelement.

13.4 ONSITE SAFETY

Neither DOT nor NRC have requirements that govern onsite safety for packaging and transportation of hazardous materials. The Department of Labor has allowed that a company may elect to establish the safety requirements for protection of occupational workers. This, therefore, is the driver for establishing the onsite Transportation and Packaging program for PFP. The program is based on an "Equivalent Degree of Safety" to the DOT Regulations if not economically and technically feasible. Where compliance with DOT regulations is not feasible, compensatory administrative and technical requirements are specified to ensure equivalent safety to workers, the public, and the environment.

Onsite hazardous materials transportation must comply with the Department of Transportation Hazardous Materials Regulations, Title 49 CFR, Parts 171-180, or must contain all of the following provisions:

1) Provide containment of hazardous materials under conditions normally incident to transportation onsite.

2) Provide for communication to personnel handling the material prior to transport, such that the hazards of the materials being transferred can be assessed by emergency responders during incident response.

3) Provide for communication to alert bystanders or others authorized to be in the area, but who are not directly involved with such transfers.

4) Provide controls appropriate for the level of containment and communication. For fissile radioactive materials, appropriate controls must also be provided to ensure nuclear criticality safety.

5) Provide approved safety documentation that describes in detail the methodology and compliance process to meet onsite packaging and transportation safety requirements that demonstrates an acceptable risk to onsite workers, bystanders, public, or the environment.

6) Ensure that each hazmat employee shall receive function-specific training concerning requirements which are specifically applicable to the functions the employee performs.

PFP personnel are responsible for the following:

1) Managing onsite shipments of hazardous material originating at the PFP facility and making shipments in compliance with requirements and established procedures.

2) Coordinating with Traffic Operations all planned inbound and outbound offsite shipments of hazardous materials, including radioactive materials. Notifying Hazardous Materials Operations about pending radioactive material shipments that require road closure to transport packages approved only for onsite use over public access roadways on the Hanford Site.

3) Preparing written operating procedures incorporating applicable safety analysis documentation requirements to be used for the packaging, loading, transporting, and unloading of hazardous materials.

4) Packaging, loading, transporting, and unloading hazardous materials in approved packagings, as specified by approved procedures and instructions.

5) Transporting repetitive onsite shipments incidental to production (such as samples and waste) on vehicles assigned to the operating organizations.

6) Ensuring only appropriately trained and qualified personnel are used to inspect, load, monitor, certify, authorize, or transport hazardous material packages.

7) Visually inspecting the vehicle used to transport hazardous material for obvious defects and the vehicle inspection tags to ensure the Class A/B preventive maintenance is current.

8) Preparing, maintaining, and retaining an annual inventory of reusable, and approved Type A and Radioactive material shipping packages (including packages approved only for onsite use by a SARP, SEP, or DAP). Ensuring the required periodic integrity inspection is current within the assigned period.

13.5 KEY INTERFACES

13.5.1 Training and Qualification

The WHC Site Technical Training Department provides guidance and assistance in developing training and qualification programs for organizations involved in P&T of hazardous materials. However, the PT Organization's Transportation Programs and Training Group prepares formal training courses and provides instruction to qualify WHC hazmat employees according to Department of Transportation (DOT), DOE, United States Environmental Protection Agency, and Washington State regulations.

The PFP management identifies hazmat employees and assures that they receive all required training. Training is provided by the WHC Company TP Organization.

13.5.2 Safeguards and Security

The Safeguards and Security Department establishes security requirements for onsite and offsite shipments of radioactive material, including special nuclear material shipments.

13.5.3 Nuclear Safety

Although nuclear safety is an area of significant interface with P&T, this is an inherent interface in that nuclear safety is a prominent factor in the regulations governing P&T of nuclear materials. However, consideration should be given to onsite P&T operations to ensure that the interaction with the nuclear safety program is carried through where administrative and technical controls are relied upon to satisfy the intent of DOT regulations in lieu of adhering to exact, sometimes unfeasible, requirements.

13.5.4 Emergency Management

Coordination between the Transportation Program and the Emergency Management Functional Area is required to ensure that commonly handled hazardous materials are known and included in emergency plans for the site and that special equipment or vehicles for transportation are known and available for emergency situations.

13.5.5 Radiation Protection

Physical management of radioactive material requires an interface to the Radiation Protection Functional Area to ensure proper compliance to the WHC Radiological Control Manual.

13.5.6 Waste Management

The Waste Management Facility personnel are responsible for assuring that the materials to be shipped are packaged correctly. Additionally, they are responsible for determining that all disposal criteria are met.

13.6 REFERENCES

13.6.1 Requirement Source Documents

The following references were used as source documents:

10 CFR 71, Packaging and Transportation of Radioactive Material, 1993.

40 CFR 761, Polychlorinated Biphenals (PCBs) Manufacturing, Processing, Distribution in Commerce, and use Prohibitions, effective 12/09/93.

49 CFR 171, General Information, Regulations, and Definitions, 1993.

49 CFR 172, Hazardous Materials Table, special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements, 1993.

49 CFR 173, Shippers - General Requirements for Shipments and Packagings, 1993.

49 CFR 177, Carriage by Public Highway, 1993.

DOE 1540.1A, Materials Transportation and Traffic Management, 07/08/92.

DOE 5480.3, Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes, 07/09/85.

WAC-173-303, Dangerous Waste Regulations, Washington Administrative Code, 12/08/93.

13.6.2 Reviewed Documents Not Used as Requirement Sources

The following documents were reviewed as requirement sources but were not used in the development of this Standards/Requirements Identification Document.

10 CFR, Part 20, Standards for Protection against Radiation, 1993.

29 CFR, Part 1910, Occupational Safety and Health Standards, Subpart Z, Toxic and Hazardous Substances, 1992.

40 CFR 261, Identification and listing of Hazardous Waste, 1992.

49 CFR 392, Driving Motor Vehicles, 1992.

49 CFR 393, Parts and Accessories for Safe Operations, 1992.

WAC-470-12, Transportation of Dangerous Cargos, Advisory Committee on, Washington Administrative Code, 12/08/93.

DOE 1540.3A, Base Technology for Radioactive Material Transportation Packaging Systems, 1992.

DOE 5480.1B, Change 5, Environment, Safety, and Health Program for Department of Energy Operations, 1986.

DOE 5480.4, Change 4, Environmental Protection, Safety, and Health Protection Standards, 1993.

DOE 5482.1B, Environment, Safety, and Health Appraisal Program, 1986.

DOE 5483.1A, Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities, 1983.

DOE 5820.2A, Radioactive Waste Management, 1988.

RL 5480.1, Environment, Safety, and Health Program, 1982.

RL 5480.1A, Environment, Safety, and Health Program for Department of Energy Operation for Richland Operations, 1988.

RL 5820.2A, Radioactive Waste Management, 11/23/93.

TABLE OF CONTENTS

14.0 ENVIRONMENTAL RESTORATION 1

14.0 ENVIRONMENTAL RESTORATION

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Environmental Restoration Functional Area normally describes the programmatic controls, activities, personnel, and programs involved in executing restoration activities, if such activities are included in the current mission of the facility.

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare the PFPTP to implement the Record of Decision (ROD) resulting from the PFP Cleanup Environmental Impact Statement, to provide interim storage for all SNM materials currently at PFP and to deactivate all portions of the PFP not required for the storage of SNM or to implement the ROD.

SCOPE

This S/RID applies to the PFP in its entirety.

JUSTIFICATION OF FUNCTIONAL AREA NONAPPLICABILITY

Facilities and activities within the scope of the DP/EM Standards/Requirements Program have been or will be assigned to one of the following four categories in accordance with the Department of Energy (DOE) Implementation Plan, revision 5:

- OP - Operational
- MT - Mission Transitional
- D&D - Decontamination and Decommissioning
- ER - Environmental Restoration

For each of these facilities/activities, standards and requirements are to be identified that are appropriate for the category and mission. The DOE Implementation Plan characterizes an ER activity by the following elements:

- Is an inactive waste site (i.e., contaminated soil/underground water, not structures);
- Possibly containing highly hazardous materials;
- Is a remedial investigation subject to applicable requirements of RCRA/CERCLA; and
- May have a generic or site SAR, plus an addendum for the specific activity.

The near-term mission of the PFP is the recovery, stabilization, and storage of plutonium in a safe and environmentally sound manner. Based on the near term mission, PFP can be considered an "Operational" facility moving towards "Mission Transition." Environmental Restoration activities are normally conducted after the facilities have been transitioned (e.g., post Mission Transitional life cycle phase) and have been decommissioned (e.g., post D&D phase).

The responsibility for environmental restoration at the Hanford Site, including remedial investigation and remedial action, was transferred to the Hanford Environmental Restoration Contractor (ERC),

Bechtel Hanford Incorporated, as of July 1, 1994. Westinghouse is responsible for transitioning facilities, however, the ERC is responsible for D&D and ER activities.

Standards and requirements for a facility are identified based on the current and near-term mission of the facility. PFP is a structure, not an inactive waste site; and PFP is not currently undergoing remedial investigation for cleanup. ER activities are not included in either the current scope of the Westinghouse Hanford Company contract or the PFP mission. Therefore, it is inappropriate, at this time, to identify ER requirements for the PFP.

In consideration of the current PFP mission, and in consideration of site responsibilities assigned to the ERC, the development of an Environmental Restoration Functional Area S/RID for PFP under the direction of Westinghouse Hanford Company is not appropriate. The following provides a discussion of each functional element and a rationale for nonapplicability to PFP.

ER Functional Area Review

Environmental Restoration

The ER Functional Area includes requirements associated with the management and implementation of remedial actions under the Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA), corrective actions under a Resource Conservation and Recovery Act (RCRA) permit, remedial actions under the Uranium Mill Tailings Radiation Control Act of 1987 (UMTRCA), and cleanup under the Toxic Substances Control Act (TSCA). The ER requirements also include those for management and implementation of procedures to assure that restoration sites are maintained in a safe and environmentally sound condition prior to and after implementation of the associated restoration activities.

Site Identification and Characterization

This subelement includes requirements used to identify and characterize a site when it has been determined that a release has occurred from an inactive waste site, RCRA disposal facility, TSCA disposal facility, or UMTRCA site. ER actions include CERCLA Removal Site Evaluations, Preliminary Assessments (PA)/Site Investigations (SI), Remedial investigations (RI)/Feasibility Studies (FS), UMTRCA Assessments, RCRA Facility Assessment (RFA)/Corrective Measures Studies (CMS), and TSCA sampling schemes. Although PFP is concerned with operational releases, PFP is not a disposal facility subject to these actions. Operational releases are addressed in the Environmental Protection Functional Area (e.g., reportable quantity releases, tank releases).

Community Relations and Public Involvement

This subelement contains provisions for preparing a formal community relations plan under CERCLA. The requirements specify provisions for providing public notification of releases, public notifications during response action development and implementation, public hearings, and maintenance of administrative records. The PFP mission does not include community relation activities under CERCLA.

Selection and Implementation of the Action

This subelement includes requirements for the selection of the Remedial Action under CERCLA, Remedial Action under UMTRCA or Corrective Action under RCRA based on the appropriate, negotiated applicable, relevant and appropriate regulations or cleanup goals/standards and available technologies. These requirements include provisions for issuing Records of Decision and for complying with the National Environmental Policy Act (NEPA) for CERCLA actions, as necessary. NEPA actions for new or modified facilities are addressed in the Environmental Protection Functional Area. Requirements for the remedial action selection process are administered by the ERC.

Current Regulatory Basis

The current regulatory basis for ER activities is delineated in the Hanford Federal Facility Agreement and Consent Order (FFACO), more commonly referred to as the Tri-Party Agreement (TPA). The TPA draws from federal requirements contained in CERCLA and RCRA and from state equivalent acts. In the event that a contaminated structure is found to be the source of release (or presents a substantial threat of a release) of hazardous substances, hazardous wastes, or hazardous constituents to the environment, the investigation and remediation of such release (to include remediation of structures, as necessary), where subject to CERCLA or RCRA, are subject to the TPA.

Standards and requirements for a facility are identified based on the current and near-term mission of the facility. Environmental restoration activities are not presently identified as integral to the PFP mission.

TABLE OF CONTENTS

15.0 DECONTAMINATION AND DECOMMISSIONING 1

15.0 DECONTAMINATION AND DECOMMISSIONING

INTRODUCTION

The Decontamination & Decommissioning (D&D) Functional Area normally describes the programmatic controls, activities, personnel, and programs involved in safely executing D&D activities, if such activities are included in the current mission of the facility. This document assess the applicability of the D&D program to the current PFP mission.

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare the PFPTP to implement the Record of Decision (ROD) resulting from the PFP Cleanup Environmental Impact Statement, to provide interim storage for all SNM materials currently at PFP and to deactivate all portions of the PFP not required for the storage of SNM or to implement the ROD.

SCOPE

This S/RID applies to the PFP in its entirety.

JUSTIFICATION OF FUNCTIONAL AREA NONAPPLICABILITY

The Department of Energy Implementation Plan in response to DNFSB Recommendation 90-2 specifies four facility categories as follows:

- Operational
- Mission Transitional
- Decontamination and Decommissioning
- Environmental Restoration

The Implementation Plan characterizes a D&D facility as follows:

- Consists of facilities and structures (i.e., not environmental restoration);
- Is usually low hazard
- Is subject to RCRA and CERCLA; and
- Includes facilities in long-term surveillance and maintenance

D&D facilities are normally in a condition of long term surveillance and maintenance with minimal occupation or are in the process of active deconstruction and demolition. This scope of work is the responsibility of the ERC contractor, Bechtel Hanford, Inc. However, there may be some aspects of the D&D functional area that warrant attention. Therefore, the following discussion assesses each functional element for potential applicability and value to PFP.

D&D Functional Area Review

15.1; Site Identification, Surveillance and Maintenance

This element includes requirements to identify contaminated facilities, for placing facilities in a safe storage condition, and for performing long term surveillance and maintenance. There is little value to PFP for its current mission to implement this element.

15.2; Characterization and Environmental Review Process

This element includes requirements to collect data to characterize a facility in support of RCRA and CERCLA corrective action requirements and decommissioning alternatives assessment in support of NEPA. There is little value to PFP for its current mission to implement this element.

15.3; Decontamination Operations

This element includes requirements used to develop a Decommissioning Project Plan in compliance with applicable e regulations. PFP does perform decontamination operation as part of routine housekeeping operations, however this activity is addressed in the Radiation Protection functional area. There is little value to PFP for its current mission to implement this element.

15.4; Post-Decommissioning Activities

this element includes requirements used to develop a final radiological and chemical survey following demolition of the facilities. There is little value to PFP for its current mission to implement this element.

15.5; Release Criteria

This element includes requirements used to determine the long-term maintenance and controls for the site or the release criteria for the reuse of the site following decommissioning. Release criteria associated with housekeeping activities are specified in the Radiation protection functional area. There is little value to PFP for its current mission to implement this element.

Current Regulatory Basis

It should be recognized that the current regulatory basis for D&D activities is minimal. DOE has provided some definition of technical requirements in DOE Orders 5820.2A and 5400.5. DOE has plans to address D&D requirements in greater technical detail within about 2 years.

Because of the inadequacy of DOE requirements, previous D&D functional area documents developed for PUREX and REDOX have drawn from NRC and IAEA standards. However, even the NRC has recognized the inadequacy of their current regulatory structure. Current NRC regulations do not contain explicit radiological criteria for decommissioning. At present, the NRC continues to use criteria and practices described in several NRC guidance documents which have been in used for a number of years. This approach ensures protection of public health and safety by guiding decommissioning decisions and generally keeping potential radiological doses to a small fraction of NRC's public dose limit given in

10 CFR Part 20. However, the NRC believes it is necessary to codify, and provide consistency in, radiological criteria for decommissioning.

The NRC believes that radiological criteria for decommissioning should be codified in its regulations so the Commission can more effectively protect public health and the environment at decommissioned sites. To accomplish this, the NRC has published a draft General Environmental Impact Statement for D&D as required by the NEPA process. This information will be used by the NRC to revise 10 CFR 20 to include radiological release criteria.

Conclusion

Based on the current mission of PFP, the responsibility for D&D assigned to Bechtel, and the current state of change of standards related to D&D, there is little value at this time to develop the full D&D functional area document. When PFP has completed its near-term mission and its transitioning to D&D, the applicable standards should be more fully developed by DOE and NRC. It is recommended that the D&D functional area be developed at that time.

TABLE OF CONTENTS

16.0 WASTE MANAGEMENT 1

16.1 WASTE CHARACTERIZATION AND CERTIFICATION 3

16.1.1 TRU Waste 3
16.1.2 Low-Level Radioactive Waste 4
16.1.3 Mixed/Dangerous Waste 5

16.2 PACKAGING AND LABELING COMPLIANCE 21

16.2.1 Low-Level Radioactive Waste Packaging 22
16.2.2 Dangerous/Mixed Waste Packaging and Labeling 22
16.2.3 PCB Waste Labeling 23

16.3 TRANSPORTATION 24

16.4 PLANS, RECORDS AND REPORTING 24

16.4.1 TRU Waste 24
16.4.2 Low-Level Radioactive Waste 24
16.4.3 Mixed/Dangerous Waste 24

16.5 PERMITTING 26

16.6 WASTE ACCEPTANCE CRITERIA 26

16.6.1 Low-Level Radioactive Waste 27
16.6.2 Mixed/Dangerous Waste 27
16.6.3 PCB Waste 27

16.7 WASTE MINIMIZATION 28

16.8 WASTE TREATMENT AND DISPOSAL TECHNOLOGY 29

16.8.1 TRU Waste 29
16.8.2 Low-Level Radioactive Waste 30
16.8.3 Mixed/Dangerous Waste 31

16.8.3.1 Standards 31
16.8.3.2 Management of Containers 34

16.8.4 Asbestos Waste 36
16.8.5 Tank Systems 38
16.8.6 Used Oil 38

16.9 RADIOLOGICAL PERFORMANCE ASSESSMENT 42

16.10 WASTE CATEGORIES 42

16.11 KEY INTERFACES 42

16.11.1 Environmental Protection 42
16.11.2 Emergency Management 43
16.11.3 Safeguards and Security 43
16.11.4 Engineering Program 43
16.11.5 Fire Protection 43
16.11.6 Packaging and Transportation 43
16.11.7 Occupational Safety and Health 43
16.11.8 Quality Assurance 44
16.11.9 Radiation Protection 44
16.11.10 Training and Qualification 44
16.11.11 Management Systems 44

16.12 REFERENCES 44

16.12.1 Requirement Source Documents 44
16.12.2 Reviewed Documents Not Used as Requirement Sources 45

16.0 WASTE MANAGEMENT

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Waste Management Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Waste Management activities, as such activities are included in the current mission of the facility.

This S/RID describes the PFP Waste Management Program as defined through the relevant U.S. Department of Energy (DOE) Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practice. The definition of a Waste Management Program, as specified by this document, is intended to address Defense Nuclear Facilities Safety Board Recommendation 90-2 which calls for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders.

The Waste Management Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents, and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. Additional subelements and sub-subelements were added to the basic format for further definition and clarity. Element 16.1, Waste characterization and Certification, was augmented with the addition of the following subelements: TRU Waste (16.1.1), Low-Level Radioactive Waste (16.1.2) and, Mixed/Dangerous Waste (16.1.3). Element 16.2, Packaging and Labeling Compliance, was embellished with the addition of the following subelements: Low-Level Radioactive Waste Packaging (16.2.1) Dangerous/Mixed Packaging and Labeling (16.2.2) and PBC Waste Labeling (16.2.3). Element 16.4, Plans, Records and Reporting, was augmented with the addition of: TRU Waste (16.4.1), Low-Level Radioactive Waste (16.4.2) and Mixed/Dangerous Waste (16.4.3). Element 16.6, Waste Acceptance Criteria, was embellished with the addition of the following subelements: Low-Level Radioactive Waste (16.6.1) Mixed/Dangerous Waste (16.6.2) and PCB Waste (16.6.3). Element 16.8, Waste Treatment and Disposal Technology, was further defined with the addition of the following subelements: TRU Waste (16.8.1), Low-Level Radioactive Waste (16.8.2), Mixed/Dangerous Waste (16.8.3), Standards (16.8.3.1), Management of Containers (16.8.3.2), Asbestos Waste (16.8.4), Tank Systems (16.8.5), and Used Oil (16.8.6). Additional key interfaces were added that include Quality Assurance (16.11.8), Radiation Protection (16.11.9), Training and Qualification (16.11.10), and Managements Systems (16.11.11). Element 16.12 was added to address applied and considered references.

PFP generates the following waste-types considered in the scope of this document:

- TRU Waste
- Low-Level Radioactive Waste
- Mixed TRU Waste
- Mixed Low-Level Radioactive Waste
- Non-radioactive Dangerous Waste
- Polychlorinatedbiphenyl (PCB) Waste

- Mixed PCB Waste
- Asbestos Waste
- Used Oil

The PFP operates the 241-Z Waste Storage and Treatment Facility which provides interim storage and treatment of PFP process waste streams prior to being transferred to double-shell tank farm facilities. The process waste stream is a dangerous waste as designated in accordance with WAC 173-303. Part A Permit Application has been submitted to the State of Washington Department of Ecology in accordance with applicable permitting requirements. 241-Z is operating under interim permit status and therefore this document includes requirements applicable to interim status dangerous waste treatment and storage facilities.

PFP also operates three 90-day dangerous waste storage pads, and satellite accumulation areas. Therefore the requirements of WAC 173-303 for accumulating dangerous waste onsite and container management are included in this document.

SCOPE

The PFPTP Mission is to prepare and implement the ROD resulting from the PFP EIS. The activities evaluated by this EIS to be implemented at PFP include:

> Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage;
>
> Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use; and,
>
> Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and cleanup of radioactive surface contamination as well as routine operations and maintenance.

16.1 WASTE CHARACTERIZATION AND CERTIFICATION

16.1.1 TRU Waste

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.a(1)

"Waste Classification
(1) Any material that is known to be, or suspected of being contaminated with transuranium radionuclides shall be evaluated as soon as possible in the generating process, and determined to be either recoverable material, transuranic waste, low-level waste, mixed waste, or non-radioactive trash in order to avoid commingling the various material streams."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.a(2)

"The lower concentration limit for transuranic waste (> 100 nCi/g of waste) shall apply to the contents of any single waste package at the time of assay. The mass of the waste container including shielding shall not be used in calculating the specific activity of the waste."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.a(3)

"Radioactive wastes with quantities of transuranic radionuclides in concentrations of 100 nCi/g of waste or less shall be considered to be low-level waste, and shall be managed according to the requirements of Chapter III of this Order."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.a(4)

"Mixed transuranic waste:
(a) Mixed transuranic waste meeting the requirements of the Waste Isolation Pilot Plant-Waste Acceptance Criteria shall be sent to the Waste Isolation Pilot Plant.

(b) The Data Package prepared by the generators for the Waste Isolation Pilot Plant shall include information on the kinds and quantities of hazardous components contained in a waste package in accordance with applicable Resource Conservation and Recovery Act regulations.

(c) The determination whether the transuranic waste exhibits any hazardous characteristics or contains listed hazardous components may be based on knowledge of the waste generating process when the performance of a chemical analysis would significantly increase the radiation hazard to personnel."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.b(2)

"Transuranic waste shall be assayed or otherwise evaluated to determine the kinds and quantities of transuranic radionuclides present prior to storage. Additionally, hazardous waste components shall be estimated or analyzed, whichever is appropriate."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.c(1)

"Transuranic Waste Certification

Transuranic waste shall be certified, pursuant to the Waste Isolation Pilot Plant-Waste Acceptance Criteria, placed in interim storage, and sent to the Waste Isolation Pilot Plant when it becomes operational."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.c(8)

"Approved certification and associated quality assurance plans shall be implemented by the generating sites using specific, written operational procedures."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.c(9)

"Certification activities conducted under approved plans and procedures shall be audited periodically, in accordance with a written audit program plan on a continuing basis by the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee. An Environmental Evaluation Group representative may accompany the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee audit team as an observer during site audits. The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee may grant certifying authority to the site following successful completion of an audit."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.c(11)

"Failure to resolve and close out previous audit findings and recommendations or sending noncomplying waste to the Waste Isolation Pilot Plant when judged by the Waste Acceptance Criteria Certification Committee to be a serious violation, shall result in suspension of certifying authority, pending satisfactory resolution."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.e Introduction and 3.e(1)

"Temporary Storage at Generating Sites
(e) The following activities shall be performed to assure the safe storage of transuranic wastes consistent with the requirements of applicable Resource Conservation and Recovery Act regulations:

(1) Transuranic waste shall be segregated or otherwise clearly identified to avoid the commingling of transuranic waste streams with high-level waste or low-level waste."

16.1.2 Low-Level Radioactive Waste

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.d(1)

"Waste Characterization
(1) Low-level waste shall be characterized with sufficient accuracy to permit proper segregation, treatment, storage, and disposal. This characterization shall ensure that, upon generation and after processing, the actual physical and chemical characteristics and major radionuclide content are recorded and known during all stages of the waste management process."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.d(3)

"The concentration of a radionuclide may be determined by direct methods or by indirect methods such as use of scaling factors which relate the inferred concentration of one radionuclide to another that is measured, or radionuclide material accountability, if there is reasonable assurance that the indirect methods can be correlated with actual measurements."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.e(3)

"Generators of waste shall implement a low-level waste certification program to provide assurance that the waste acceptance criteria for any low-level waste treatment, storage, or disposal facility used by the generator are met. Generators and facilities receiving the waste are jointly responsible for assuring compliance with waste acceptance criteria. Generators are financially responsible for actions required due to nonconformance."

16.1.3 Mixed/Dangerous Waste

REQUIREMENT SOURCE: 40CFR268 Part 7(a)

"Except as specified in 268.32 or section 268.42 of this part, the generator must test his waste, or test an extract developed using the test method described in Appendix I of this part, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this part."

REQUIREMENT SOURCE: 40CFR268 Part 7(a)(1)

"Except as specified in 268.32, if a generator's waste is listed in 40 CFR part 261, subpart DD, the generator must test his waste, or test an extract using the Toxicity Characteristic Leaching Procedure, Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 260.11 of this chapter, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this part.) Except as specified in §268.32, if a generator's waste exhibits one or more of the characteristics set out at 40 CFR part 261, subpart CC, the generator must test an extract using the Extraction Procedure Toxicity Test, Method 1310 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 260.11 of this chapter, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this part.) If the generator determines that this waste displays the characteristic of ignitability (D001) (and is not in the High TOC Ignitable Liquids Subcategory or is not treated by INCIN, FSUBS, or RORGS of 268.42, Table 1), or the characteristic of corrosivity (D002), and is prohibited under 268.37, the generator must determine what underlying hazardous constituents (as defined in 268.2) are reasonably expected to be present in the D001 or D002 waste.

If a generator determines that he is managing a restricted waste under this part and the waste does not meet the applicable treatment standards set forth in subpart D of this part or exceeds the applicable prohibition levels set forth in 268.32 or RCRA 3004(d), with each shipment of waste the generator must notify the treatment or storage facility in writing of the appropriate treatment standards set forth in subpart D of this part and any applicable prohibition levels set forth in 268.32 or RCRA 3004(d).) The notice must include the following information:

(i) EPA Hazardous Waste Number;

(ii) The corresponding treatment standards for wastes F001-F005, F039, wastes prohibited pursuant to 268.32 or RCRA section 3004(d), and for underlying hazardous constituents (as defined in 268.2 of this part), in D001 and D002 wastes if those wastes are prohibited under 268.37 of this part. Treatment standards for all other restricted wastes must either be included, or be referenced by including on the notification the applicable wastewater (as defined in §268.2(f)) or nonwastewater (as defined in 268.2(d)) category, the applicable subdivisions made within a waste code based on waste-specific criteria (such as D003 reactive cyanides), and the CFR section(s) and paragraph(s) where the applicable treatment standard appears.) Where the applicable treatment standards are expressed as specified technologies in

268.42, the applicable five-letter treatment code found in Table 1 of 268.42 (e.g., INCIN, WETOX) also must be listed on the notification.

(iii) The manifest number associated with the shipment of waste;

(iv) For hazardous debris, the contaminants subject to treatment as provided by 268.45(b) and the following statement:) "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"; and

(v) Waste analysis data, where available."

REQUIREMENT SOURCE: 40CFR268 Part 7(a)(5)

"If a generator determines whether the waste is restricted based solely on his knowledge of the waste, all supporting data used to make this determination must be retained on-site in the generator's files. If a generator determines whether the waste is restricted based on testing this waste or an extract developed using the test method described in appendix I of this part, all waste analysis data must be retained on-site in the generator's files."

REQUIREMENT SOURCE: 40CFR268 Part 7(a)(6)

"If a generator determines that he is managing a restricted waste that is excluded from the definition of hazardous or solid waste or exempt from subtitle C regulation, under 40 CFR 261.2-261.6 subsequent to the point of generation, he must place a one-time notice stating such generation, subsequent exclusion from the definition of hazardous or solid waste or exemption from subtitle C regulation, and the disposition of the waste, in the facility's file."

REQUIREMENT SOURCE: 40CFR268 Part 7(a)(7)

"Generators must retain on-site a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to this section for at least five years from the date that the waste that is the subject of such documentation was last sent to on-site or off-site treatment, storage, or disposal.) The five year record retention period is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.) The requirements of this paragraph apply to solid wastes even when the hazardous characteristic is removed prior to disposal, or when the waste is excluded from the definition of hazardous or solid waste under 40 CFR 261.2-261.6, or exempted from subtitle C regulation, subsequent to the point of generation."

REQUIREMENT SOURCE: 40CFR268 Part 7(a)(8)

"If a generator is managing a lab pack that contains wastes identified in appendix IV of this part and wishes to use the alternative treatment standard under 268.42, with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section.) The generator must also comply with the requirements in paragraphs (a)(5) and (a)(6) of this section, and must submit the following certification, which must be signed by an authorized representative:

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only the wastes specified in appendix IV to part 268 or solid wastes not subject to regulation under 40 CFR part 261.) I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment."

REQUIREMENT SOURCE: 40CFR268 Part 9(a)

"The initial generator of a solid waste must determine each EPA Hazardous Waste Number (waste code) applicable to the waste in order to determine the applicable treatment standards under subpart D of this part. For purposes of part 268 the waste will carry the waste code for any applicable listing under 40 CFR 261 subpart D. In addition, the waste will carry one or more of the waste codes under 40 CFR 261 subpart C, where the waste exhibits a characteristic except in the case when the treatment standard for the waste listed in part 261 subpart D operates in lieu of the treatment standard for the waste under part 261 subpart C, as specified in paragraph (b) of this section. If the generator determines that his waste displays the characteristic of ignitability (D001) (and is not in the High TOC Ignitable Liquids Subcategory or is not treated by CMBST or RORGS), or the characteristic of corrosivity (D002) and is prohibited under 268.37; or that his waste displays the characteristic of toxicity (D012-D043) and is prohibited under 268.38, the generator must determine the underlying hazardous constituents (as defined in 268.2), in the D001, D002, or D012-D043 wastes."

REQUIREMENT SOURCE: 40CFR268 Part 9(b)

"Where a prohibited waste is both listed under 40 CFR part 261 subpart D and exhibits a characteristic under 40 CFR part 261 subpart C, the treatment standard for the waste code listed in 40 CFR part 261 subpart D will operate in lieu of the standard for the waste code under 40 CFR part 261 subpart C, provided that the treatment standard for the listed waste includes a treatment standard for the constituent that causes the waste to exhibit the characteristic. Otherwise the waste must meet the treatment standards for all applicable listed and characteristic waste codes."

REQUIREMENT SOURCE: 40CFR268 Part 9(c)

"In addition to any applicable standards determined from the initial point of generation no prohibited waste which exhibits a characteristic under 40 CFR part 261 subpart C may be land disposed unless the waste complies with the treatment standards under subpart D of this part."

REQUIREMENT SOURCE: 40CFR268 Part 9(d)

"Wastes that exhibit a characteristic are also subject to 268.7 requirements, except that once the waste is no longer hazardous a one-time notification and certification must be placed in the generators or treaters files and sent to the EPA region or authorized state. The notification and certification that is placed in the generators or treaters files must be updated if the process or operation generating the waste changes and/or if the subtitle D facility receiving the waste changes. However the generator or treater need only notify the EPA region or an authorized state on an annual basis if such changes occur. Such notification and certification should be sent to the EPA region or authorized state by the end of the calendar year but no later that December 31.
(1) The notification must include the following information:

(i) Name and address of the RCRA Subtitle D facility receiving the waste shipment; and

(ii) A description of the waste as initially generated including the applicable EPA Hazardous Waste Number(s) treatability group(s), and underlying hazardous constituents (as defined in 268.2(i) in D001 and D002 wastes prohibited under 268.37, or D012-D043 wastes under 268.38.

(2) The certification must be signed by an authorized representative and must state the language found in 268.7(b)(5).

(i) If treatment removes the characteristic but does not treat underlying hazardous constituents then the certification found in 268.7(b)(5)(iv) applies.

(ii) [Reserved]"

REQUIREMENT SOURCE: WAC-173-303(940523) Section 070(2)(a)

"Once a material has been determined to be a dangerous waste, then any solid waste generated from the recycling, treatment, storage, or disposal of that dangerous waste is a dangerous waste unless and until:

(i) The generator has been able to accurately describe the variability or uniformity of the waste over time, and has been able to obtain demonstration samples which are representative of the waste's variability or uniformity; and

(ii)(A) It does not exhibit any of the characteristics of WAC 173-303-090; and

(B) If it was a listed waste under WAC 173-303-080 through 173-303-083, it also has been exempted pursuant to WAC 173-303-910; or

(iii) If originally designated only through WAC 173-303-100, it does not exhibit any of the criteria of WAC 173-303-100.

Such solid waste shall include but not be limited to any sludge, spill residue, ash emission control dust, leachate, or precipitation run-off. Precipitation run-off will not be considered a dangerous waste if it can be shown that the run-off has not been contaminated with the dangerous waste, or that the run-off is adequately addressed under existing state laws (e.g. chapter 90.48 RCW), or that the run-off does not exhibit any of the criteria or characteristics described in WAC 173-303-100."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 070(2)(b)

"Materials that are reclaimed from solid wastes and that are used beneficially (as provided in WAC 173-303-016 and 173-303-017 are not solid wastes and hence are not dangerous wastes under this section unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 070(3)

"Designation procedures.
(a) To determine whether or not a waste is designated a person shall check the waste against the following sections, and in the following order:

(i) First, Discarded chemical products, WAC 173-303-081;
(ii) Second, Dangerous waste sources, WAC 173-303-082;
(iii) Third, Dangerous waste characteristics, WAC 173-303-090; and
(iv) Fourth, Dangerous waste criteria, WAC 173-303-100.

(b) A person shall check each section, in the order set forth, until he determines whether the waste is designated as a dangerous waste. Once the waste is designated through the lists, characteristics, or criteria he need not determine any other designations for the waste, except as required by subsection (4) or (5) of this section, or for the purposes of compliance with the federal land disposal restrictions, as adopted by reference in WAC 173-303-140. If the designation procedures identify a waste as both EHW and DW (e.g., a waste may be DW for corrosivity and EHW for toxicity characteristic), the waste must be designated EHW. If a

person has checked the waste against each section and the waste is not designated, then the waste is not subject to the requirements of chapter 173-303 WAC.

Any person who wishes to seek an exemption for a waste which has been designated DW or EHW shall comply with the requirements of WAC 173-303-072.

(c) For the purpose of determining if a solid waste is a dangerous waste as identified in WAC 173-303-080 through 173-303-100, a person shall either:

(i) Test the waste according to the methods, or an approved equivalent method, set forth in WAC 173-303-110; or

(ii) Apply knowledge of the waste in light of the materials or the process used, when:

(A) Such knowledge can be demonstrated to be sufficient for determining whether or not it designated and/or designated properly; and

(B) All data and records supporting this determination in accordance with WAC 173-303-210 (3) are retained on-site."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 070(4)

"Testing required. Notwithstanding any other provisions of this chapter, the department may require any person to test a waste according to the methods, or an approved equivalent method, set forth in WAC 173-303-110 to determine whether or not the waste is designated under the dangerous waste lists, characteristics, or criteria, WAC 173-303-080 through 173-303-100. Such testing may be required if the department has reason to believe that the waste would be designated DW or EHW by the dangerous waste lists, characteristics, or criteria, or if the department has reason to believe that the waste is designated improperly (e.g., the waste has been designated DW but should actually be designated EHW). If a person, pursuant to the requirements of this subsection, determines that the waste is a dangerous waste or that its designation must be changed, then he shall be subject to the applicable requirements of this chapter 173-303 WAC. The department shall base a requirement to test a waste on evidence that includes, but is not limited to:

(a) Test information indicating that the person's waste may be DW or EHW;

(b) Evidence that the person's waste is very similar to another persons' already designated DW or EHW;

(c) Evidence that the persons' waste has historically been a DW or EHW;

(d) Evidence or information about a person's manufacturing materials or processes which indicate that the wastes may be DW or EHW; or

(e) Evidence that the knowledge or test results a person has regarding a waste is not sufficient for determining whether or not it designated and/or designated properly."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 070(5)

"Special knowledge. If a generator has designated his waste under the dangerous waste lists, WAC 173-303-080 through 173-303-082, or characteristics, WAC 173-303-090, and has knowledge that the waste also exhibits any of the dangerous waste characteristics, WAC 173-303-090, or that the waste also meets any of the dangerous waste criteria, WAC

173-303-100, then he shall also designate the waste in accordance with those dangerous waste characteristics, or criteria, or both."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 081(1)

"A waste shall be designated as a dangerous waste if it is handled in any of the manners described in (e) of this subsection, and if it is a residue from the management of:

(a) A commercial chemical product or manufacturing chemical intermediate which has the generic name listed in the discarded chemical products list, WAC 173-303-9903;

(b) An off-specification commercial chemical product or manufacturing chemical intermediate which if it had met specifications would have the generic name listed in the discarded chemical products list, WAC 173-303-9903;

(c) Any containers, inner liners, or residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate that has, or any off-specification commercial chemical product or manufacturing chemical intermediate which if it had met specifications would have, the generic name listed on the acutely dangerous chemical products list of WAC 173-303-9903, unless the containers or inner liners are empty as described in WAC 173-303-160 (2);

(d) Any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill of a commercial chemical product or manufacturing chemical intermediate which has, or of an off-specification commercial chemical product or manufacturing chemical intermediate which if it had met specifications would have, the generic name listed in the discarded chemical products list, WAC 173-303-9903;

(e) The materials or items described in (a), (b), (c), and (d) of this subsection are dangerous wastes when they are:

(i) Discarded or intended to be discarded as described in WAC 173-303-016 (3)(b)(i);

(ii) Burned for purposes of energy recovery in lieu of their original intended use;

(iii) Used to produce fuels in lieu of their original intended use;

(iv) Applied to the land in lieu of their original intended use; or

(v) Contained in products that are applied to the land in lieu of their original intended use."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 081(3)

"Dangerous waste numbers and mixtures. A waste which has been designated as a discarded chemical product dangerous waste shall be assigned the dangerous waste number or numbers listed in WAC 173-303-9903 next to the generic chemical or chemicals which caused the waste to be designated. If a person mixes a solid waste with a waste that would be designated as a discarded chemical product under this section, then the entire mixture shall be designated. The mixture designation shall be the same as the designation for the discarded chemical product which was mixed with the solid waste. For example, a mixture containing 2.2 lbs. (1 kg) of Aldrin (dangerous waste number P004; EHW designation) and 22 lbs. (10 kg) of a solid waste, would be designated as an EHW, and would have the dangerous waste number P004."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 081(4)

"For the purposes of this chapter, the term "acutely hazardous waste" shall include discarded chemical products (listed in WAC 173-303-9903) that are identified with a dangerous waste number beginning with a "P" or that show an "X" or "A" in the reason for designation column."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 082(1)

"The dangerous waste sources list appears in WAC 173-303-9904. Any waste which is listed or which is a residue from the management of a waste listed on the dangerous waste sources list shall be designated a dangerous waste, and shall be identified as DW, except that WAC 173-303-9904 includes several footnotes describing circumstances under which certain dangerous waste sources should be designated EHW rather than DW."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 082(3)

"Care should be taken in the proper designation of these wastes and of mixtures of these wastes and solid wastes. If a person mixes a solid waste with a waste that would be designated as a dangerous waste source under this section, then the entire mixture shall be designated as a dangerous waste source. The mixture shall have the same designation (DW or EHW), and shall have the same dangerous waste number as the dangerous waste source which was mixed with the solid waste."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 082(4)

"For the purposes of this section, any dangerous waste source listed in WAC 173-303-9904 which lists more than one chemical compound must be designated as a dangerous waste if it contains any one or any combination of the listed chemical compounds. For example, a spent nonhalogenated solvent containing both xylene and acetone must be designated as dangerous waste source F003."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 090(2)

"Representative samples. The department will consider a sample obtained using any of the applicable sampling methods described in WAC 173-303-110 (2), sampling and testing methods, to be a representative sample."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 090(3)

"Equivalent test methods. The testing methods specified in this section shall be the only acceptable methods, unless the department approves an equivalent test method in accordance with WAC 173-303-910 (2)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 090(4)

"Quantity exclusion limit. A solid waste is a dangerous waste if it exhibits one or more of the dangerous waste characteristics described in subsections (5), (6), (7), and (8) of this section. If a person's solid waste exhibits one or more of these characteristics, then he shall be a dangerous waste generator (and may not be considered a small quantity generator as provided in WAC 173-303-070 (8)) if the quantity of his waste exceeds 220 lbs. (100 kg) per month or per batch."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 090(5)

"Characteristic of ignitability.
(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(i) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60 degrees C (140 degrees F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80, or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78;

(ii) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard;

(iii) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation; or,

(iv) It is an oxidizer as defined in 49 CFR 173.151.

(b) A solid waste that exhibits the characteristic of ignitability shall be designated DW, and shall be assigned the dangerous waste number of D001."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 090(6)

"Characteristic of corrosivity.
(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has any one or more of the following properties:

(i) It is aqueous, and has a pH less than or equal to 2, or greater than or equal to 12.5, using Method 9040 or 9041 in Test Methods for Evaluating Solid Waste (SW 846), Physical/Chemical Methods, available from the department;

(ii) It is liquid, and corrodes steel (SAE 1020) at a rate greater than 0.250 inch (6.35 mm) per year at a test temperature of 55 degrees C (130 degrees F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods. The NACE Standard is available from the department; or

(iii) It is solid or semi-solid, and when mixed with an equal weight of water results in a solution, the liquid portion of which has the property specified in (a)(i) of this subsection. Procedures for preparing and extracting the solution and liquid are described in the test procedures of WAC 173-303-110 (3)(a).

(b) A solid waste that exhibits the characteristic of corrosivity shall be designated DW, and shall be assigned the dangerous waste number of D002."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 090(7)

"Characteristic of reactivity.
(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(i) It is normally unstable and readily undergoes violent change without detonating;

(ii) It reacts violently with water;

(iii) It forms potentially explosive mixtures with water;

(iv) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment;

(v) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5 can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment;

(vi) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement;

(vii) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or

(viii) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristic of reactivity shall be designated DW, and shall be assigned the dangerous waste number of D003."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 090(8)

"Toxicity characteristic.
(a) A solid waste exhibits the toxicity characteristic if, using the Toxicity Characteristic Leaching Procedure (TCLP, found in Appendix II of 40 CFR Part 261 or available upon request from the department) or equivalent methods approved by the department under WAC 173-303-110 (5), the extract from a representative sample of the waste contains any of the contaminants listed in the toxicity characteristic list in (c) of this subsection, at concentrations equal to or greater than the respective value given in the list. When the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in the TCLP, is considered to be the extract for the purposes of this subsection.

(b) A solid waste that exhibits the toxicity characteristic has the dangerous waste number specified in the list which corresponds to the toxic contaminant causing it to be dangerous.

(c) Toxicity characteristic list. Two levels of concentration are established for the contaminants listed. Any waste containing one or more contaminants with concentrations at or above the EHW threshold shall cause that waste to be designated EHW. Any waste containing contaminants which occur at concentrations at or above the DW threshold only (i.e., no EHW contaminants), shall be designated DW.

TOXICITY CHARACTERISTICS LIST:

Maximum Concentration of Contaminants for the Toxicity Characteristic

Dangerous Waste Number	Contaminant	(Chemical Abstracts Services No.)	EHW (mg/L)	DW (mg/L)
D004	Arsenic	(7440-38-2)	500	5.0
D005	Barium	(7440-39-3)	10,000	100.0
D018	Benzene	(71-43-2)	50	0.5

D006	Cadmium	(7440-43-9)	100	1.0
D019	Carbon tetrachloride	(56-23-5)	50	0.5
D020	Chlordane	(57-74-9)	3.0	0.03
D021	Chlorobenzene	(108-90-7)	10,000	100.0
D022	Chloroform	(67-66-3)	600	6.0
D007	Chromium	(7440-47-3)	500	5.0
D023	o-Cresol	(95-48-7)/1/	20,000	200.0
D024	m-Cresol	(108-39-4)/1/	20,000	200.0
D025	p-Cresol	(106-44-5)/1/	20,000	200.0
D026	Cresol/1/			200.0
D016	2,4-D	(94-75-7)	1,000	10.0
D027	1,4-Dichlorobenzene	(106-46-7)	750	7.5
D028	1,2-Dichloroethane	(107-06-2)	50	0.5
D029	1,1-Dichloroethylene	(75-35-4)	70	0.7
D030	2,4-Dinitrotoluene	(121-14-2)/2/	130	0.13
D012	Endrin	(72-20-8)	20	0.02
D031	Heptachlor(and its epoxide)	(76-44-8)	0.8	0.008
D032	Hexachlorobenzene	(118-74-1)/2/	130	0.13
D033	Hexachlorobutadiene	(87-68-3)	50	0.5
D034	Hexachloroethane	(67-72-1)	300	3.0
D008	Lead	(7439-92-1)	500	5.0
D013	Lindane	(58-89-9)	40	0.4
D009	Mercury	(7439-97-6)	20	0.2
D014	Methoxychlor	(72-43-5)	1,000	10.0
D035	Methyl ethyl ketone	(78-93-3)	20,000	200.0
D036	Nitrobenzene	(98-95-3)	200	2.0
D037	Pentachlorophenol	(87-86-5)	10,000	100.0
D038	Pyridine	(110-86-1)/2/	500	5.0
D010	Selenium	(7782-49-2)	100	1.0
D011	Silver	(7440-22-4)	500	5.0
D039	Tetrachloroethylene	(127-18-4)	70	0.7
D015	Toxaphene	(8001-35-2)	50	0.5
D040	Trichloroethylene	(79-01-6)	50	0.5
D041	2,4,5-Trichlorophenol	(95-95-4)	40,000	400.0
D042	2,4,6-Trichlorophenol	(88-06-2)	200	2.0
D017	2,4,5-TP (Silvex)	(93-72-1)	100	1.0
D043	Vinyl chloride	(75-01-4)	20	0.2

/1/ If 0-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The DW level for total cresol is 200 mg/L and the EHW level for total cresol is 20,000 mg/L.

/2/ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(2)

"References. The National Institute for Occupational Safety and Health's (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS), Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; Health Effects Assessment Summary Table, #PB 93-921199 and Integrated Risk Information System, #PB 915-913-31, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161; and IARC Monographs, Oxford University Press, 2001 Evans Road, Cary, N.C. 27513 are adopted by reference."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(3)

"A person shall use data which is available to him, and, when such data is inadequate for the purposes of this section, shall refer to the NIOSH RTECS to determine:

(a) Toxicity data or toxic category for each known constituent in the waste;

(b) Whether or not each known constituent of the waste is a halogenated hydrocarbon or a polycyclic aromatic hydrocarbon with greater than three rings and less than seven rings."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(5)

"Toxicity criteria. Except as provided in WAC 173-303-070 (4) or (5), a person shall determine if a solid waste meets the toxicity criteria under this section by following either the instructions for book designation, when his knowledge of the waste is sufficient, or by testing the waste using the biological testing methods adopted under WAC 173-303-110 (3)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(5)(a)

"Except as provided in WAC 173-303-070 (4) or (5), if a person knows only some of the toxic constituents in the waste or only some of the constituent concentrations, and if the waste is undesignated for those known constituents or concentrations, then the waste is not designated for toxicity under this subsection."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(5)(b)

"Book designation procedure. A person may determine if a waste meets the toxicity criteria by following the book designation instructions as follows:

(i) A person shall determine the toxic category for each known constituent. The toxic category for each constituent may be determined from available data, or by obtaining data from the NIOSH RTECS and checking this data against the toxic category table, below. If data is available for more than one of the four toxicity criteria (aquatic, oral, inhalation, or dermal), then the data indicating severest toxicity shall be used, and the most acutely toxic category shall be assigned to the constituent. If the NIOSH RTECS or other data sources do not agree on the same category, then the category arrived at using the NIOSH RTECS will be used to determine the toxic category. If toxicity data for a constituent cannot be found in the NIOSH RTECS, or other source reasonably available to a person, then the toxic category need not be determined for that constituent.

TOXIC CATEGORY TABLE

Category	Toxic (Fish) TLm96 (Fish) or, Aquatic LC50(ppm)	Oral (Rat) LD50(mg/kg)	Inhalation (Rat) LC50(mg/L)	Dermal (Rabbit) LD50(mg/kg)
X	< .1	< .5	< .02	< 2
A	.1 - < 1	.5 - < 5	.02 - < .2	2 - < 20
B	1 - < 10	5 - < 50	.2 - < 2	20 - < 200
C	10 - < 100	50 - < 500	2 - < 20	200 - < 2000
D	100 - 1000	500 - 5000	20 - 200	2000 - 20,000

(ii) A person whose waste contains one or more toxic constituents shall determine the equivalent concentration for the waste from the following formula:

$$\text{Equivalent Concentration}(\%) = \Sigma X\% + \frac{\Sigma A\%}{10} + \frac{\Sigma B\%}{100} + \frac{\Sigma C\%}{1000} + \frac{\Sigma D\%}{10{,}000}$$

where Σ(X,A,B,C, or D)% is the sum of all the concentration percentages for a particular toxic category.

Example 1. A person's waste contains: Aldrin (X Category) - .01%; Diuron (B Category) - 1%; Benzene (C Category) - 4%; Phenol (C Category) - 2%; Cyclohexane (C Category) - 5%; Water (nontoxic) - 87%. The equivalent concentration (E.C.) would be:

$$\text{E.C. }(\%) = .01\% + \frac{0\%}{10} + \frac{1\%}{100} + \frac{(4\% + 2\% + 5\%)}{1000} + \frac{0\%}{10{,}000}$$

$$= .01\% + 0\% + .01\% + .011\% + 0\% = .031\%$$

So the equivalent concentration equals .031%.

(iii) A person whose waste contains toxic constituents shall determine its designation from the toxic dangerous waste graph in WAC 173-303-9906 by finding the equivalent concentration percentage for the waste along the abscissa, finding the total waste quantity along the ordinate, and plotting the point on the graph where the horizontal line drawn from the total waste quantity intersects the vertical line drawn from the waste's equivalent concentration. If the plotted point is in the area marked DW, the person shall designate the waste as DW, and shall assign the dangerous waste number of WT02; if the plotted point is in the area marked EHW, the person shall designate the waste as EHW, and shall assign the dangerous waste number of WT01.

(iv) Toxic dangerous waste graph. The toxic dangerous waste graph appears in WAC 173-303-9906."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(5)(c)

"Designation from bioassay data. A person may determine if a waste meets the toxicity criteria by following the bioassay designation instructions as follows:

(i) A person shall establish the toxicity category range (D category toxicity, or C category or greater toxicity) of a waste by means of the biological testing methods (bioassay) adopted under WAC 173-303-110 (3).

(ii) A person shall designate a waste according to the toxic dangerous waste designation table below.

TOXIC DANGEROUS WASTE DESIGNATION TABLE

If your waste's toxicity range is . . .	And your monthly or batch waste quantity is . . .	Then your waste's designation, and waste numbers are . . .

D Category: (LC50 1000 mg/L to 100 mg/L, or LD50 5000 mg/kg to 500 mg/kg)	Any quantity	DW, WT02
X, A, B, or C (LC50 less than 100 mg/L, or LD50 less than 500 mg/kg)	Less than 220 lbs. (100 kg)	DW, WT02
	Greater than or equal to 220 lbs. (100 kg)"	EHW, WT01

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(5)(d)

"If the designation acquired from book designation and bioassay data do not agree, then bioassay data will be used to designate a waste. If a waste is designated as DW or EHW following the book designation procedure, a person may test the waste by means of the biological testing methods (bioassay) adopted under WAC 173-303-110 (3), using both static acute fish and acute oral rat methods, to demonstrate that the waste is not a dangerous waste or should be designated as DW and not EHW."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(5)(e)

"A waste designated as DW by toxicity criteria shall be assigned the dangerous waste number of WT02. A waste designated as EHW by toxicity criteria shall be assigned the dangerous waste number of WT01."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(6)

"Persistence criteria. For the purposes of this section, persistent constituents are chemical compounds which are either halogenated hydrocarbons (HH), or polycyclic aromatic hydrocarbons (PAH), as defined under WAC 173-303-040. Except as provided in WAC 173-303-070 (4) or (5), a person may determine the identity and concentration of persistent constituents by either applying knowledge of the waste or by testing the waste according to the chemical testing methods for complying with the dangerous waste regulation adopted under WAC 173-303-110 (3)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(6)(a)

"Except as provided in WAC 173-303-070 (4) and (5), if a person knows only some of the persistent constituents in the waste, or only some of the constituent concentrations, and if the waste is undesignated for those known constituents or concentrations, then the waste is not designated for persistence under this subsection."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(6)(b)

"When a waste contains one or more halogenated hydrocarbons (HH) for which the concentrations are known, the total halogenated hydrocarbon concentration shall be determined

by summing the concentration percentages for all of the halogenated hydrocarbons for which the concentrations are known.

Example 2. A waste contains: Carbon tetrachloride - .009%; DDT - .012%; 1,1,1 - trichloroethylene - .020%. The total halogenated hydrocarbon concentration would be:

Total HH Concentration (%) = .009% + .012% + .020% = .041%"

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(6)(c) and (d)

"A person whose waste contains one or more polycyclic aromatic hydrocarbons (PAH) with more than three rings and less than seven rings for which the concentrations are known shall determine the total polycyclic aromatic hydrocarbon concentration by summing the concentration percentages for all of those polycyclic aromatic hydrocarbons with more than three rings and less than seven rings about which he knows the concentration in the waste.

Example 3. A person's waste contains: Chrysene - .08%; 3,4 - benzo[a]pyrene - 1.22%. The total polycyclic aromatic hydrocarbon concentration would be:

Total PAH Concentration (%) = .08% + 1.22% = 1.30%

(d) A person whose waste contains halogenated hydrocarbons and/or polycyclic aromatic hydrocarbons shall determine its designation from the persistent dangerous waste table or persistent dangerous waste criteria graph WAC 173-303-9907.

PERSISTENT DANGEROUS WASTE TABLE

If your waste contains. . .	At a total concentration level of. . .	Then your waste's designation, and waste numbers are. . .
Halogenated Hydrocarbons (HH)	0.01% to 1.0%	DW, WP02
	greater than 1.0%	EHW, WP01
Polycyclic Aromatic Hydrocarbons (PAH)	greater than 1.0%	EHW*, WP01

* No DW concentration level for PAH."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(7)(a)

"Criteria. For the purposes of this section, a carcinogenic substance shall be a substance which has sufficient or limited evidence as a human or animal carcinogen as listed in both:

(i) The National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS) as an International Agency for Research on Cancer (IARC) carcinogen; and

(ii) The Integrated Risk Information System (IRIS) or Health Effects Assessment Summary Table (HEAST).

(iii) A list of carcinogenic substances is available from the department. Any IARC identified substance that is an inorganic, respiratory carcinogen shall be a carcinogenic substance only if it occurs in a friable format (i.e., if it is in a waste which easily crumbles and forms dust which can be inhaled). Any IARC human or animal, sufficient or limited carcinogen that is so

rated because of studies involving implantation of the substance into test animals as the sole cause for the carcinogenic IARC rating, shall not be a carcinogenic substance. This additional information is available in the IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(7)(b)

"Except as provided in WAC 173-303-070 (4) and (5), if a person knows only some of the carcinogenic substances in the waste, or only some of the substance concentrations, and if the waste is undesignated for those known substances or concentrations, then the waste is not designated for carcinogens under this subsection."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 100(7)(c)

"Designation. A solid waste that contains one or more carcinogenic substances shall be designated DW and assigned the waste number of WC02 if either,

(i) The concentration of any one carcinogenic substance exceeds 0.01% of the waste quantity; or

(ii) The total concentration summed for all carcinogenic substances exceeds 1.0% of the waste quantity."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 110(2)(a)

"The methods and equipment used for obtaining representative samples of a waste will vary with the type and form of the waste. The department will consider samples collected using the sampling methods below or the most recent version of such methods for wastes with properties similar to the indicated materials, to be representative samples of the wastes:

(i) Crushed or powdered material - ASTM Standard D346-75;

(ii) Extremely viscous liquid - ASTM Standard D140-70;

(iii) Fly ash-like material - ASTM Standard D2234-86;

(iv) Soil-like material - ASTM Standard D1452-65;

(v) Soil or rock-like material - ASTM Standard D420-69;

(vi) Containerized liquid wastes - "COLIWASA" described in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, revised July 1982, as amended by Update 1 (April 1984) and Update 2 (April 1985); and,

(vii) Liquid waste in pits, ponds, lagoons, and similar reservoirs - "Pond Sampler" described in Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846, revised July 1982, as amended by Update 1 (April 1984) and Update 2 (April 1985)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 110(4)

"Substantial changes to the testing methods described above shall be made only after the department has provided adequate opportunity for public review and comment on the proposed changes. The department may, at its discretion, schedule a public hearing on the proposed changes."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 110(5)

"Equivalent testing methods. Any person may request the department to approve an equivalent testing method by submitting a petition, prepared in accordance with WAC 173-303-910 (2), to the department."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 150(1)

"Any action taken to evade the intent of this regulation by dividing or diluting wastes to change their designation shall be prohibited, except for the purposes of treating, neutralizing, or detoxifying such wastes."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 150(2)

"Separation of a homogeneous waste into heterogeneous phases (e.g., separation of a suspension into sludge and liquid phases, or of a solvent/water mixture into solvent and water phases, etc.) shall not be considered as division, provided that the person generating the waste either:

(a) Designates the homogeneous waste before separation, and handles the entire waste accordingly; or

(b) Designates each phase of the heterogeneous waste, in accordance with the dangerous waste designation requirements of this chapter, and handles each phase accordingly."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 150(3)

"For the purposes of designation, quantities of continuously generated wastes shall be summed monthly. All wastes generated less frequently than once a month shall be considered as batch or single event wastes."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 170(1)

"A person shall be a dangerous waste generator if his solid waste is designated by the requirements of WAC 173-303-070 through 173-303-100.

(a) The generator shall be responsible for designating his waste as DW or EHW.
(b) The generator may request an exemption for his dangerous waste according to the procedures of WAC 173-303-072."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 170(2)

"A dangerous waste generator shall notify the department and obtain an EPA/state identification number as required by WAC 173-303-060, and shall comply with the requirements of WAC 173-303-170 through 173-303-230."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 170(3)

"Any generator who stores, treats, or disposes of dangerous waste on-site shall perform his operations in accordance with the TSD facility requirements with the following exceptions:

(a) Generators who accumulate dangerous wastes for less than ninety days as allowed under WAC 173-303-200 or for less than one hundred eighty days as allowed under WAC 173-303-201 and 173-303-202 ;

(b) Generators who treat dangerous waste on-site in accumulation tanks and containers provided that the generator maintains a log showing the date and amount of waste treated and complies with:

(i) WAC 173-303-200 or 173-303-201, and for tanks, WAC 173-303-202 ; and
(ii) WAC 173-303-283 (3);

(c) Generators who treat special waste in units other than accumulation tanks or containers provided:

(i) The treatment occurs within the appropriate accumulation time frame;
(ii) The unit is designed, constructed, and operated in a manner that prevents:

(A) A release of waste and waste constituents to the environment;
(B) Endangerment of health of employees or the public;
(C) Excessive noise;
(D) Negative aesthetic impact on the use of adjacent property.

(iii) The treatment unit must also be inspected routinely for deterioration that would lead to a release and repairs must be conducted promptly."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 170(4)

"The generator of a special waste may, upon approval by the department, for special waste only:

(a) Develop and implement an alternative manifest mechanism in lieu of the requirements of WAC 173-303-180 for special waste shipments. Such alternative mechanism might employ a single manifest for multiple shipments of the same special waste, might not require signatures or multiple copies for transporters or designated receiving facilities, and might include such other factors as the generator might develop and the department approve. The generator must, however, demonstrate to the department's satisfaction before implementing the alternative mechanism that it will assure accurate tracking and recording of waste shipments, and that the mechanism provides for the proper submission of exception reports as specified in WAC 173-303-220 (2). The generator shall be responsible for assuring that all transporters and facilities involved in implementing the alternative manifest mechanism are complying with the terms and conditions of the mechanism as approved by the department; and

(b) Pursuant to the requirements of WAC 173-303-200, accumulate special waste in containers and tanks for up to one hundred eighty days, and accumulate special waste in piles for up to ninety days provided that he complies with WAC 173-303-660 (2), (3)(a), (b)(i), (ii)(A), (7), (8), and (9)(a)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 170(5)

"The generator must comply with the special land disposal restrictions for certain dangerous wastes in WAC 173-303-140."

16.2 PACKAGING AND LABELING COMPLIANCE

The requirements for packaging and labeling of radioactive and hazardous wastes are covered in the Packaging and Transportation Functional Area.

16.2.1 Low-Level Radioactive Waste Packaging

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.i(5)(b)

"Liquid wastes, or wastes containing free liquid, must be converted into a form that contains as little freestanding and noncorrosive liquid as is reasonably achievable, but, in no case, shall the liquid exceed 1 percent of the volume of the waste when the waste is in a disposal container, or 0.5 percent of the volume of the waste processed to a stable form."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.i(5)(c)

"Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.i(5)(d)

"Waste must not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. This does not apply to radioactive gaseous waste packaged as identified in paragraph 3.i.(5)(e)."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.i(5)(f)

"Waste must not be pyrophoric. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable."

16.2.2 Dangerous/Mixed Waste Packaging and Labeling

REQUIREMENT SOURCE: WAC-173-303(940523) Section 070(6)

"Dangerous waste numbers. When a person is reporting or keeping records on a dangerous waste, he shall use all the dangerous waste numbers which he knows are assignable to his waste from the dangerous waste lists, characteristics, or criteria. For example, if his waste is ignitable and contains extremely hazardous concentrations of halogenated hydrocarbons, he shall use the dangerous waste numbers of D001 and WP01. This shall not be construed as requiring a person to designate his waste beyond those designation requirements set forth in subsections (2), (3), (4), and (5) of this section."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 104(2)

"Characteristics. A waste which exhibits any of the dangerous waste characteristics, WAC 173-303-090, shall be assigned the dangerous waste number corresponding to the characteristic(s) exhibited by the waste."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 104(3)

"Criteria. The following table shall be used for assigning dangerous waste numbers to wastes designated by the dangerous waste criteria or by WAC 173-303-084.

GENERIC DANGEROUS WASTE NUMBERS TABLE

Dangerous Waste Number	Dangerous Waste Criteria and Designation

Toxic Dangerous Wastes
WT01---------- EHW
WT02---------- DW
Persistent Dangerous Wastes
Halogenated Hydrocarbons
WP01---------- EHW
WP02---------- DW
Polycyclic Aromatic Hydrocarbons
WP03---------- EHW
Carcinogenic Dangerous Wastes
WC02---------- DW"

16.2.3 **PCB Waste Labeling**

The requirements of this section apply to all materials containing 2 ppm PCB's using American Society of Testing and Materials (ASTM) Method D-4059-86 or 1 ppm using EPA Method 600/4-81-045 [refer to WAC 173-303-071(3)(k)].

REQUIREMENT SOURCE: 40CFR761 Part 40(a)(1)

"Each of the following items in existence on or after July 1, 1978 shall be marked as illustrated in Figure 1 in 761.45(a): The mark illustrated in Figure 1 is referred to as ML throughout this subpart.
(1) PCB Containers;"

REQUIREMENT SOURCE: 40CFR761 Part 40(a)(9)

"PCB Article Containers containing articles or equipment that must be marked under paragraphs (a) (1) through (8) of this section;"

REQUIREMENT SOURCE: 40CFR761 Part 45

"The following formats shall be used for marking:

(a) Large PCB Mark - ML. Mark ML shall be as shown in Figure 1, letters and striping on a white or yellow background and shall be sufficiently durable to equal or exceed the life (including storage for disposal) of the PCB Article, PCB Equipment, or PCB Container. The size of the mark shall be at least 15.25 cm (6 inches) on each side. If the PCB Article or PCB Equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of 5 cm (2 inches) on each side.

(b) Small PCB Mark - Ms. Mark Ms shall be as shown in Figure 2, letters and striping on a white or yellow background, and shall be sufficiently durable to equal or exceed the life (including storage for disposal) of the PCB Article, PCB Equipment, or PCB Container. The mark shall be a rectangle 2.5 by 5 cm (1 inch by 2 inches). If the PCB Article or PCB Equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of 1 by 2 cm (.4 by .8 inches). [44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982]"

REQUIREMENT SOURCE: 40CFR761 Part 65(c)(8)

"PCB Articles and PCB Containers shall be dated on the article or container when they are placed in storage. The storage shall be managed so that the PCB Articles and PCB Containers

can be located by the date they entered storage. Storage containers provided in paragraph (c)(7) of this section, shall have a record that includes for each batch of PCBs the quantity of the batch and date the batch was added to the container. The record shall also include the date, quantity, and disposition of any batch of PCBs removed from the container."

16.3 TRANSPORTATION

Waste transportation regulations are covered in the Packaging and Transportation Functional Area and will not be repeated here.

16.4 PLANS, RECORDS AND REPORTING

Plans and recordkeeping for environmental monitoring and releases are included in the Environmental Protection Functional Area.

16.4.1 TRU Waste

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.e(6)

"Facilities which store transuranic waste shall have a contingency plan designed to minimize the adverse impacts of fire, explosion, or accidental release of hazardous components of the waste to the environment."

16.4.2 Low-Level Radioactive Waste

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.c(2)

"Waste Generation Reduction. All DOE-low-level waste generators shall establish auditable programs (goals, incentives, procedures, and reports) to assure that the amount of low-level waste generated and/or shipped for disposal is minimized."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.m(1)

"Records and Reports
(1) Each field organization shall develop and maintain a record keeping system that records the following: a historical record of waste generated, treated, stored, shipped, disposed of, or both, at the facilities under its cognizance. The data maintained shall include all data necessary to show that the waste was properly classified, treated, stored, shipped, and/or disposed of. The data maintained in the system shall be based on the data recorded on waste manifests."

16.4.3 Mixed/Dangerous Waste

Contingency planning per WAC-173-303-350 is covered in the Emergency Management Functional Area. Dangerous waste management records and Closure Plans are covered in this subelement.

REQUIREMENT SOURCE: TPA Part Five, Article XXXVI, Section 113

"Each Party to this Agreement shall preserve for a minimum of ten (10) years after termination of this Agreement all of the records in its or its contractors possession related to sampling, analysis, investigations, and monitoring conducted in accordance with this Agreement. After this ten year period, DOE shall notify the EPA and Ecology at least

forty-five (45) days prior to destruction or disposal of any such records. Upon request, the Parties shall make such records or true copies available, to the other Parties subject to Article XLV (Classified and Confidential Information)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 210(2)

"The generator shall keep a copy of each annual report and exception report as required by WAC 173-303-220 for a period of at least five years from the due date of each report. The generator shall keep a copy of his most recent notification (Form 2) until he is no longer defined as a generator under this chapter."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 210(3)

"Waste designation records.
(a) The generator shall keep records of any test results, waste analyses, or other determinations made in accordance with WAC 173-303-170 (1) for designating dangerous waste for at least five years from the date that the waste was last transferred for on-site or off-site treatment, storage, or disposal.

(b) At a minimum, test results must include:

(i) The sample source, sampling date, and sampling procedure used;
(ii) The laboratory performing the test;
(iii) The testing date, and testing method used;
(iv) The analytical result, or the quantitative range of the testing method for analytes not detected."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 210(4)

"Any other records required for generators accumulating wastes on-site as described in WAC 173-303-170 (4)(b) or 173-303-200 must be retained for at least five years, including, but not limited to such items as inspection logs."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 210(5)

"The periods of retention for any records described in this section shall be automatically extended during the course of any unresolved enforcement action requiring those records or upon request by the director."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 210(6)

"All generator records, including plans required by this chapter, shall be made available and furnished upon request by the director."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 220(3)

"Additional reports. The director, as he deems necessary under chapter 70.105 RCW, may require a generator to furnish additional reports (including engineering reports, plans, and specifications) concerning the quantities and disposition of the generator's dangerous waste."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 390(2)

"Annual reports. The owner or operator of a facility that holds an active EPA/state identification number shall prepare and submit a single copy of an annual report to the

department by March 1 of each year. The report form and instructions in the TSD Facility Annual Dangerous Waste Report - Form 5 (which may be obtained from the department) must be used for this report. In addition, any facility which ships dangerous waste off-site must comply with the annual reporting requirements of WAC 173-303-220. The annual report must cover facility activities during the previous calendar year and must include, but is not limited to the following information:

(a) The EPA/state identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) For off-site facilities, the EPA/state identification number of each dangerous waste generator from which the facility received a dangerous waste during the year. For imported shipments, the report must give the name and address of the foreign generator;

(d) A description and the quantity of each dangerous waste the facility received during the year. For off-site facilities, this information must be listed by EPA/state identification number of each generator;

(e) The method of treatment, storage, or disposal for each dangerous waste;

(f) The most recent closure cost estimate under WAC 173-303-620 (3) (or 40 CFR 265.142 for interim status facilities), and for disposal facilities, the most recent post-closure cost estimate under WAC 173-303-620 (5) (or 40 CFR 265.144 for interim status facilities); and

(g) The certification signed in accordance with the requirements of WAC 173-303-810 (12)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 390(3)

"Additional reports. The owner or operator shall also report to the department releases of dangerous wastes, fires, and explosions as specified in WAC 173-303-360 (2)(k) and interim status groundwater monitoring data, as specified in 40 CFR 265.94 (a)(2) and (b)(2).

In addition, the owner or operator shall submit any other reports (including engineering reports, plans, and specifications) required by the department."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 390(4)

"Recordkeeping. The owner/operator of a facility shall keep a copy of all unmanifested waste reports, annual reports, and any other reports submitted to the department according to the requirements of this section for a period of three years from the date the report was submitted."

16.5 PERMITTING

Permitting regulations are covered in the Environmental Protection Functional Area and will not be repeated here.

16.6 WASTE ACCEPTANCE CRITERIA

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.g(2)(e)

"Incompatible wastes types shall be placed in separate packages and stored in segregated areas to prevent accidental ignition or chemical reaction."

16.6.1 Low-Level Radioactive Waste

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.e(4)

"Generator low-level waste certification programs shall be subject to a periodic audit by operators of facilities to which the waste is sent by the generator."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.e(5)

"The waste acceptance criteria for storage, treatment, or disposal facilities shall address the following issues:

(a) Allowable quantities/concentrations of specific radioisotopes to be handled, processed, stored, or disposed of;

(b) Criticality safety requirements (waste forms and geometries);

(c) Restrictions regarding low-level waste classified for security reasons;

(d) External radiation and internal heat generation;

(e) Restrictions on the generation of harmful gases, vapors, or liquids in waste;

(f) Chemical and structural stability of waste packages, radiation effects, microbial activity, chemical reactions, and moisture;

(g) Restrictions for chelating and complexing agents having the potential for mobilizing radionuclides; and

(h) Quantity of free liquids."

16.6.2 Mixed/Dangerous Waste

REQUIREMENT SOURCE: WAC-173-303(940523) Section 140(4)

"Land disposal restrictions and prohibitions. The land disposal requirements of this subsection apply to land disposal in Washington state."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 140(4)(a)

"Disposal of extremely hazardous waste (EHW). No person shall land dispose of EHW, except as provided in subsection (5) of this section, at any land disposal facility in the state. No person shall land dispose of EHW at the facility established under RCW 70.105.050, except as provided by subsections (5), (6), and (7) of this section. A person is encouraged to reclaim, recycle, recover, treat, detoxify, neutralize, or otherwise process EHW to remove or reduce its harmful properties or characteristics, provided that such processing is performed in accordance with the requirements of this chapter."

16.6.3 PCB Waste

REQUIREMENT SOURCE: 40CFR761 Part 79

"(a) Any PCB Container to be decontaminated shall be decontaminated by flushing the internal surfaces of the container three times with a solvent containing less than 50 ppm PCB. The

solubility of PCBs in the solvent must be five percent or more by weight. Each rinse shall use a volume of the normal diluent equal to approximately ten (10) percent of the PCB Container capacity. The solvent may be reused for decontamination until it contains 50 ppm PCB. The solvent shall then be disposed of as a PCB in accordance with 761.60(a). Non-liquid PCBs resulting from the decontamination procedures shall be disposed of in accordance with the provisions of 761.60(a)(4).

(b) Movable equipment used in storage areas shall be decontaminated by swabbing surfaces that have contacted PCBs with a solvent meeting the criteria of paragraph (a) of this section."

16.7 WASTE MINIMIZATION

REQUIREMENT SOURCE: 40CFR262 Part 41(a)(6)

"A description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated."

REQUIREMENT SOURCE: 40CFR264 Part 73(b)(9)

"Operating Record. A certification by the permittee no less often than annually, that the permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the permittee to be economically practicable; and the proposed method of treatment, storage or disposal is that practicable method currently available to the permittee which minimizes the present and future threat to human health and the environment."

REQUIREMENT SOURCE: 40CFR265 Part 75(h)

"For generators who treat, store, or dispose of hazardous waste on-site, a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated."

REQUIREMENT SOURCE: 40CFR265 Part 75(i)

"For generators who treat, store, or dispose of hazardous waste on-site, a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for the years prior to 1984."

REQUIREMENT SOURCE: 40CFR265 Part 75(j)

"The certification signed by the owner or operator of the facility or his authorized representative."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.b(1)

"Transuranic Waste Generation and Treatment
(1) Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Transuranic waste reduction efforts shall be based on the implementation of techniques such as process modification, process optimization, materials substitution, decontamination, assay of suspect waste, and new technology development. Volume reduction techniques, such as incineration, compaction, extraction, and shredding, shall be implemented wherever cost effective and practical. Treatment facilities shall be permitted by the appropriate regulatory authority."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.g(2)(b)

"The facility shall be designed and operated to minimize the run on and run off of precipitation. The run off control system shall provide for collecting and sampling run off, which may come in contact with the waste packages, prior to releasing the water for discharge."

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.c(4)

"Waste Minimization. Each DOE-low-level waste generator preparing a design for a new process or process change shall incorporate principles into the design that will minimize the generation of low-level waste."

16.8 WASTE TREATMENT AND DISPOSAL TECHNOLOGY

16.8.1 TRU Waste

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.b(3)

"Mixed transuranic waste shall be treated, where feasible and practical, to destroy the hazardous waste component."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.e(4)

"Transuranic wastes in storage shall be monitored periodically to ensure that the wastes are not releasing their radioactive and/or hazardous constituents."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.e(5)

"Transuranic waste storage facilities shall be designed, constructed, maintained, and operated to minimize the possibilities of fire, explosion, or accidental release of radioactive and/or hazardous components of the waste to the environment."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.e(7)

"Transuranic waste shall be stored in such a way so as to maintain radiation exposures as low as reasonably achievable."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.g(2)(f)

"Waste storage facilities shall be designed and operated to minimize the exposure of personnel to radiation and chemicals."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.g(2)(g)

"The storage facility operator shall inspect or verify routinely the condition of waste packages at the storage site for deterioration that may threaten human health or cause release of hazardous or radioactive components to the environment."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.g(3)

"Existing interim storage sites shall be reviewed for consistency with the items in paragraph 3.g.(2). Any necessary corrective actions shall be performed based on a compliance schedule approved by appropriate regulatory authorities."

REQUIREMENT SOURCE: DOE5820.2A Chapter II, Section 3.g(4)

"Certified waste shall be stored in a manner unlikely to alter the certification of the waste package."

16.8.2 Low-Level Radioactive Waste

REQUIREMENT SOURCE: DOE5820.2A Chapter III, Section 3.a(2)

"Assure that external exposure to the waste and concentrations of radioactive material which may be released into surface water, ground water, soil, plants and animals results in an effective dose equivalent that does not exceed 25 mrem/yr to any member of the public. Releases to the atmosphere shall meet the requirements of 40 CFR 61. Reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 141(1)

"A person shall only offer a designated dangerous waste to a TSD facility which is operating either: Under a permit issued pursuant to the requirements of this chapter; or, if the TSD facility is located outside of this state, under interim status or a permit issued by United States EPA under 40 CFR Part 270, or under interim status or a permit issued by another state which has been authorized by United States EPA pursuant to 40 CFR Part 271."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 141(2)

"A person may offer a state only designated dangerous waste (not regulated as a hazardous waste by EPA) to a facility which is located outside of this state and which does not meet the requirements of subsection (1) of this section if:

(a) The facility receiving the waste will legitimately treat or recycle the dangerous waste (disposal is an unacceptable management practice);

(b) The generator has on file a letter or copy of a letter signed by the regulatory authority in the receiving state that the receiving facility may accept the waste;

(c) The generator uses a transporter with a valid EPA/state identification number;

(d) The generator complies with all other applicable requirements, including manifesting, packaging and labeling, with respect to the shipping of the waste. However, the EPA/state identification number for the receiving facility is not required on the manifest or annual report; and

(e) The generator receives from the receiving facility a signed and dated copy of the manifest."

16.8.3 Mixed/Dangerous Waste

REQUIREMENT SOURCE: WAC-173-303(940523) Section 300(5)

"Waste analysis plan. The owner or operator shall develop and follow a written waste analysis plan which describes the procedures he will use to comply with the waste analysis requirements of subsections (1), (2), (3), and (4) of this section. He must keep this plan at the facility, and the plan must contain at least:

(a) The parameters for which each dangerous waste, or nondangerous waste if applicable under WAC 173-303-610
(4)(d), will be analyzed, and the rationale for selecting these parameters;

(b) The methods of obtaining or testing for these parameters;

(c) The methods for obtaining representative samples of wastes for analysis (representative sampling methods are discussed in WAC 173-303-110 (2));

(d) The frequency with which analysis of a waste will be reviewed or repeated to ensure that the analysis is accurate and current;

(e) The waste analyses which generators have agreed to supply;

(f) Where applicable, the methods for meeting the additional waste analysis requirements for specific waste management methods as specified in 40 CFR Part 265 Subparts F through R for interim status facilities and in WAC 173-303-395 (1) and in WAC 173-303-630 through 173-303-670 for final status facilities; and

(g) For off-site facilities, the procedures for confirming that each dangerous waste received matches the identity of the waste specified on the accompanying manifest or shipping paper. This includes at least:

(i) The procedures for identifying each waste movement at the facility; and
(ii) The method for obtaining a representative sample of the waste to be identified, if the identification method includes sampling."

16.8.3.1 Standards

REQUIREMENT SOURCE: WAC-173-303(940523) Section 283(3)

"Performance standards. Unless authorized by state, local, or federal laws, or unless otherwise authorized in this regulation, the owner/operator shall design, construct, operate, or maintain a dangerous waste facility that to the maximum extent practical given the limits of technology prevents:

(a) Degradation of ground water quality;

(b) Degradation of air quality by open burning or other activities;

(c) Degradation of surface water quality;

(d) Destruction or impairment of flora and fauna outside the active portion of the facility;

(e) Excessive noise;

(f) Conditions that constitute a negative aesthetic impact for the public using rights of ways, or public lands, or for landowners of adjacent properties;

(g) Unstable hillsides or soils as a result of trenches, impoundments, excavations, etc.;

(h) The use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible; and

(i) Endangerment of the health of employees, or the public near the facility."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 400(3)(a)

"Interim status standards shall be standards set forth by the Environmental Protection Agency in 40 CFR Part 265 Subparts F through R which are incorporated by reference into this regulation (including, by reference, any EPA requirements specified in those subparts which are not otherwise explicitly described in this chapter), and:

(i) The land disposal restrictions of WAC 173-303-140 and the facility requirements of WAC 173-303-280 through 173-303-440; and the corrective action requirements of WAC 173-303-646 (2);

(ii) WAC 173-303-630 (3), for containers. In addition, for container storage, the department may require that the storage area include secondary containment in accordance with WAC 173-303-630 (7), if the department determines that there is a potential threat to public health or the environment due to the nature of the wastes being stored, or due to a history of spills or releases from stored containers. Any new container storage areas constructed or installed after September 30, 1986, must comply with the provisions of WAC 173-303-630 (7).

(iii) WAC 173-303-640 (5)(d), for tanks; and

(iv) WAC 173-303-805."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 400(3)(b)

"For purposes of applying the interim status standards of 40 CFR Part 265 Subparts F through R to the state of Washington facilities, the federal terms shall have (and in the case of the wording used in the financial instruments referenced in Subpart H of Part 265, shall be replaced with) the following state of Washington meanings:

(i) "Regional administrator" shall mean the "department";
(ii) "Hazardous" shall mean "dangerous"; and
(iii) "Compliance procedure" shall have the meaning set forth in WAC 173-303-040, Definitions."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 400(3)(c)

"In addition to the changes described in (b) of this subsection, the following modifications shall be made to interim status standards of 40 CFR Part 265 Subparts F through R:

(i) The words "the effective date of these regulations" shall mean:

(A) November 19, 1980, for facilities which manage any wastes designated by 40 CFR Part 261;

(B) For wastes which become designated by 40 CFR Part 261 subsequent to November 19, 1980, the effective date shall be the date on which the wastes become regulated;

(C) March 12, 1982, for facilities which manage wastes designated only by WAC 173-303-080 through 173-303-100 and not designated by 40 CFR Part 261;

(D) For wastes which become designated only by WAC 173-303-080 through 173-303-100 and not designated by 40 CFR Part 261 subsequent to March 12, 1982, the effective date shall be the date on which the wastes become regulated.

(ii) "Subpart N - landfills" shall have an additional section added which reads: "An owner/operator shall not landfill an organic carcinogen or an EHW, as defined by WAC 173-303-080 through 173-303-100, except at the EHW facility at Hanford";

(iii) "Subpart R - underground injection" shall have an additional section which reads: "Owners and operators of wells are prohibited from disposing of EHW or an organic carcinogen designated under WAC 173-303-080 through 173-303-100 ";

(iv) "Subpart M - land treatment," section 265.273(b) shall be modified to replace the words "Part 261, Subpart D of this chapter" with "WAC 173-303-080";

(v) "Subpart F - ground water monitoring," section 265.91(c) shall include the requirement that: "Groundwater monitoring wells shall be designed, constructed, and operated so as to prevent groundwater contamination. Chapter 173-160 WAC may be used as guidance in the installation of wells";

(vi) "Subpart H - financial requirements" shall have an additional section which reads: "Any owner or operator who can provide financial assurances and instruments which satisfy the requirements of WAC 173-303-620 will be deemed to be in compliance with 40 CFR Part 265 Subpart H". In 40 CFR Parts 265.143(g) and 265.145(g) the following sentence does not apply to the state: "If the facilities covered by the mechanisms are in more than one Region, identical evidence of financial assurance must be submitted to the maintained with the Regional Administrators of all such Regions."; and

(vii) "Subpart J - tank systems" section 265.193(a) shall be modified so that the dates by which secondary containment (which meets the requirements of that section) must be provided are the same as the dates in WAC 173-303-640(4)(a).

(viii) "Subpart J - tank systems" section 265.191(a) shall be modified so that the date by which an assessment of a tank system's integrity must be completed is January 12, 1990.

(ix) "Subpart G - closure and post-closure" section 265.115 shall be modified to read "Within 60 days of completion of closure of each dangerous waste management unit (including tank systems and container storage areas) and within 60 days of completion of final closure..." In addition, the clean-up levels for removal or decontamination set forth at WAC 173-303-610 (2)(b) apply.

(x) "Subpart B - general facility standards. References to "EPA" (etc.), means the "department" except at 40 CFR 265.11. Additionally, references to "administrator" (etc.), means the "director" except at 40 CFR 265.12(a)."
(xi) The following sections and any cross-reference to these sections are not incorporated or adopted by reference:

(A) 40 CFR Parts 260.1 (b)(4)-(6) and 260.20-22.

(B) 40 CFR Parts 264.1 (d) and (f); 265.1 (c)(4); 264.149-150 and 265.149-150; 264.301(k); and 265.430.

(C) 40 CFR Parts 268.5 and 6; 268 subpart B; 268.42(b); and 268.44.

(D) 40 CFR Parts 270.1 (c)(1)(i); 270.60(b); and 270.64.

(E) 40 CFR Parts 124.1 (b)-(e); 124.4; 124.5(e); 124.9; 124.10 (a)(1)(iv); 124.12(e); 124.14(d); 124.15 (b)(2); 124.16; 124.17(b); 124.18; 124.19; and 124.21.

(F) 40 CFR Parts 2.106(b); 2.202(b); 2.205(i); 2.209 (b)-(c); 2.212-213; and 2.301-311."

16.8.3.2 Management of Containers

REQUIREMENT SOURCE: WAC-173-303(940523) Section 160(1)

"Waste quantity. Containers and inner liners shall not be considered as a part of the waste when measuring or calculating the quantity of a dangerous waste. Only the weight of the residues in nonempty or nonrinsed containers or inner liners will be considered when determining waste quantities."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 160(2)

"A container or inner liner is "empty" when:

(a) All wastes in it have been taken out that can be removed using practices commonly employed to remove materials from that type of container or inner liner (e.g., pouring, pumping, aspirating, etc.) and, whichever quantity is least, either less than one inch of waste remains at the bottom of the container or inner liner, or the volume of waste remaining in the container or inner liner is equal to one percent or less of the container's total capacity, or, if the container's total capacity is greater than one hundred ten gallons, the volume of waste remaining in the container or inner liner is no more than 0.3 percent of the container's total capacity. A container which held compressed gas is empty when the pressure inside the container equals or nearly equals atmospheric pressure; and

(b) If the container or inner liner held acutely hazardous waste, as defined in WAC 173-303-040, or pesticides bearing the danger or warning label, the container or inner liner has been rinsed at least three times with an appropriate cleaner or solvent. The volume of cleaner or solvent used for each rinsing shall be ten percent or more of the container's or inner liner's capacity. In lieu of rinsing for containers that might be damaged or made unusable by rinsing with liquids (e.g., fiber or cardboard containers without inner liners), an empty container may be vacuum cleaned, struck, with the open end of the container up, three times (e.g., on the ground, with a hammer or hand) to remove or loosen particles from the inner walls and corners, and vacuum cleaned again. Equipment used for the vacuum cleaning of residues from containers or inner liners must be decontaminated before discarding, in accordance with procedures approved by the department.

Any rinsate or vacuumed residue which results from the cleaning of containers or inner liners shall whenever possible be reused in a manner consistent with the original intended purpose of the substance in the container or inner liner. In the case of a farmer, if the rinsate is a pesticide residue then the rinsate shall be managed or reused in a manner consistent with the instructions on the pesticide label, provided that when the label instructions specify disposal or burial, such disposal or burial must be on the farmer's own (including rented, leased or tenanted) property. Otherwise, the rinsate shall be checked against the designation

requirements (WAC 173-303-070 through 173-303-100 and, if designated, managed according to the requirements of this chapter.

(c) In the case of a container, the inner liner, that prevented the container from contact with the commercial chemical product or manufacturing chemical, has been removed."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 160(3)

"Any residues remaining in containers or inner liners that are "empty" as described in subsection (2) of this section will not be subject to the requirements of this chapter, and will not be considered as accumulated wastes for the purposes of calculating waste quantities."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 160(4)

"A person may petition the department to approve alternative container rinsing processes in accordance with WAC 173-303-910 (1)."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 200(1)

"A generator, not to include transporters as referenced in WAC 173-303-240 (3), may accumulate dangerous waste on-site without a permit for ninety days or less after the date of generation, provided that:

(a) All such waste is shipped off-site to a designated facility or placed in an on-site facility which is permitted by the department under WAC 173-303-800 through 173-303-845 or recycled or treated on-site in ninety days or less. The department may, on a case-by-case basis, grant a maximum thirty day extension to this ninety day period if dangerous wastes must remain on-site due to unforeseen, temporary and uncontrollable circumstances. A generator who accumulates dangerous waste for more than ninety days is an operator of a storage facility and is subject to the facility requirements of this chapter and the permit requirements of this chapter as a storage facility unless he has been granted an extension to the ninety day period allowed pursuant to this subsection;

(b) The waste is placed in containers and the generator complies with WAC 173-303-630 (2), (3), (4), (5), (6), (8), (9), and (10), or the waste is placed in tanks and the generator complies with WAC 173-303-640 (2) through (10), except WAC 173-303-640 (8)(c) and the second sentence of WAC 173-303-640 (8)(a).

(Note: A generator, unless otherwise required to do so, does not have to prepare a closure plan, a cost estimate for closure, or provide financial responsibility for his tank system to satisfy the requirements of this section.)

Such a generator is exempt from the requirements of WAC 173-303-620 and 173-303-610, except for WAC 173-303-610 (2) and (5). For container accumulation (including satellite areas as described in subsection (2) of this section), the department may require that the accumulation area include secondary containment in accordance with WAC 173-303-630 (7), if the department determines that there is a potential threat to public health or the environment due to the nature of the wastes being accumulated, or due to a history of spills or releases from accumulated containers. In addition, any new container accumulation areas (but not including new satellite areas, unless required by the department) constructed or installed after September 30, 1986, must comply with the provisions of WAC 173-303-630 (7);

(c) The date upon which each period of accumulation begins is marked and clearly visible for inspection on each container;

(d) While being accumulated on site, each container and tank is labeled or marked clearly with the words "dangerous waste" or "hazardous waste." Each container or tank must also be marked with a label or sign which identifies the major risk(s) associated with the waste in the container or tank for employees, emergency response personnel and the public (Note--If there is already a system in use that performs this function in accordance with local, state, or federal regulations, then such system will be adequate).The department may also require that a sign be posted at each entrance to the accumulation area, bearing the legend, "danger--unauthorized personnel keep out," or an equivalent legend, written in English, and legible from a distance of twenty-five feet or more; and

(e) The generator complies with the requirements for facility operators contained in:

(i) WAC 173-303-330 through 173-303-360 (personnel training, preparedness and prevention, contingency plan and emergency procedures, and emergencies) except for WAC 173-303-355 (SARA Title III coordination); and

(ii) WAC 173-303-320 (1), (2)(a), (b), (d), and (3) (general inspection)."

16.8.4 Asbestos Waste

REQUIREMENT SOURCE: 40CFR61 Part 150(a)(1)

"Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, or transporting of any asbestos-containing waste material generated by the source, or use one of the emission control and waste treatment methods specified in paragraphs (a) (1) through (4) of this section.

Adequately wet asbestos-containing waste material as follows:

(i) Mix control device asbestos waste to form a slurry; adequately wet other asbestos-containing waste material; and

(ii) Discharge no visible emissions to the outside air from collection, mixing, wetting, and handling operations, or use the methods specified by 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air; and

(iii) After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; or, for materials that will not fit into containers without additional breaking, put materials into leak-tight wrapping; and

(iv) Label the containers or wrapped materials specified in paragraph (a)(1)(iii) of this section using warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(j)(2) or 1926.58(k)(2)(iii). The labels shall be printed in letters of sufficient size and contrast so as to be readily visible and legible.

(v) For asbestos-containing waste material to be transported off the facility site, label containers or wrapped materials with the name of the waste generator and the location at which the waste was generated."

REQUIREMENT SOURCE: 94-FDB-015 Section A

"DISPOSAL:

Disposal of Regulated Asbestos-Containing Material shall be in accordance with 40 CFR 61.150 and this Agreement as more specifically set forth below for on-site disposal:

1. Asbestos containing waste shall be disposed of at the Hanford Site Central Landfill or other appropriate asbestos disposal facility, normally within five days of collection, unless handled as a dangerous waste in accordance with WAC 173-303 or as a radioactive material.

2. When it is determined to be impractical to dispose of asbestos waste within five (5) working days after collection for disposal, asbestos waste containers, while on the Hanford Site, shall be handled, transported, and disposed of in accordance with the following:

(a) Asbestos waste containers shall be accumulated in securable locations not accessible to the general public.

(b) Asbestos waste containers placed in an accumulation location shall be free of dangerous waste or radioactive contamination.

(c) Only employees authorized by RL and its contractors shall have access and use of asbestos waste accumulation locations.

(d) Access to accumulation locations shall be controlled at all times.

(e) Containers not containing asbestos waste, if present at an accumulation location, will be segregated from the asbestos waste containers.

(f) Accumulation locations and the outer surface of asbestos waste containers shall be maintained free of uncontained asbestos waste."

REQUIREMENT SOURCE: 94-FDB-015 Section B

"Notifications:

Notifications shall be in accordance with 40 CFR 61.145(b)(3)(ii) and 40 CFR 61.145(b)(3)(i,)(iii), or (iv) and this Agreement as more specifically set forth below

1. Annual notification for projects under Regulation 1 thresholds will be submitted annually and the prescribed filing fee will be billed to the Westinghouse Hanford Company (WHC), or such other contractor as RL may direct by written notification.

2. Annual notification for asbestos projects between the Regulation 1 and NESHAP thresholds will also be reported annually and the filing fee as prescribed in Regulation 1 will also be billed to WHC, or such other contractor as RL may direct by written notification.

3. All other asbestos projects that exceed the NESHAP 260 liner feet and 160 square feet threshold will be reported to BFCCAA on a case by case basis and a separate filing fee will be billed to WHC, or such other contractor as RL may direct by written notification."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 395(3)

"Asbestos dangerous waste disposal requirements. All asbestos containing waste material shall be disposed of at waste disposal sites which are operated in accordance with 40 CFR Part 61 Subpart M. Such sites will not need to comply with any other standards of chapter 173-303 WAC, if they comply with 40 CFR Part 61."

16.8.5 Tank Systems

REQUIREMENT SOURCE: WAC-173-303(940523) Section 640(5)(a)

"Dangerous wastes or treatment reagents must not be placed in a tank system if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, corrode, or otherwise fail."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 640(5)(b)

"The owner or operator must use appropriate controls and practices to prevent spills and overflows from tank or containment systems. These include at a minimum:

(i) Spill prevention controls (e.g., check valves, dry disconnect couplings);

(ii) Overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and

(iii) Maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 640(5)(c)

"The owner or operator must comply with the requirements of subsection (7) of this section if a leak or spill occurs in the tank system."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 640(5)(d)

"All tank systems holding dangerous waste shall be marked with labels or signs to identify the waste contained in the tank. The label or sign shall be legible at a distance of at least fifty feet, and shall bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s).

(Note--If there already is a system in use that performs this function in accordance with local, state or federal regulations, then such system will be adequate.)"

REQUIREMENT SOURCE: WAC-173-303(940523) Section 640(5)(e)

"All tank systems holding EHW which is acutely or chronically toxic by inhalation must be designed to prevent escape of vapors, fumes, or other emissions into the air."

16.8.6 Used Oil

REQUIREMENT SOURCE: 40CFR279 Part 10(b)(1)

"Mixtures of used oil and hazardous waste--
Listed hazardous waste.
(i) Mixtures of used oil and hazardous waste that is listed in subpart D of part 261 of this chapter are subject to regulation as hazardous waste under parts 260 through 266, 268, 270, and 124 of this chapter, rather than as used oil under this part.

(ii) Rebuttable presumption for used oil. Used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste because it has been mixed with halogenated

hazardous waste listed in subpart D of part 261 of this chapter. Persons may rebut this presumption by demonstrating that the used oil does not contain hazardous waste (for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in appendix VIII of part 261 of this chapter). EPA Publication SW-846, Third Edition, is available from the Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954, (202) 783-3238 (document number 955-001-00000-1).

[279.10(b)(1)(ii) amended at 59 FR 10559, March 4, 1994]

(A) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling arrangement as described in 279.24(c), to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

(B) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units."

REQUIREMENT SOURCE: 40CFR279 Part 10(b)(2)

"Characteristic hazardous waste. Mixtures of used oil and hazardous waste that solely exhibits one or more of the hazardous waste characteristic identified in subpart C of part 261 of this chapter and mixtures of used oil and hazardous waste that is listed in subpart D solely because it exhibits one or more of the characteristics of hazardous waste identified in subpart C are subject to:

(i) Except as provided in paragraph (b)(2)(iii) of this section, regulation as hazardous waste under parts 260 through 266, 268, 270, and 124 of this chapter rather than as used oil under this part, if the resultant mixture exhibits any characteristics of hazardous waste identified in subpart C of part 261 of this chapter; or

(ii) Except as specified in 279.10(b)(2)(iii) regulation as used oil under this part, if the resultant mixture does not exhibit any characteristics of hazardous waste identified under subpart C of part 261 of this chapter.

(iii) Regulation as used oil under this part, if the mixture is of used oil and a waste which is hazardous solely because it exhibits the characteristic of ignitability (e.g., ignitable-only mineral spirits), provided that the resultant mixture does not exhibit the characteristic of ignitability under 261.21 of this chapter."

REQUIREMENT SOURCE: 40CFR279 Part 21

"Hazardous waste mixing.
(a) Mixtures of used oil and hazardous waste must be managed in accordance with 279.10(b).

(b) The rebuttable presumption for used oil of 279.10(b)(1)(ii) applies to used oil managed by generators. Under the rebuttable presumption for used oil of 279.10(b)(1)(ii), used oil containing greater than 1,000 ppm total halogens is presumed to be a hazardous waste and thus must be managed as hazardous waste and not as used oil unless the presumption is rebutted.However, the rebuttable presumption does not apply to certain metalworking oils/fluids and certain used oils removed from refrigeration units."

REQUIREMENT SOURCE: 40CFR279 Part 22

"279.22 Used oil storage.
Used oil generators are subject to all applicable Spill Prevention, Control and Countermeasures (40 CFR part 112) in addition to the requirements of this Subpart. Used oil generators are also subject to the Underground Storage Tank (40 CFR part 280) standards for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of this subpart.

[279.22 amended at 58 FR 26425, May 3, 1993]

(a) Storage units. Used oil generators shall not store used oil in units other than tanks, containers, or units subject to regulation under parts 264 or 265 of this chapter.

(b) Condition of units. Containers and aboveground tanks used to store used oil at generator facilities must be:

(1) In good condition (no severe rusting, apparent structural defects or deterioration); and

(2) Not leaking (no visible leaks).

(c) Labels.

(1) Containers and aboveground tanks used to store used oil at generator facilities must be labeled or marked clearly with the words "Used Oil."

(2) Fill pipes used to transfer used oil into underground storage tanks at generator facilities must be labeled or marked clearly with the words "Used Oil."

(d) Response to releases. Upon detection of a release of used oil to the environment not subject to the requirements of part 280, subpart F of this chapter which has occurred after the effective date of the authorized used oil program for the State in which the release is located, a generator must perform the following cleanup steps:

(1) Stop the release;

(2) Contain the released used oil;

(3) Clean up and manage properly the released used oil and other materials; and

(4) If necessary to prevent future releases, repair or replace any leaking used oil storage containers or tanks prior to returning them to service."

REQUIREMENT SOURCE: 40CFR279 Part 81

"279.81 Disposal.

(a) Disposal of hazardous used oils. Used oils that are identified as a hazardous waste and cannot be recycled in accordance with this part must be managed in accordance with the hazardous waste management requirements of parts 260 through 266, 268, 270 and 124 of this chapter.

(b) Disposal of nonhazardous used oils. Used oils that are not hazardous wastes and cannot be recycled under this part must be disposed in accordance with the requirements of parts 257 and 258 of this chapter."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 515(1)(a)

"This section applies to used oil that is burned for energy recovery in any boiler or industrial furnace that is not regulated under Subpart O of 40 CFR Part 265 or WAC 173-303-670, if such used oil:

(i) Exhibits any characteristic of a dangerous waste identified in WAC 173-303-090; or

(ii) Is designated as DW solely through WAC 173-303-100; or

(iii) Is designated solely as W001."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 515(1)(b)

"(b)(i) This section does not apply to used oil burned for energy recovery that is mixed with a listed waste (except as provided in (a)(iii) of this subsection) or that is designated as EHW through WAC 173-303-100. Such used oil is subject to the requirements of WAC 173-303-510.

(ii) Used oil containing more than 1000 ppm of total halogens is presumed to be a dangerous waste because it has been mixed with halogenated dangerous waste listed in WAC 173-303-9903 or 173-303-9904. Such dangerous wastes are subject to the requirements of WAC 173-303-510. Persons may rebut this presumption by demonstrating that the used oil does not contain dangerous waste (for example, by showing that the used oil does not contain significant concentrations of halogenated dangerous constituents listed in WAC 173-303-9905).

(iii) This section does not apply to used oil that is designated for any reason other than being listed as W001 if such used oil is burned for energy recovery by the generator of the used oil in his own marine or diesel engines."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 515(1)(c)

"If a used oil subject to this section does not exceed any of the specifications of Table 1, it is subject only to the analysis and recordkeeping requirements under subsection (4)(b)(i) and (vi) of this section; otherwise, it is subject to all applicable provisions of this section."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 515(1)(d)

"For the purposes of this chapter:

(i) "Used oil" means any oil that has been refined from crude oil, used, and, as a result of such use, is contaminated by physical or chemical impurities;

(ii) Used oil fuel includes any fuel produced from used oil by processing, blending, or other treatments;

(iii) Used oil fuel that exceeds any specification level (described in Table 1) is termed "off-specification used oil fuel."

TABLE 1
USED OIL EXCEEDING ANY SPECIFICATION LEVEL IS SUBJECT TO THIS SECTION WHEN BURNED FOR ENERGY RECOVERY

Constituent/property	Allowable level

Arsenic.....	5 ppm maximum
Cadmium.....	2 ppm maximum
Chromium.....	10 ppm maximum
Lead.....	100 ppm maximum
Flash point.....	100° F minimum
Total halogens.....	4,000 ppm maximum*
Polychlorinated Biphenyls.....	2 ppm maximum

* Used oil containing more than 1,000 ppm total halogens is presumed to be a dangerous waste under the rebuttable presumption provided under (b)(ii) of this subsection. Such used oil is subject to WAC 173-303-510 rather than this section when burned for energy recovery unless the presumption of mixing can be successfully rebutted."

16.9 RADIOLOGICAL PERFORMANCE ASSESSMENT

Not applicable; PFP is not a disposal facility.

16.10 WASTE CATEGORIES

Not applicable; Waste Categories is not a programmatic element. Program requirements are addressed in elements 16.1 through 16.9.

16.11 KEY INTERFACES

This element describes key functional area interfaces including Engineering, Emergency Planning and Management, Environmental Protection, Occupational Safety and Health (OSH), Packaging and Transportation, Quality Assurance, Radiation Protection, and Training and Qualification.

16.11.1 Environmental Protection

The Environmental Protection Functional Area develops and implements programs that direct the WM Program and provides oversight, confirmation, and independent verification of an ongoing WM Program. Specific environmental programmatic interfaces for the WM Program should include the following:

a. A process which ensures programs are in place requiring monitoring, surveillance, and inspection and are designed to prevent, detect, and mitigate leaks, spills, uncontrolled effluent discharges.

b. A process that ensures the appropriate identification of necessary environmental permits, permit application processes, permit contents, permit modification, permit tracking systems, and closure.

c. A process in which facilities must observe to comply with environmental protection laws and regulations.

d. A process which addresses the development of an environmental database that defines a reference point against which all future activities may be measured.

16.11.2 Emergency Management

The Emergency Management Functional Area addresses the centralized management within WM regarding emergency planning, preparedness, and response activities. These functions are segregated into the Transportation Emergency Preparedness Program, and the site Emergency Preparedness Program.

16.11.3 Safeguards and Security

The Safeguards and Security Functional Area is responsible for implementing the WAC requirements for dangerous waste security to ensure that unauthorized personnel may not unknowingly enter TSD facilities.

16.11.4 Engineering Program

The WM Functional Area interfaces with the Engineering Program Functional Area in that the engineering program must have organizational interaction with state or federal regulators in the design requirements for permitted waste facilities. In addition, changes to waste operations and modification of processes may require regulatory approval.

16.11.5 Fire Protection

The Fire Protection Functional Area interfaces with the WM Functional Area in that the Fire Protection Functional Area includes administrative control of hazardous substances or processes, inspection, maintenance, and testing of fire protection features and for other relevant fire protection activities. Waste generation, accumulation, storage, treatment, and disposal facilities would need to be included in the program establishing such hazard controls.

16.11.6 Packaging and Transportation

The Packaging and Transportation Functional Area addresses and ensures all hazardous materials (particularly radioactive), substances, and waste, can be efficiently, economically, safely, and legally packaged and transported. The Packaging and Transportation Functional Area maintains the responsibility with any waste packaging and transport of materials from the areas within the site boundary.

16.11.7 Occupational Safety and Health

The OS&H Functional Area addresses broad DOE safety and health goals and objectives and incorporates them into site-specific Westinghouse Hanford Company (WHC) procedures and requirements. The WM Program must rely on the OS&H Functional Area for establishing the health and safety controls required to perform WM functions. Specifically, the OS&H Functional Area provides implementation procedures to control hazardous or toxic materials; physical hazards; hazards identification, surveillance, and communication; asbestos removal operation; hazardous materials handling and emergency response; posting of danger signs and tags or safety instructional materials; storage of pressurized gases; lockout and tagout activities; and explosive or combustible materials handling, processing, storage, transportation, and shipping. The WM Program should integrate the OS&H Functional Area into its Program which identifies the basic policy, responsibilities, authorities, program requirements, and implementation criteria.

16.11.8 Quality Assurance

The Quality Assurance Functional Area and its requirements apply to all items, activities, and processes managed by the WM Program. The Quality Assurance Functional Area is integrated into the WM Program with three fundamental categories: management, performance, and assessment. The integration of these categories should be included in the WM Program procedures.

16.11.9 Radiation Protection

The Radiological Protection Functional Area addresses the radiological safety of WHC employees, Hanford personnel, the public, and the environment during all WM activities.

16.11.10 Training and Qualification

The Training and Qualification Functional Area is integrated into the WM Program by defining the appropriate personnel selection, training, qualifications, and resources necessary to safely and efficiently perform WM activities.

16.11.11 Management Systems

The Management Systems Functional Area specifies requirements for compliance management that are applicable to implementing the WM requirements specified in this document.

16.12 REFERENCES

16.12.1 Requirement Source Documents

The following documents were reviewed and cited in the Waste Management Functional Area document:

40 CFR 61, National Emissions Standards for Hazardous Air Pollutants, as amended by 59 FR 36301, 07/15/94

40 CFR 262, Standards Applicable to Generators of Hazardous Waste, as amended by 58 FR 34370, 06/25/93

40 CFR 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, as amended by 59 FR 62896, 12/06/94

40 CFR 265, Interim Status Standards for the Treatment, Storage, and Disposal of Hazardous Waste, as amended by 59 FR 48041, 09/19/94

40 CFR 268, EPA Regulations on Land Disposal Restrictions, as amended by 60 FR 244, 01/03/95

40 CFR 279, Standards for the Management of Used Oil, as amended by 59 FR 10559, 03/04/94

40 CFR 761, Polychlorinated Biphenals (PCBs) Manufacturing, Processing, Distribution in Commerce, and use Prohibitions, effective 12/09/93

WAC-173-303, Dangerous Waste Regulations, effective 05/23/94

DOE 5820.2A, Radioactive Waste Management, effective 09/26/88

Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement), Rev. 5, 07/95

94-FDB-015, Agreement Relating to Removal and Encapsulation of Asbestos Material, effective 02/17/94

16.12.2 **Reviewed Documents Not Used as Requirement Sources**

The following reference documents were reviewed, but were not cited.

42 USC 6924, Resource Conservation and Recovery Act of 1976, 10/24/92

DOE 5400.1, General Environmental Protection Program, effective 06/29/90

WAC-173-304, Minimum Function Standards for Solid Waste Handling, effective 11/05/88

WAC-296-65, Asbestos Removal and Encapsulation, effective 01/01/92

Washington State Register Issue 94-12, dated 06/15/94

TABLE OF CONTENTS

17.0 RESEARCH AND DEVELOPMENT AND EXPERIMENTAL ACTIVITIES 1

17.1 MANAGEMENT 3

17.1.1 Conduct of Programs 3
17.1.2 Project Design Reviews 3
17.1.3 Review and Documentation of Results 3

17.2 FACILITIES AND EQUIPMENT 3

17.2.1 Facility Construction 4
17.2.2 Inventory Control and Accountability 4
17.2.3 Dismantling and Disposition 4

17.3 R&D AND EXPERIMENTAL ACTIVITIES SAFETY 4

17.3.1 Safety Analyses 4
17.3.2 Safety Review Committee 4

17.4 KEY INTERFACES 4

17.4.1 Management Systems 4
17.4.2 Quality Assurance 5
17.4.3 Configuration Management 5
17.4.4 Training and Qualification 5
17.4.5 Emergency Management 5
17.4.6 Safeguards and Security 5
17.4.7 Engineering Program 5
17.4.8 Construction Program 5
17.4.9 Operations 6
17.4.10 Radiation Protection 6
17.4.11 Occupational Safety and Health 6
17.4.12 Environmental Protection 6

17.5 REFERENCES 6

17.5.1 Reviewed Documents Not Used as Requirement Sources 6

17.0 RESEARCH AND DEVELOPMENT AND EXPERIMENTAL ACTIVITIES

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Research and Development and Experimental Activities Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Research and Development and Experimental Activities, as such activities are included in the current mission of the facility.

This S/RID describes the PFP Research and Development and Experimental Activities Program as defined through the relevant U.S. Department of Energy (DOE) Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practice. The definition of a Research and Development and Experimental Activities Program as specified by this document is intended to address Defense Nuclear Facilities Safety Board Recommendations 90-2 and 91-1, which call for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders.

The Research and Development and Experimental Activities Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. After thorough research, it has been determined that there are no unique requirements to the R&D/EA activities that are currently taking place at the PFP, and that any applicable requirements are covered in related Functional Areas. Therefore, the elements and subelements contained in this document, reference sections of related Functional Areas, as the documents that contain the applicable requirement source.

The safety basis for future operations at PFP is contained in WHC-SD-CP-SAR-021, Rev O, "Plutonium Finishing Plant Safety Analysis Report". This document combines and upgrades the information, analyses, requirements, and controls that were previously contained in 14 older safety documents.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

The Development Laboratory inside the PFP compound provides process chemistry and chemical engineering laboratories and provides chemical process technology services to support WHC programs. Major activities of the Development Laboratory include:

- Process development, process testing and pilot plant capability required to implement new technology and support to plant process control and operations.
- Long-term technology to improve performance, safety, or economics of ongoing or new operations and programs.
- Advanced technical planning and studies in the area of chemical processing.

The Development laboratory at PFP primarily supports PFP although they do support other WHC and DOE programs, as well. Requests from PFP usually come from the process engineering group for a wide range of activities including: literature searches, bench type chemical experiments, and full scale demonstration of equipment or processes. Experiments and process technology development projects are developed and conducted off-line from other PFP operations. PFP provides management oversight and helps to perform safety and operations review to ensure that the experiments are conducted safely and meet PFP objectives.

17.1 MANAGEMENT

The general aspects of management, policy, staffing, and training are covered in the Management Systems Functional Area.

Additional aspects of management are also covered in the Training and Qualification Functional Area, section 4.2 Administration of Training, and in the Nuclear Safety Functional Area, section 18.1 Management.

17.1.1 Conduct of Programs

Prior to initiation of an activity, testing in a R&D/EA facility or performance of an individual experiment, participating personnel are to be briefed on the test objectives and instructed (trained and tested, as necessary) on the test procedures with particular emphasis on worker and overall environment, safety and health aspects during the activity, including emergency procedures.

Research and Development's Conduct of Programs section interfaces with PFP's Operations, Construction, Maintenance, Engineering Design, Management Systems and Quality Assurance Functional Areas. The control of work processes is an ongoing and continuous interface and is the single most important process to be accomplished to ensure that the work activity is completed in an efficient and effective manner with a high level of quality. The Quality Assurance Functional Area provides requirements for documents, records and work processes.

Requirement 10CFR830 Part 120(c)(1)(iv), cited in section 2.5 Documents and Records of the PFP Quality Assurance Functional Area, applies to this sub-element. This requirement states that "documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design." In addition, requirement 10CFR830 Part 120(c)(2)(i), cited in section 2.6 Work Processes of the PFP Quality Assurance Functional Area, states that work processes "shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means."

Additional requirements are defined in the Management Systems Functional Area, section 1.2.1 Preparation.

17.1.2 Project Design Reviews

Requirement DOE 4700.1, provides guidance to determine the reviews needed for R&D/EA projects. When formal designs are needed, requirements for this sub-subelement can be located in the Engineering Program Functional Area, section 7.2.4 Design Review and Verification.

17.1.3 Review and Documentation of Results

The PFP Engineering Functional Area provides appropriate requirements for the validation and documentation of results and their impact and are not included here.

17.2 FACILITIES AND EQUIPMENT

The PFP Functional Areas of Construction and Maintenance contain the programmatic elements which control the acquisition and use of R&D/EA facilities and equipment.

17.2.1 Facility Construction

General construction requirements are given in the PFP Construction Functional Area.

17.2.2 Inventory Control and Accountability

R&D/EA projects frequently involve the use of radioactive and hazardous materials, and generally use many items of expensive equipment. Requirements for an effective Material Control and Accountability (MC&A) Plan should ensure the provision of MC&A systems to provide accurate nuclear materials inventory information; control nuclear materials to deter and prevent loss or misuse; and, provide for timely detection of unauthorized removals and/or dispersal of nuclear materials. These requirements can be located in the Safeguards and Security Functional Area, section 6.4 Material Control and Accountability for Special Nuclear Material.

17.2.3 Dismantling and Disposition

Upon completion of R&D/EA projects, a determination should be made regarding any potential future use of the R&D prototype or the experimental setup. Reusable resources should be cleaned and decontaminated as necessary. The capability for reuse should be determined. The resources should be inventoried, if appropriate, and stored in a safe condition for reuse.

Prior to dismantling major R&D/EA projects, a determination should be made for the potential future use for similar or other R&D/EA efforts.

17.3 R&D AND EXPERIMENTAL ACTIVITIES SAFETY

Note: The Nuclear Safety Functional Area describes the general requirements for Safety Analysis Reports. DOE Order 5480.23 contains most of the requirements for safety analysis.

17.3.1 Safety Analyses

Requirements pertaining to Safety Analyses can be located in the Nuclear Safety Functional Area, section 18.3.1 Safety Analysis Report, and section 18.5 Unreviewed Safety Questions.

17.3.2 Safety Review Committee

The Safety Review Committee (SRC) is an essential element in the planning and performance of any R&D and EA program. Requirements for this sub-subelement are located in the Nuclear Safety Functional Area, section 18.2.2 Operations Review.

17.4 KEY INTERFACES

The interfaces between R&D/EA and other functional areas within the PFP are as follows:

17.4.1 Management Systems

Because of the highly diverse and unique activities performed during R&D/EA programs, clear management responsibilities and authorities should be defined for each activity. Such definitions should be designed to minimize impact on the performance of the experimental activities.

All information and records developed during the conduct of the R&D/EA project should be handled in accordance with the requirements of the Document Control and Records Management sub-element of the Management Systems Functional Area.

17.4.2 Quality Assurance

QA develops the QA program that provides the requirements to be applied to activities determined by R&D/EA to be important to quality. QA also provides for the performance of audits and surveillances of NS activities plus quality control inspections to be performed by the QA organization.

17.4.3 Configuration Management

Configuration Management uses input from R&D/EA on which to base the configuration control program for future modifications.

17.4.4 Training and Qualification

Training and Qualification establishes the procedures and requirements that control the training and/or selection of certain R&D/EA management and technical personnel. Training and Qualification develops training curriculum and keeps records for training to be delivered by R&D/EA.

17.4.5 Emergency Management

R&D/EA supplies information to Emergency Planning and Preparedness so they can design their programs and plans around this information. This information deals with results of potential accidents, including criticality. If design conditions change, R&D/EA will notify the EP organization.

17.4.6 Safeguards and Security

Safeguards and Security Functional Area addresses acts of sabotage and other malevolent acts involving the control and accountability of special nuclear material and nuclear facilities and operations. Safeguards and Security information should not be addresses in SARs or other publicly available documents to ensure facility security.

17.4.7 Engineering Program

Engineering incorporates R&D/EA requirements into design and design modifications. They also develop and update the SAR per NS requirements to identify additional engineering nuclear safety features, and to ensure that current safety features are not affected by modifications.

17.4.8 Construction Program

R&D/EA interfaces with the WHC Site Construction Functional Area to ensure that the installation of facilities or equipment within the laboratory area is performed in accordance with design requirements.

17.4.9 Operations

The Operations Functional Area interfaces and provides input to R&D/EA in area of operations that may be different form the safety analysis basis for determination of any possible USQs. This interface is needed to ensure that R&D/EA principles are incorporated and that requirements specific to the operation of an experiment are not overlooked.

17.4.10 Radiation Protection

An interface between the R&D/EA Functional Area and the RP Functional Area is necessary to ensure that radiation protection standards are incorporated into the nuclear safety program. RP will notify R&D/EA of any findings which are in conflict with any portion of the SAR.

17.4.11 Occupational Safety and Health

Occupational Safety and Health guidelines require and interface with R&D/EA to ensure that any specific requirements are included in experimental activities.

17.4.12 Environmental Protection

The Environmental Protection Program, facilities disposal of waste for the R&D/EA functional area.

17.5 REFERENCES

17.5.1 Reviewed Documents Not Used as Requirement Sources

The R&D/EA Functional Area references related functional area sections in which these document requirement sources are utilized:

ANSI/ANS-8.1-1993, Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors.

ANSI/ANS-8.1-1984, Administrative Practices for Nuclear Criticality Safety.

ANSI/ANS-8.20-1991, Nuclear Criticality Safety Training.

ANSI N16.5-1975 (ANS-8.7), American National Standard Guide for Nuclear Criticality Safety in the Storage of Fissile Materials.

ANSI N45.2.11 1974, Quality Assurance Requirements for Design of Nuclear Power Plants.

10 CFR 820, Procedural Rules for Nuclear Activities, Final Rule, Federal Register, Vol. 58, No. 157, Tuesday, August 17, 1993, Rules and Regulations.

10CFR830, Nuclear Safety Management, Final Rule, Federal Register, Vol. 59, No. 65, Tuesday, 4/5/94.

DOE 4330.4B, Maintenance Management Program, February 10, 1994

DOE 5480.1B, Environmental Safety and Health Program for Departmental of Energy Operation, 9/23/86.

DOE 5480.19, Conduct Of Operations Requirements for DOE Facilities, 5/18/92

DOE 5480.21, Unreviewed Safety Questions, 12/24/91.

DOE 5480.24, Nuclear Criticality Safety, 8/12/92.

DOE 5480.28, Natural Phenomena Hazards Mitigation, 1/15/93.

DOE 5480.30, Nuclear Reactor Safety Design Criteria, 1/19/93.

DOE 5480.4, Environmental Protection, Safety, Health Protection Standards, 1/7/93.

DOE 5480.5, Safety of Nuclear Facilities, 10/15/84.

DOE 5482.1B, Environment, Safety and Health Appraisal Program, 11/18/91.

DOE 5633.3A, Control and Accountability of Nuclear Materials, 02\12\93

DOE/EH0135, Performance Objectives and Criteria for Technical Safety Appraisals at DOE Facilities and Sites, 6/01/90.

DOE-RL 5480.1, Safety of Department of Energy Owned Reactors, 6/24/82.

DOE-RL-5482.1B, Environment, Safety, Health, and Quality Assurance Appraisal and Surveillance Program, 3/4/87.

DOE-SEN-35-91, Nuclear Safety Policy, 9/9/91.

DOE-STD-1027-92, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports, 12/1/92.

RL 5480.1A, Environment, Safety, and Health Program for Department of Energy Operations, 10/31/83.

RL 5481.1, Safety Analysis and Review System, 10/5/83.

RLIP 5480.4C, Environmental Protection, Safety, and Health Protection Standards for RL, 11/6/92.

TABLE OF CONTENTS

18.0 NUCLEAR SAFETY 1

18.1 MANAGEMENT 3

18.2 SAFETY REVIEWS 3

18.3 SAFETY ANALYSIS 3

18.4 TECHNICAL SAFETY REQUIREMENTS 4

18.5 UNREVIEWED SAFETY QUESTIONS 7

18.6 NUCLEAR CRITICALITY SAFETY 8

18.6.1 Criticality Safety Design Practices 9
18.6.2 Materials Control 9

18.7 KEY INTERFACES 10

18.7.1 Management Systems 10
18.7.2 Quality Assurance 10
18.7.3 Configuration Management 10
18.7.4 Training and Qualification 10
18.7.5 Emergency Management 10
18.7.6 Safeguards and Security 10
18.7.7 Engineering Program 10
18.7.8 Operations 11
18.7.9 Maintenance 11
18.7.10 Radiation Protection 11
18.7.11 Packaging and Transportation 11
18.7.12 Research and Development and Experimental Activities 11
18.7.13 Fire Protection 11
18.7.14 Occupational Safety and Health 11
18.7.15 Environmental Protection 11

18.8 REFERENCES 12

18.8.1 Requirement Source Documents 12
18.8.2 Reviewed Documents Not Used as Requirement Sources 12

18.0 NUCLEAR SAFETY

INTRODUCTION

A Standards/Requirements Identification Document (S/RID) sets forth the Environmental Safety and Health (ES&H) standards/requirements. This S/RID is applicable to the appropriate life cycle phases of design, construction, operation, and preparation for decommissioning for each of the categories of facilities addressed in Revision 5 of the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 90-2. This Recommendation calls for the strengthening of DOE weapons complex activities through the identification and application of relevant DOE Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practices. These standards/requirements are adequate to ensure protection of the health and safety of workers, the public, and the environment.

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Nuclear Safety Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Nuclear Safety activities, as such activities are included in the current mission of the facility.

The Nuclear Safety Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. Additional elements and sub-elements were added to the basic format for further definition and clarity. Sub-elements, Fire Protection (18.7.13), Occupational Safety and Health (OSH)(18.7.14), and Environmental Protection (18.7.15), were added because of their essential interface with the Safety Analysis Report. Additionally, a reference element was added as 18.8.

This S/RID contains only those requirements that PFP personnel are clearly responsible to satisfy. Other requirements that are applicable to PFP, but are satisfied by others, are defined in the Westinghouse Hanford Company (WHC) Level S/RID. For application in this S/RID, the words "shall" and "should" in requirements statements both indicate mandatory compliance. The Key interface information contained in the Functional Area documents is provided for general recognition and understanding and is not considered to contain prescriptive requirements.

The safety basis for future operations in PFP is contained in WHC-SD-CP-SAR-021, Rev O, "Plutonium Finishing Plant Final Safety Analysis Report" (PFP FSAR). This document combines and upgrades the information, analyses, requirements, and controls that were previously contained in 14 older safety documents. The PFP SAR was originally prepared between 1988 and 1990 in accordance with DOE Order 5481.1B, "Safety Analysis and Review System", prior to issuance of DOE Order 5480.23, "Nuclear Safety Analysis Reports". The PFP SAR's content and format are based on guidance from U.S. Nuclear Regulatory Guide (RG) 3.39, "Standard Format and Content of License Applications for Plutonium Processing and Fuel Fabrication Plants", as prescribed by DOE Order 5480.5. A draft SAR was submitted to DOE for review and approval in January 1991. The SAR was subsequently approved by DOE Office of Defense Programs (DP) in January 1995. In October 1992 WHC submitted to DOE an implementation plan for complying with DOE Orders 5480.21, 5480.22, and 5480.23. The

implementation plan indicated that because of the absence of a long term operating mission for PFP, and the currently envisioned shutdown of the facility, the PFP SAR will not be upgraded to comply with DOE Order 5480.23. The implementation plan was forwarded to DOE's Office of Environmental Management (EM) in August 1993, and in April 1994 the plan was approved by DOE. Westinghouse Hanford Company management has agreed to maintain the current SAR by performing annual updates and by implementing the Unreviewed Safety Question (USQ) process, outlined in 5480.21. All Nuclear Safety requirements contained in the PFP SAR are applicable to PFP, but are not included within the scope of this S/RID.

PFP has an approved OSR (WHC-SD-CP-OSR-010 REV.O) which defines the boundary conditions and administrative controls required to ensure safe operation.

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use.

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

18.1 MANAGEMENT

The general aspects of management, policy, staffing, and training are covered in the Management Systems Functional Area.

18.2 SAFETY REVIEWS

Requirements for this element are located within the Quality Assurance, Management Systems, and Operations Functional Areas.

18.3 SAFETY ANALYSIS

Author's Note: The PFP SAR is approved as the authorization basis for operation of PFP per letter 95-PFP-001 from O. A. Farabee to the President of the Westinghouse Hanford Company dated January 11, 1995 in lieu of compliance to DOE 5480.23.

REQUIREMENT SOURCE: DOE5480.24 Section 7.c. Paragraph 1

"Nuclear criticality safety programs shall be fully documented. In addition to the requirements of the ANS standards, contractors shall perform detailed nuclear criticality safety analyses for specific operations, storage arrangements, and the handling and transportation of fissionable materials."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c. Paragraph 2, Sentence 1 and 2

"The basis for criticality safety shall be included in the facility SAR. Additionally, the limiting conditions of operation for criticality safety shall be included in the facility TSRs."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(1)

"A description, using appropriate sketches or drawings, of equipment and facilities in which the hazard of criticality exists showing dimensions in sufficient detail to permit evaluation of the information mentioned in subparagraphs 7c(3) through 7c(6) below."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(2)

"A statement of the chemical and physical form of fissionable material in each step of the process, including isotopic content, the nature of any material, and the resulting concentrations, densities, and degrees of moderation throughout the steps of the process."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(3)

"A statement of the maximum quantities of fissionable material at any one time in each step of the process, including a description of the technical practices which are intended to prevent exceeding these maximum quantities."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(4)

"A description of the methods of collection, handling, and transportation products from each process area or individual operation and evaluation of the nuclear safety of these methods."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(5)

"An analysis of criticality incident scenarios and their impact on health and safety of the workers and/or public. This analysis will be used to determine the conditions of operation for criticality safety, the design of the CAS as noted in subparagraph (7) below, and the need for audible and/or visual alarms."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(6)

"A description of the safety control parameters which are intended to prevent criticality resulting from such events as: accumulation of fissionable material in scrap or waste, lathe turnings, crucible slag, pickling solutions, choppings, sumps, filters, etc. Also included shall be the description of the technical practices used to prevent exceeding the safety control parameters."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(7)

"A description of the installed CAS and emergency procedures, including alarm levels, fail-safe features, response time of devices, and frequency of evacuation drills. Pertinent documents shall show the location of all detectors, their distance to possible sources of criticality, and intervening shielding and audio and visual alarms."

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(8)

"A description of the technical practices and measurement control program (including reliability and operability characteristics) used in determining the quantities of fissionable material (or other materials such as soluble poisons to prevent accidental criticality) present in any location and the uncertainties of the measured values. The measurement control program shall be in accordance with the latest edition of DOE 5700.6C, "QUALITY ASSURANCE.""

REQUIREMENT SOURCE: DOE5480.24 Section 7.c.(9)

"An analysis of the spacing of masses of fissionable material within each process area and separation from fissionable material in adjoining areas."

18.4 TECHNICAL SAFETY REQUIREMENTS

Author's Note: The PFP OSR meets the order requirements for Technical Safety requirements listed below.

REQUIREMENT SOURCE: DOE5480.22 Section 9.a

"A contractor responsible for the operation of a DOE nuclear facility shall:

(1) prepare Technical Safety Requirements for the facility;

(2) submit the Technical Safety Requirements to the PSO for approval; and

(3) operate the facility in accordance with the Technical Safety Requirements as approved by the PSO including any modification by the PSO;"

REQUIREMENT SOURCE: DOE5480.22 Section 9.b, Sentences 1 and 2

"Technical Safety Requirements shall define the operating limits and surveillance requirements, the basis thereof, safety boundaries, and management or administrative controls necessary to protect the health and safety of the public and to minimize the potential risk to workers from the uncontrolled release of radioactive or other hazardous materials and from radiation exposure due to inadvertent criticality. Technical Safety Requirements shall be based on the facility Safety Analysis Report and shall set forth specific limits and other requirements as specified in this Order and Attachment 1 to this Order, "Guidelines for Technical Safety Requirements.""

REQUIREMENT SOURCE: DOE5480.22 Section 9.c

"The TSR and its appendices constitute an agreement or contract between DOE and the facility operating management regarding the safe operation of the facility. As such, they cannot be changed without PSO approval."

REQUIREMENT SOURCE: DOE5480.22 Section 9.e.(1)

"Use and Application. Definitions of terms, operating modes, frequency notations, and actions to be taken in the event of violation of Technical Safety Requirements operating limits or surveillance requirements are to be included in the Use and Application section. This section of the Technical Safety Requirements shall contain the basic instructions for using and applying the safety restriction contained in the Technical Safety Requirements."

REQUIREMENT SOURCE: DOE5480.22 Section 9.e.(3)(b)

Author's Note: Occurrence Reporting requirements are located in the PFP Management Systems Functional Area.

"Limiting Conditions for Operation (LCO). Limiting Conditions for Operation are the lowest functional capability or performance level of safety-related structures, systems, component and their support systems required for normal safe operation of the facility. This subsection of the TSR shall contain the limits on functional capability or performance level. When a Limiting Condition for Operation is not met, the contractor shall take remedial actions defined by the Technical Safety Requirements until the condition can be met. The LCO shall describe the action to be taken in case of exceedance of the LCO. In cases of exceedance of an LCO, the contractor shall notify DOE in accordance with DOE 5000.3A, review the matter, and record the results of the review including the cause of the condition and the basis for any corrective actions taken to preclude reoccurrence."

REQUIREMENT SOURCE: DOE5480.22 Section 9.e.(4)

"Surveillance Requirements. Surveillance Requirements are requirements relating to test, calibration, or inspection to ensure that the necessary operability and quality of safety-related structures, systems, components, and their support systems required for safe operation of the facility are maintained. This section of the Technical Safety Requirements shall contain the requirements necessary to maintain operation of the facility within the Safety Limits, Limiting Control Settings, and Limiting Conditions for Operations. In the event that Surveillance Requirements are not successfully completed or accomplished within their required frequency, the systems or components involved shall be assumed to be inoperative and actions defined by the Limiting Condition for Operation or Limiting Control Setting shall be taken until the systems or components can be shown to be operable."

REQUIREMENT SOURCE: DOE5480.22 Section 9.e.(5)

"Administrative Controls. Administrative Controls are the provisions relating to organization and management, procedures, recordkeeping, reviews, and audits necessary to ensure safe operation of the facility. This section of the Technical Safety Requirements shall contain the requirements associated with Administrative Controls including those for reporting deviations from Technical Safety Requirements (i.e., exceedances of LCO, LCS, or SR, or violation of TSR). Staffing requirements for facility position important to safe operation of the facility shall be provided in the Administrative Controls sections. Physical and administrative controls of the criticality safety program shall also be provided in the Administration Controls section."

REQUIREMENT SOURCE: DOE5480.22 Section 9.e.(6)

"Appendices. The following information shall be in the Appendices:

(a) Basis. This Appendix shall provide summary statements of the reasons for the operating limits and associated surveillance requirements. The basis shall show how the numeric value, the condition, or the surveillance does fulfill the purpose derived from the safety documentation. The primary purpose for describing the basis for each requirement will not affect its original intent or purpose.

(b) Design Features. This Appendix shall describe passive design features of the facility which, if altered or modified, would have a significant effect on safe operation. If Design Features are in a DOE-approved Safety Analysis Report, this Appendix is not required."

REQUIREMENT SOURCE: DOE5480.22 Section 9.f

"The TSR shall be kept current at all times so that it reflects the facility as it exists and as it is analyzed in Safety Analysis Reports. Contractors shall determine whether revisions to the Technical Safety Requirements are required upon originating or proposing a revision to a Safety Analysis Report, and, if so, shall prepare revisions and submit them with their basis for PSO approval concurrent with the revisions to the Safety Analysis Report. The TSR must be approved prior to facility or facility practice change. To assure that the TSR is current, it shall be reviewed at least annually along with the facility Safety Analysis Report."

REQUIREMENT SOURCE: DOE5480.22 Section 9.h

"Only the current PSO-approved Technical Safety Requirements shall be used for the operation of the facility. The current PSO-approved Technical Safety Requirements shall be a controlled document."

REQUIREMENT SOURCE: DOE5480.22 Section 9.i

"A contractor may take emergency actions that depart from the approved Technical Safety Requirements when no actions consistent with the Technical Safety Requirements are immediately apparent, and when these actions are needed to protect the public health and safety. Such contractor actions shall be approved, as a minimum, by a certified operator or supervisor certified on that system through an accredited training program. If emergency actions are taken, verbal notifications shall be made to the Head of the Field Element within 2 hours and by written reports to the PSO within 24 hours."

18.5 UNREVIEWED SAFETY QUESTIONS

REQUIREMENT SOURCE: DOE5480.21 Chapter III, Section 5.a

"Contractors are required to develop procedures that provide detailed guidance for the performance and review of USQ determinations. At a minimum, the procedures shall define the purpose of the procedure; set forth the procedure's applicability; provide definitions of appropriate terms, including those set forth in this Order; include screening criteria, as appropriate, and the basis for their application; include detailed guidance on what must be considered and evaluated when performing or reviewing a safety evaluation; define the qualifications needed and responsibilities of personnel performing and reviewing safety evaluations; and include documentation requirements for each USQ determination."

REQUIREMENT SOURCE: DOE5480.21 Preamble, Section 10.a

"A contractor authorized to operate DOE nuclear facilities shall:

(1) Perform all safety evaluations required by paragraph (b) of this section to determine whether a situation involves USQ;

(2) Prior to implementation of a proposed action, obtain PSO approval for situations determined to involve a USQ or a Technical Safety Requirements (TSR) change; and

(3) Develop and implement procedures to govern the need for, and the performance of, safety evaluations under this section."

REQUIREMENT SOURCE: DOE5480.21 Preamble, Section 10.b

"A safety evaluation shall be performed for:

(1) Temporary or permanent changes in the facility as described in the existing safety analyses;

(2) Temporary or permanent changes in the procedures as described in existing safety analyses; or

(3) Test or experiments not described in existing safety analyses."

REQUIREMENT SOURCE: DOE5480.21 Preamble, Section 10.c

"A situation involves a USQ if:

(1) The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the facility safety analyses could be increased;

(2) The possibility for an accident or malfunction of a different type than any evaluated previously in the facility safety analyses could be created; or

(3) Any margin of safety, as defined in the bases of the TSRs, could be reduced."

REQUIREMENT SOURCE: DOE5480.21 Preamble, Section 10.d

"When a contractor identifies information that indicates a potential inadequacy of previous safety analyses or a possible reduction in the margin of safety as defined in the TSRs, the contractor shall:

(1) Notify the PSO of the situation upon discovery of the information;

(2) Make an evaluation in accordance with paragraphs 10a and 10c;

(3) Take action to place the facility in a safe condition until the safety evaluation is completed; and

(4) Submit the completed safety evaluation prior to removing any operational restrictions initiated pursuant to paragraph 10d(2)."

REQUIREMENT SOURCE: DOE5480.21 Preamble, Section 10.e

"For all safety evaluations required under this section, a contractor shall:

(1) Document the basis for the USQ determination, utilizing the procedures provided for in paragraph 10a(3) of this section and the criteria of paragraph 10c;

(2) Maintain documentation required by paragraph 10e(1) for the authorized operating period of the nuclear facility and ensure the complete transfer of all documentation to any subsequent contractor prior to termination of its contract;

(3) Incorporate in the existing SAR, any changes that are needed as a result of the safety evaluation or any action taken; and

(4) Submit to the PSO, on a schedule corresponding to the periodic updates of the SAR, a report summarizing all situations for which a safety evaluation was required by this section and indicating all "changes" considered in a safety evaluation and implemented 6 months or more before the submittal date of the report."

18.6 NUCLEAR CRITICALITY SAFETY

REQUIREMENT SOURCE: DOE5480.24 Section 7.a. Introduction

Author's Note: ANS-8.5 and ANS-8.15 are not applicable to the PFP facility.

"The basic elements and control parameters of programs for nuclear criticality safety shall satisfy the requirements of the following mandatory American Nuclear Society's ANSI/ANS nuclear criticality safety standards:

ANS-8.1, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors," except paragraphs 4.2.2 and 4.2.3.

ANS-8.3, "Criticality Accident Alarm System," except paragraphs 4.2 and 4.2.2.

ANS-8.5, "Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material."

ANS-8.15, "Nuclear Criticality Control of Special Actinide Elements."

ANS-8.19, "Administrative Practices for Nuclear Criticality Safety."

ANS-8.7, "Guide for Nuclear Criticality Safety in the Storage of Fissile Materials.""

18.6.1 Criticality Safety Design Practices

REQUIREMENT SOURCE: DOE5480.24 Section 7.a.(2)(a)

"4.2.2 Double Contingency Principle. Process designs shall incorporate sufficient factors of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible. Protection shall be provided by either (a) the control of two independent process parameters (which is the preferred approach, if practical) or (b) a system of multiple (at least two) controls on a single parameter. In all cases, no single failure shall result in the potential for a criticality accident. The basis for selecting either approach shall be fully documented."

REQUIREMENT SOURCE: DOE5480.24 Section 7.a.(2)(b)

"4.2.3 Geometry Control. As a first priority, reliance shall be placed on equipment design in which dimensions of the contained fissionable material and spacing between equipment are limited via passive engineering controls. Where geometry control is not feasible, the preferred order of controls is other passive engineering controls, active engineering controls, and administrative controls. Feasibility is determined by weighing risk versus practicality/cost. Full advantage may be taken of any nuclear characteristics of the process materials and equipment. All dimensions, nuclear properties, and other features upon which reliance is placed shall be verified prior to beginning operations, and control shall be exercised to maintain them. The basis for not selecting geometry control shall be fully documented."

REQUIREMENT SOURCE: DOE6430.1A Division 13, Section 1300- 4[05], Sentence 1

"Structures, systems, and components that provide nuclear criticality safety shall be designed as safety class systems and be capable of performing their criticality safety functions during and following design basis accidents and events."

18.6.2 Materials Control

REQUIREMENT SOURCE: DOE5480.24 Section 7.d

"Contractors shall establish a monitoring and surveillance program to prevent accumulations of fissionable materials in, but not limited to, process equipment and storage, pipe, and ventilation systems. If unsafe accumulations are detected, corrective measures shall be taken to prevent criticality hazards."

REQUIREMENT SOURCE: DOE5480.24 Section 7.e.(1)

"The requirements of this Order shall apply to all activities where fissionable material is transferred from one operation to another within a facility and from one on-site location to another."

REQUIREMENT SOURCE: DOE5480.24 Section 7.f.(1)

"Contractors shall establish guidelines for permitting fire fighting water or other moderating materials used to suppress fires within or adjacent to moderation controlled areas. These

guidelines shall be based on comparisons of risk and consequences of accidental criticality with the risks and consequences of postulated fires for the respective area(s). The basis for the guidelines shall be fully documented in a DOE approved Safety Analysis."

18.7 KEY INTERFACES

All facility activities are governed by the site wide nuclear safety program. Specific functional areas must implement the programs/requirements developed in the nuclear safety program.

The interfaces between nuclear safety and other functional areas within the PFP Facility are as follows:

18.7.1 Management Systems

Program management systems provides the general aspects of management, policy, staffing, training, and self assessment required to run a nuclear facility. Nuclear safety interacts with program management to determine what programs can be developed to give assurance that nuclear safety is maintained.

18.7.2 Quality Assurance

QA develops the QA program that provides the requirements to be applied to activities important to nuclear safety and quality as described in the facility QA Plan. QA also provides for the performance of audits and surveillances of nuclear safety activities plus quality control inspections to be performed by the QA organization.

18.7.3 Configuration Management

Configuration Management uses input from the nuclear safety program on which to base the configuration control program for future modifications.

18.7.4 Training and Qualification

Training and Qualification establishes the procedures and requirements that control the training and/or selection of certain technical personnel. Training and Qualification develops training curriculum and keeps records for training on nuclear safety requirements.

18.7.5 Emergency Management

Nuclear safety information is supplied to Emergency Planning (EP) and Preparedness for the design of programs and plans. This information will deal with the potential for accidental criticality and the results of the potential accident.

18.7.6 Safeguards and Security

The Safeguards and Security Functional Area addresses acts of sabotage and other malevolent acts involving the control and accountability of special nuclear material and nuclear facilities and operations. Safeguards and security information should not be addressed in SARs or other publicly available documents to ensure facility security.

18.7.7 Engineering Program

Engineering incorporates nuclear safety requirements into design and design modifications. They also develop and update the SAR per nuclear safety requirements to identify additional

engineering nuclear safety features, and to ensure that current safety features are not affected by modifications.

18.7.8 Operations

The Operations Functional Area interfaces and provides nuclear safety input in areas of operations that may be different from the safety analysis basis for determination of any possible USQs. This interface is needed to ensure that nuclear safety principles are incorporated into daily operations.

18.7.9 Maintenance

Nuclear safety input is received from Maintenance activities if systems/equipment do not perform per design and determines if there is a safety impact of these problem areas. This interface is also necessary to assure that maintenance personnel are familiar with areas containing material with the potential for accidental criticality events, and to assure that engineered safety systems receive the proper maintenance.

18.7.10 Radiation Protection

An interface between nuclear safety Functional Area and the RP Functional Areas is necessary to ensure that radiation protection standards are incorporated into the nuclear safety program.

18.7.11 Packaging and Transportation

Physical management of special nuclear materials requires an interface to the Packaging and Transportation Functional Area to ensure proper labelling, packaging, and transportation of those materials.

18.7.12 Research and Development and Experimental Activities

There is no interface with this functional area.

18.7.13 Fire Protection

Fire Protection requirements and system information are described in the SAR. This interface is necessary to assure that fire fighting activities do not create the potential for criticality.

18.7.14 Occupational Safety and Health

OS&H provides information regarding health related areas for inclusion in and modification to the SAR.

18.7.15 Environmental Protection

Environmental Protection periodic monitoring programs supply information to confirm the assumptions of the SAR. If there are any deviations from expected results, an investigation will determine the cause and a course of corrective action.

18.8 REFERENCES

18.8.1 Requirement Source Documents

The following documents were used as requirement sources in the development of this S/RID:

DOE 5480.21, Unreviewed Safety Questions, 12/24/91.

DOE 5480.22, Technical Safety Requirements, 9/15/92.

DOE 5480.24, Nuclear Criticality Safety, 8/12/92.

DOE 6430.1A, General Design Criteria, 4/6/89.

WHC-SD-CP-SAR-021, Rev 0, PFP Safety Analysis Report.

WHC-SD-CP-OSR-010, Rev 0, PFP Operational Safety Requirements.

18.8.2 Reviewed Documents Not Used as Requirement Sources

10 CFR 820, Procedural Rules for Nuclear Activities, Final Rule, Federal Register, Vol. 58, No. 157, Tuesday, August 17, 1993, Rules and Regulations.

10 CFR 830, Nuclear Safety Management, Final Rule, Federal Register, Vol. 59, No. 65, Tuesday, 4/5/94.

RL 5480.1A, Environment, Safety, and Health Program for Department of Energy Operations, 10/31/83.

DOE 5480.1B, Environmental Safety and Health Program for Departmental of Energy Operation, 9/23/86.

DOE-RL 5480.1, Safety of Department of Energy Owned Reactors, 6/24/82.

DOE 5480.4, Environmental Protection, Safety, Health Protection Standards, 1/7/93.

RLIP 5480.4C, Environmental Protection, Safety, and Health Protection Standards for RL, 11/6/92.

DOE 5480.5, Safety of Nuclear Facilities, 10/15/84.

DOE 5480.7A, Fire Protection, 2/17/93.

DOE 5480.10, Contractor Industrial Hygiene Program, 6/26/85.

DOE 5480.23, Nuclear Safety Analysis Reports, 4/10/92.

DOE 5480.28, Natural Phenomena Hazards Mitigation, 1/15/93.

DOE 5480.30, Nuclear Reactor Safety Design Criteria, 1/19/93.

DOE 5482.1B, Environment, Safety and Health Appraisal Program, 11/18/91.

RL 5481.1, Safety Analysis and Review System, 10/5/83.

DOE-RL-5482.1B, Environment, Safety, Health, and Quality Assurance Appraisal and Surveillance Program, 3/4/87.

DOE-SEN-35-91, Nuclear Safety Policy, 9/9/91.

DOE-STD-1027-92, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports, 12/1/92.

ANSI/ANS-8.1-1993, Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors.

ANSI/ANS-8.7-1984, Administrative Practices for Nuclear Criticality Safety.

ANSI/ANS-8.20-1991, Nuclear Criticality Safety Training.

ANSI N16.5-1975 (ANS-8.7), American National Standard Guide for Nuclear Criticality Safety in the Storage of Fissile Materials.

TABLE OF CONTENTS

19.0 OCCUPATIONAL SAFETY AND HEALTH 1

19.1 MANAGEMENT AND ADMINISTRATION 3

19.1.1 Program Policy 3
19.1.2 Occupational Safety and Health Goals and Objectives 4
19.1.3 Requests for Exemptions/Variances 4

19.2 HAZARD ANTICIPATION, IDENTIFICATION AND EVALUATION 5

19.2.1 Hazard Assessment 5
19.2.2 Hazards Reporting System 6
19.2.3 Investigation of Occurrences, Accidents, and Near Misses 6
19.2.4 Injury and Illness Trend Analysis 6
19.2.5 Occupational Safety and Health Hazard Inventory System 7

19.3 OSH HAZARD PREVENTION AND CONTROL 7

19.3.1 Hazard Monitoring, Sampling, and Surveillance 7
19.3.2 Hazard Controls 7

19.4 OCCUPATIONAL HEALTH PROGRAM 12

19.4.1 Health Examinations 12
19.4.2 Health Maintenance 13
19.4.3 Diagnosis and Treatment 13
19.4.4 Fitness for Duty 13
19.4.5 Medical Facilities and Equipment 13
19.4.6 Professional Development of Occupational Staff 13
19.4.7 Health Records and Reporting 13

19.5 OCCUPATIONAL SAFETY AND HEALTH TRAINING 13

19.6 RECORDKEEPING AND REPORTING 14

19.6.1 Occupational Injury and Illness Reporting 14
19.6.2 Occurrence Reporting 16

19.7 KEY INTERFACES 16

19.7.1 Engineering Program 17
19.7.2 Emergency Management 17
19.7.3 Maintenance 17
19.7.4 Operations 17
19.7.5 Radiation Protection 17
19.7.6 Training and Qualification 17
19.7.7 Construction Program 17
19.7.8 Management Systems 17
19.7.9 Packaging and Transportation 18

19.7.10 Safeguards and Security 18
19.7.11 Quality Assurance 18
19.7.12 Fire Protection 18
19.7.13 Waste Management 18
19.7.14 Nuclear Safety 18
19.7.15 Environmental Protection 18

19.8 REFERENCES 18

19.8.1 Requirement Source Documents 18
19.8.2 Reviewed Documents Not Used as Requirement Sources 19

19.0 OCCUPATIONAL SAFETY AND HEALTH

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Occupational Safety and Health Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Occupational Safety and Health activities, as such activities are included in the current mission of the facility.

This S/RID describes the PFP Occupational Safety and Health Program as defined through the relevant U.S. Department of Energy (DOE) Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practice. The definition of a Occupational Safety and Health Program as specified by this document is intended to address Defense Nuclear Facilities Safety Board Recommendations 90-2, which calls for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders.

The Occupational Safety and Health Program defined in this document is described in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned with each subelement. The principle governing requirements for an Occupational Safety and Health Program are contained in 29 CFR 1910 and 29 CFR 1926. The PFP is a general industry facility that has modifications ongoing by outside contractors, however, construction is not an integral part of PFP Operations or their current and future mission, therefore 29 CFR 1926 (OSHA Construction) is not currently applicable to the PFP.

The OS&H Program defined in this document is presented in the form of program elements and subelements. The elements used to outline the basis of a comprehensive OS&H Program are as follows:

- Program Management
- Hazard Anticipation, Identification, and Evaluation
- OS&H Hazard Prevention and Control
- Occupational Health Program
- Recordkeeping and Recording
- Key Program Interfaces
- References

SCOPE

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare and implement the Record of Decision (ROD) resulting from the PFP Stabilization Environmental Impact Statement (EIS). The activities evaluated by this EIS to be implemented at PFP include:

> Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage of disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and clean up of radioactive surface contamination as well as routine operations and maintenance.

19.1 MANAGEMENT AND ADMINISTRATION

19.1.1 Program Policy

Specific controls which govern the preparation and implementation of program policies are addressed in the Policies and Procedures section of the Management Systems Functional Area.

REQUIREMENT SOURCE: DOE5480.10 Section 9.a(1)

"The Operating Organization having line safety and health responsibilities should be required to: (a) conduct operation consistent with established health and safety procedures; (b) include the industrial hygiene staff in the design review process whenever new construction or remodeling of an existing process is planned; and (c) request the industrial hygiene staff to evaluate the effectiveness of proposed environmental control equipment and approve procedures for its use."

REQUIREMENT SOURCE: DOE5480.10 Section 9.a(5)

"Employees should be required to:
(a) observe all safety and health rules;
(b) use all prescribed personal protective equipment;
(c) follow established health and safety practices and procedures; and
(d) notify supervisors immediately of suspected exposures to harmful agents or conditions."

REQUIREMENT SOURCE: DOE5480.10 Section 9.d(1)

"The staff responsible for the direction and operation of the industrial hygiene program must be professionally qualified, adequate in number, and have sufficient time and authority to design and implement the industrial hygiene program set forth in this Order."

REQUIREMENT SOURCE: DOE5483.1A Chapter I, Section 1

Author's Note: The PFP is a general industry facility that has modifications ongoing by outside contractors, however, construction is not an integral part of PFP operations or their current or future mission, therefore, 29 CFR 1926 in not routinely applicable to the PFP.

Title 29 CFR Part 1915, Occupational Safety and Health Standards for Shipyard Employees," Title 29 CFR Part 1918, "Safety and Health Regulations for Longshoring," and Title 29 CFR 1928, "Occupational Safety and Health Standards for Agriculture," are also not applicable to the PFP.

"DOE Prescribed OSHA Standards. As applicable to their work in GOCO facilities, contractors shall comply with the following DOE-prescribed OSHA standards:
a. "Occupational Safety and Health Standards," Title 29 CFR Part 1910.
b. "Safety and Health Regulations for Construction," Title 29 CFR Part 1926.
c. "Occupational Safety and Health Standards for Shipyard Employees," Title 29 CFR Part 1915.
d. "Safety and Health Regulations for Longshoring," Title 29 CFR Part 1918.
e. "Occupational Safety and Health Standards for Agriculture," Title 29 CFR Part 1928."

REQUIREMENT SOURCE: PUBLIC-LAW-91-596 Section 5(a)(1)

"Each employer - shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;"

19.1.2 Occupational Safety and Health Goals and Objectives

REQUIREMENT SOURCE: 54FR3904 Part (c)(1)(ii)

"Establish and communicate a clear goal for the safety and health program and objectives for meeting that goal, so that all members of the organization understand the results desired and the measures planned for achieving them."

19.1.3 Requests for Exemptions/Variances

REQUIREMENT SOURCE: DOE5483.1A Chapter I, Section 4.a

"Temporary Variances.

(1) A contractor may apply to the appropriate CO or CO representative for a temporary variance from the DOE-prescribed OSHA standards. A request for a temporary variance shall contain:

(a) A specification of the standard from which the contractor seeks a variance.

(b) A representation that the contractor is portable to comply with the standard and a detailed statement of the reasons therefor.

(c) A statement of the steps the contractor has taken and will take to protect employees from the hazard covered by the standard, to include the conditions the contractor must maintain and the practices, means, methods, operations, and processes which must be adopted and utilized to the extent they provide protection equivalent to that of the standard for which the variance is requested.

(d) A certification that the contractor has informed employees of the application by giving a copy thereof to their authorized representative (where applicable), posting a statement, giving a summary of the request, and specifying where a copy may be examined (e.g., at the place or places where notices to employees are normally posted) and by other appropriate means. A description of how employees have been informed shall be contained in the certification. The information to employees also shall inform them that they may comment on the request to the appropriate CO or CO representative.

(e) A statement of when the contractor will be able to comply with the standard and what steps have been taken and will be taken by the contractor to come into compliance with the standard.

(2) The CO or CO representative, the safety and health manager, and other appropriate elements of the field organization shall review the contractor's request and the employees' comments and submit the field organization's recommendation, together with the contractor's request and contractor employee comments, to the Director of Operational Safety (EP-32) within 30 days of receipt of the request. After review and evaluation of the request, comments, and recommendation and after coordination with the appropriate program office(s), EP-32 shall approve a temporary variance if the request establishes that (a) the contractor is unable to comply with the standard because of unavailability of professional or technical

personnel materials or equipment funding needed to come into compliance with the standard, or because necessary construction or alteration of facilities must be completed in order to comply; (b) the contractor is taking all available steps to safeguard employees against the hazards covered by the standard; and (c) the contractor has an effective program for coming into compliance with the standard as quickly as practicable.

(3) A temporary variance may be in effect for no longer than the period needed by the contractor to achieve compliance with the standard or 1 year, whichever is shorter, except that in unusual circumstances (e.g., lack of programmatic funding) such a temporary variance may be renewed not more than once. Such a renewal also shall be in effect for no longer than 1 year. An application for renewal must be filed and processed in the manner specified in paragraph 4a(2), above at least 90 days prior to expiration of the temporary variance. Employees also shall be given an opportunity to review and comment on a request for a renewal as outlined on page I-2, paragraph 4a(1)(d).

(4) The Director of Operational Safety shall inform the field organization of the results of the evaluation of the request for a temporary variance or the extension thereof, within 180 days of receipt of the request."

REQUIREMENT SOURCE: DOE5483.1A Chapter I, Section 4.b

"Permanent Variances.

(1) DOE contractors may apply to the appropriate CO or CO representative for a permanent variance from the prescribed OSHA standards. The request for variance shall contain the same information specified on page I-2, paragraphs 4a(1)(a)-(d). The CO or CO representative, the local safety and health office, and other appropriate elements of the field organization shall review the contractor's request and the employees comments and submit their recommendation together with the contractor's request and contractor employee comments, to the Director of Operational Safety (EP-32) within 30 days of receipt of the request. After review and evaluation of the request, comments, and recommendation, and after coordination with the appropriate program office, EP-32 shall submit a recommendation to the Assistant Secretary, Environmental Protection Safety, and Emergency Preparedness (EP-1), for consideration.

(2) If EP-1 determines that the contractor has demonstrated that the conditions practices, means, methods, operations, or processes to be used will provide employment and a place of employment which is as safe and healthful as those which would prevail if the contractor complied with the standard, a permanent variance shall be approved and the requesting organization shall be notified accordingly, within 180 days of receipt of the request by EP-32.

(3) However, if the permanent variance request is not approved by EP-1, the requesting organization shall be notified of the rationale for the determination, within 180 days of receipt of the request by EP-32."

19.2 HAZARD ANTICIPATION, IDENTIFICATION AND EVALUATION

19.2.1 Hazard Assessment

REQUIREMENT SOURCE: DOE5480.10 Section 9.a(3)

"Purchasing and Contracting Organizations should be required to: (a) participate as requested by the industrial hygiene staff to assure that potentially hazardous material or equipment being procured are adequately identified, evaluated, and controlled; and (b) require contractors or subcontractors performing potentially hazardous operations within a DOE or DOE-controlled

facility to comply with the mandatory industrial hygiene standards of DOE 5480.4 and make provisions to allow the industrial hygiene staff to monitor compliance."

REQUIREMENT SOURCE: DOE5480.10 Section 9.b Introduction and 9.b(1)

"Functions. The industrial hygiene program shall be designed to preserve employee health and well-being. This shall be accomplished by identification, evaluation, and control of environmental factors and stresses found in the workplace. These environmental factors and stresses include: chemical (e.g., liquid, particulate, vapor, and gas); physical (e.g., electromagnetic radiation, noise, vibration, and magnetic fields); biological (e.g., agents of infectious diseases); and ergonomic (e.g., body position in relation to task, repetitive motion, and mental or physical fatigue). The contractor industrial hygiene program must have the following features:

(1) Identification of Health Hazards. The industrial hygiene staff shall identify and document existing and potential occupational health hazards through: knowledge and assessment of the operations; periodic walk-through surveys; information provided by interorganizational communication; the review of proposed projects, facilities, engineering plan, and specifications; and maintenance of a hazards inventory or tracking system."

REQUIREMENT SOURCE: DOE5480.10 Section 9.b(2)

"Hazard Evaluation. Once potential health hazards are identified, the industrial hygiene staff must determine the extent of the hazard through appropriate consultation with other professionals, sound judgment, and the application of established standards or guides and such evaluation techniques as air sampling and bioassay. A report shall be sent to the first level supervisor with the industrial hygiene staff's evaluation of whether occupational exposures are within permissible limits, together with supporting evidence. The permissible exposure limits used in hazard evaluation shall not exceed those in the mandatory industrial hygiene standards of DOE 5480.4, Attachment 2, paragraph 2.d.(3). When a potential health hazard is identified that has no assigned permissible exposure limit, a guideline on evaluation and control should be developed based on the best available information (refer to paragraph 10.a.(1))."

19.2.2 Hazards Reporting System

Additional requirements for this subelement are found in the WHC Occupational Safety and Health S/RID.

REQUIREMENT SOURCE: DOE5483.1A Chapter I, Section 5.a.(1)

"All contractor employees shall be instructed by the contractor to:
(1) Observe the DOE-prescribed OSHA standards applicable to their work and report promptly to the contractor any condition which may lead to a violation of these standards."

19.2.3 Investigation of Occurrences, Accidents, and Near Misses

Refer to the Occupational Safety and Health Functional Area Document in the WHC Occupational Safety and Health S/RID.

19.2.4 Injury and Illness Trend Analysis

Refer to the Occupational Safety and Health Functional Area Document in the WHC Occupational Safety and Health S/RID.

19.2.5 Occupational Safety and Health Hazard Inventory System

REQUIREMENT SOURCE: DOE5480.10 Section 9.f(1)

"An inventory of occupational health hazards shall be maintained. The inventory should be a listing of potential chemical, physical, and biological health hazards by location and/or job category of users and indicate when the hazards were present."

19.3 OSH HAZARD PREVENTION AND CONTROL

This element interfaces with and relies upon support from other Functional Areas such as: Operations, Fire Protection, Maintenance, Nuclear Safety, Quality Assurance, Radiation Protection, and Safeguards and Security.

19.3.1 Hazard Monitoring, Sampling, and Surveillance

REQUIREMENT SOURCE: DOE5480.10 Section 9.b(4)

"Periodic Review. The satisfactory control of occupational health hazards shall be given continuing attention despite the imposition of control measures. Periodic monitoring is essential to assure maintenance of satisfactory conditions. The industrial hygiene staff shall determine the type and frequency of periodic monitoring. The industrial hygiene staff shall report to line management regarding the continuing adequacy of controls, the need for additional controls, or recommendations for maintenance or reemphasis of administrative controls. Employees of DOE contractor organizations shall be provided the results of the monitoring program for toxic materials or harmful physical agents, upon request."

19.3.2 Hazard Controls

REQUIREMENT SOURCE: 29CFR1910 Subpart D - Table of Contents [Restated]

Walking-Working Surfaces
1910.22 General Requirements
1910.23 contains requirements that address guarding floor and wall openings and holes
1910.24 contains requirements that address fixed industrial stairs
1910.25 contains requirements that address portable wood ladders
1910.26 contains requirements that address portable metal ladders
1910.27 contains requirements that address fixed ladders
1910.28 contains requirements that address safety requirements for scaffolding
1910.29 contains requirements that address manually propelled mobile ladder stands and scaffolds (towers).
1910.30 contains requirements that address other working surfaces.

REQUIREMENT SOURCE: 29CFR1910 Subpart E - Table of Contents [Restated]

Means of Egress
1910.36 General requirements
1910.37 contains requirements that address means of egress, general
1910.38 contains requirements that address employee emergency plans and fire prevention plans.

REQUIREMENT SOURCE: 29CFR1910 Subpart F - Table of Contents [Restated]

Powered Platforms, Manlifts & Vehicle-Mounted Work Platforms
1910.66 contains requirements that address power platforms for exterior building maintenance
1910.67 contains requirements that address vehicle-mounted elevating and rotating work platforms
1910.68 contains requirements that address manlifts

REQUIREMENT SOURCE: 29CFR1910 Subpart G - Table of Contents [Restated]

Occupational Health and Environmental Control
1910.94 contains requirements that address ventilation
1910.95 contains requirements that address occupational noise exposure
1910.96 contains requirements that address ionizing radiation
1910.97 contains requirements that address nonionizing radiation

REQUIREMENT SOURCE: 29CFR1910 Subpart H - Table of Contents [Restated]

Author's Note: Only 241-Z is classified as a RCRA TSD. Therefore, only paragraph P of 29 CFR 1910.120 is applicable. Also, Section 1910.119 is not applicable to PFP. PFP does not have chemicals that meet the threshold quantities.

Hazardous Materials
1910.101 contains requirements that address compressed gases (general requirements)
1910.102 contains requirements that address acetylene
1910.103 contains requirements that address hydrogen
1910.104 contains requirements that address oxygen
1910.105 contains requirements that address nitrous oxide
1910.106 contains requirements that address flammable and combustible liquids
1910.107 contains requirements that address spray finishing using flammable or combustible liquids
1910.108 contains requirements that address dip tanks containing flammable or combustible liquids
1910.110 contains requirements that address storage and handling of liquefied petroleum gases
1910.111 contains requirements that address storage and handling of anhydrous ammonia
1910.119 contains requirements that address Process Safety Management of Highly Hazardous Chemicals
1910.120 Hazardous Waste Operations and emergency response.

REQUIREMENT SOURCE: 29CFR1910 Subpart I - Table of Contents [Restated]

Personal Protective Equipment
1910.132 General requirements
1910.133 contains requirements that address eye and face protection
1910.134 contains requirements that address respiratory protection
1910.135 contains requirements that address occupational head protection
1910.136 contains requirements that address occupational foot protection
1910.137 contains requirements that address electrical protective devices
1910.138 contains requirements that address hand protection

REQUIREMENT SOURCE: 29CFR1910 Subpart J - Table of Contents [Restated]

Author's Note: 29 CFR 1910.143 is not applicable to the PFP.

General Environmental Controls
1910.141 contains requirements that address sanitation
1910.143 contains requirements that address nonwater carriage disposal systems
1910.144 contains requirements that address safety color code for marking physical hazards
1910.145 contains requirements that address specifications for accident prevention signs and tags.
1910.146 contains requirements that address permit required confined space

Note: This section contains requirements for practices and procedures to protect employees in general industry from the hazards of entry into permit-required confined spaces.

1910.147 contains requirements that address the control of hazardous energy (lockout/tagout)

REQUIREMENT SOURCE: 29CFR1910 Subpart M - Table of Contents [Restated]

Compressed Gas and Compressed Air Equipment
1910.169 contains requirements that address air receivers

REQUIREMENT SOURCE: 29CFR1910 Subpart N - Table of Contents [Restated]

Author's Note: 29 CFR 1910.177 and 29 CFR 1910.181 are not applicable to the PFP.

Materials Handling and Storage
1910.176 contains requirements that address handling material-general
1910.177 contains requirements that address servicing multi-piece and single piece rim wheels
1910.178 contains requirements that address powered industrial trucks
1910.179 contains requirements that address overhead and gantry cranes
1910.180 contains requirements that address crawler locomotive and truck cranes
1910.183 contains requirements that address helicopters
1910.184 contains requirements that address slings.

REQUIREMENT SOURCE: 29CFR1910 Subpart O - Table of Contents [Restated]

Author's Note: 29 CFR 1910.217 and 29 CFR 1910.218 are not applicable to the PFP.

Machinery and Machine Guarding
1910.212 contains requirements that address general requirements for all machines.
1910.213 contains requirements that address woodworking Machinery Requirements
1910.214 contains requirements that address cooperage machinery
1910.215 contains requirements that address abrasive wheel machinery
1910.217 contains requirements that address mechanical power presses
1910.218 contains requirements that address forging machines
1910.219 contains requirements that address mechanical power-transmission apparatus.

REQUIREMENT SOURCE: 29CFR1910 Subpart P - Table of Contents [Restated]

Hand and Portable Powered Tools
1910.242 contains requirements that address hand and portable powered tools and equipment, general
1910.243 contains requirements that address guarding of portable powered tools.
1910.244 contains requirements that address other portable tools and equipment.

REQUIREMENT SOURCE: 29CFR1910 Subpart Q - Table of Contents [Restated]

Welding, Cutting, and Brazing
1910.252 contains requirements that address general requirements
1910.253 contains requirements that address oxygen-fuel gas welding and cutting
1910.254 contains requirements that address arc welding and cutting
1910.255 contains requirements that address resistance welding

REQUIREMENT SOURCE: 29CFR1910 Subpart S - Table of Contents [Restated]

Design Safety Standards for Electrical Systems
1910.302 contains requirements that address electric utilization systems
1910.303 general requirements
1910.304 contains requirements that address wiring design and protection
1910.305 contains requirements that address wiring methods, components, and equipment for general use
1910.306 contains requirements that address specific purpose equipment and installations
1910.307 contains requirements that address hazardous (classified) locations
1910.308 contains requirements that address special systems

Safety-Related Work Practices
1910.332 contains requirements that address training
1910.333 contains requirements that address selection and use of work practices
1910.334 contains requirements that address use of equipment
1910.335 contains requirements that address safeguards for personnel protection

REQUIREMENT SOURCE: 29CFR1910 Subpart Z - Table of Contents [Restated]

Author's Note: Only sections 1910.1000,.1001,.1025,.1030,.1200, and.1450, of 29 CFR 1910, are applicable to PFP.

Toxic and Hazardous Substances
1910.1000 contains requirements that address air contaminants.
1910.1001 contains requirements that address asbestos.
1910.1002 contains requirements that address coal tar pitch volatiles.
1910.1003 contains requirements that address 4-Nitrophenyl.
1910.1004 contains requirements that address Alpha Naphthylamine.
1910.1006 contains requirements that address Methyl Chloromethyl Ether.
1910.1007 contains requirements that address 3,3' Dichlorobenzidine.
1910.1008 contains requirements that address Bis-chloromethyl ether.
1910.1009 contains requirements that address Beta Naphthylamine.
1910.1010 contains requirements that address Benzidine.
1910.1011 contains requirements that address 4-Aminodiphenyl.
1910.1012 contains requirements that address Ethyleneamine.
1910.1013 contains requirements that address Beta-propiolactone.
1910.1014 contains requirements that address 2-Acetylaminofluorene.
1910.1015 contains requirements that address 4-Dimethylaminoazobenzene.
1910.1016 contains requirements that address N-Nitrosodimethylamine.
1910.1017 contains requirements that address Vinyl Chloride.
1910.1018 contains requirements that address inorganic arsenic.
1910.1025 contains requirements that address lead.
1910.1027 contains requirements that address cadmium.
1910.1028 contains requirements that address Benzene.
1910.1030 contains requirements that address bloodborne pathogens.
1910.1044 contains requirements that address 1,2-dibrome-3-chloropropane.

1910.1045 contains requirements that address Acrylonitrile.
1910.1047 contains requirements that address Ethylene oxide.
1910.1048 contains requirements that address Formaldehyde.
1910.1050 contains requirements that address Methylenedianline.
1910.1200 contains requirements that address hazard communication.
1910.1450 contains requirements that address occupational exposure to hazardous chemicals in laboratories.

REQUIREMENT SOURCE: ANSI-Z136.1 Laser Safety

"Has requirements that pertain to the Safe Use of Lasers."

REQUIREMENT SOURCE: ANSI-Z88.2-1992 Respiratory Protection

"Has requirements that pertain to Respiratory Protection."

REQUIREMENT SOURCE: DOE5480.10 Section 9.b(3)

"Control Measures. Control measures shall be implemented whenever it is determined that a potential health hazard exists sufficient to produce illness or injury or that applicable standards are not being followed. The industrial hygiene staff shall formally recommend control measures to the first level supervisor who must respond promptly. Where feasible, engineering control measures, process change, or material substitution shall be used to prevent or minimize exposure to hazards. Administrative controls and personal protective equipment should supplement engineering controls as appropriate."

REQUIREMENT SOURCE: DOE5480.10 Section 9.c(4)(b)

"Regulated areas shall be established where chemical carcinogens are used. The characteristics of regulated areas shall be appropriate to assure that access is controlled and will depend on the quantity and physical properties of the material being used and on the operations being performed. A record shall be maintained of all personnel working in regulated areas."

REQUIREMENT SOURCE: DOE5480.10 Section 9.c(4)(d)

"Signs warning of the presence of chemical carcinogens shall be posted at all entrances to regulated work areas. Labels should be used on all carcinogen containers to identify the chemical and to warn of the carcinogenic hazard."

REQUIREMENT SOURCE: DOE5480.10 Section 9.c(4)(e)

"Good hygiene shall be maintained through work practices, such as: use of protective clothing; availability of showers and change rooms; bans on eating, drinking, and smoking in regulated areas; and use of nonpermeable work surfaces."

REQUIREMENT SOURCE: DOE5480.4 Attachment 2, Section 2.d.(3)(a)

""TLVs R(SUPERSCRIPT) Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes," most current edition (ACGIH)."

REQUIREMENT SOURCE: DOE5480.4 Attachment 2, Section 2.e.(1)(b)

"Sections I-XI, "Boiler and Pressure Vessel Code" (ASME)."

REQUIREMENT SOURCE: DOE5480.4 Attachment 2, Section 2.e.(3)(a)

"ANSI B-30 Series (ANSI)."

REQUIREMENT SOURCE: DOE5480.4 Attachment 2, Section 2.e.(5)(a) and (b)

"(a) ANSI/NFPA 70-1981, "National Electrical Code" (ANSI).
(b) ANSI C2-1981, "National Electrical Safety Code" (ANSI)."

19.4 OCCUPATIONAL HEALTH PROGRAM

The Hanford Environmental Health Foundation (HEHF) is a primary provider of medical services to the Hanford Site. Requirements applicable to medical activities are contained in HEHF specific documents.

19.4.1 Health Examinations

REQUIREMENT SOURCE: DOE5480.10 Section 9.b(6)

"Medical Monitoring. The industrial hygiene staff shall inform the medical organization of potential and existing health hazards identified, the results of hazard evaluations, and other industrial hygiene information needed for operation of a medical monitoring program. The industrial hygiene staff should be available to accompany medical staff on periodic worksite visits (refer to DOE 5480.1A, Chapter VIII, paragraph 4a(2))."

REQUIREMENT SOURCE: DOE5480.8A Section 11.b(3)(a)

Author's Note: This requirement is performed by the line organization in conjunction with the WHC human resources and legal departments.

"Preplacement Evaluations.

1 A medical evaluation of an individual shall be conducted after the job offer, but prior to the performance of job duties, and in the case of an employee, prior to a job transfer. The health status and fitness for duty of the individual shall be determined, thereby assuring that assigned duties can be performed in a safe and reliable manner and consistent with the Americans with Disabilities Act of 1990.

2 Contractor management shall provide to the Site Occupational Medical Director a job task analysis pertaining to the applicant/employee to enable the medical examiner to assess the individual as required in 11b(3)(a)1.

3 The scope of the initial preplacement evaluation shall be a comprehensive examination as outlined in paragraph 11b(2). The Site Occupational Medical Director shall determine additional examination content, considering such factors as special physical or mental requirements of the job, potential hazardous exposures, or medical surveillance requirements mandated by the Occupational Safety and Health Act, 29 CFR 1910 or 29 CFR 1926.

4 Those contractor operations requiring large numbers of preplacement evaluations may defer the comprehensive evaluation of individuals not assigned to hazardous work or potentially hazardous exposures after a review of the individual's medical history. The evaluation shall be performed within 6 months of the hire date.

5 The occupational medical department shall be informed of all job transfers. The Occupational Medical Director or designee should determine whether a medical evaluation is necessary."

19.4.2 Health Maintenance

Requirements for this sub-subelement are covered by the WHC Occupational Safety and Health Functional Area.

19.4.3 Diagnosis and Treatment

This subelement does not apply, Diagnosis and Treatment are the responsibility of HEHF.

19.4.4 Fitness for Duty

This subelement does not apply, Fitness for Duty requirements are the responsibility of HEHF.

19.4.5 Medical Facilities and Equipment

This subelement does not apply, WHC does not have medical facilities or equipment.

19.4.6 Professional Development of Occupational Staff

This subelement does not apply, WHC does not have a medical staff.

19.4.7 Health Records and Reporting

All medical records are maintained by HEHF.

REQUIREMENT SOURCE: 29CFR1910 Subpart C - Table of Contents [Restated]

General Safety and Health Provisions
1910.20 contains requirements that address access to employee exposure and medical records.

19.5 OCCUPATIONAL SAFETY AND HEALTH TRAINING

Additional requirements for this subelement are found in the WHC Occupational Safety and Health S/RID.

REQUIREMENT SOURCE: DOE1324.2A Attachment V-1, Section 4.c

"Records and investigations establishing the extent of employee exposure to toxic chemicals and materials. These records should be filed in the Health Hazard case file (item 6, below), wherever possible.

Destroy when 75 years old. NCI-430-76-9(5)"

REQUIREMENT SOURCE: DOE1324.2A Attachment V-1, Section 4.d

"Industrial hygiene logsheets recording surveys for industrial hazards other than radiation and contamination.

(1) Surveys indicating no industrial hazard. - Destroy when 75 years old. NCI-430-76-9(5)

(2) Surveys indicating a potential industrial hazard. - Until related facility is dismantled. NCI-430-76-9(5)"

REQUIREMENT SOURCE: DOE5480.10 Section 9.a(4)

"First-line Supervisors should be required to: (a) maintain healthful working conditions within his or her own organization and implement industrial hygiene recommendations; (b) train employees to perform assignments in a safe manner; and (c) follow administrative procedures to allow appropriate disciplinary action to be taken when health and safety rules are violated."

REQUIREMENT SOURCE: DOE5480.10 Section 9.b(5)

"Employee Education. The industrial hygiene staff shall assist the first level supervisor in the development of an employee information and training program whenever a potential health hazard exists requiring engineering controls, administrative procedures, or personal protective equipment. The program shall include written notification of employees of environmental monitoring results when the results indicate that the employees are exposed above permissible limits. Training should include information on operations that may lead to exposure, the potential health effects of the hazard, the content of applicable standards, and the purpose and results of environmental monitoring. Training should be updated and repeated periodically."

19.6 RECORDKEEPING AND REPORTING

19.6.1 Occupational Injury and Illness Reporting

Additional requirements for this subelement are found in the WHC Occupational Safety and Health S/RID.

REQUIREMENT SOURCE: 29CFR1904 Part 2

"Log and summary of occupational injuries and illnesses.

(a) Each employer shall, except as provided in paragraph (b) of this section, (1) maintain in each establishment a log and summary of all recordable occupational injuries and illnesses for that establishment; and (2) enter each recordable injury and illness on the log and summary as early as practicable but no later than 6 working days after receiving information that a recordable injury or illness has occurred."

REQUIREMENT SOURCE: 29CFR1904 Part 3

"Records shall be established on a calendar year basis."

REQUIREMENT SOURCE: 29CFR1904 Part 4

"In addition to the log of occupational injuries and illnesses provided for under §1904.2, each employer shall have available for inspection at each establishment within 6 working days after receiving information that a recordable case has occurred, a supplementary record for each occupational injury or illness for that establishment. The record shall be completed in the detail prescribed in the instructions accompanying Occupational Safety and Health Administration Form OSHA No. 101."

REQUIREMENT SOURCE: 29CFR1904 Part 5(2)

"A failure to post a copy of the establishment's annual summary may result in the issuance of citations and assessment of penalties pursuant to section 9 and 17 of the Act."

REQUIREMENT SOURCE: 29CFR1904 Part 5(a)

"Each employer shall post an annual summary of occupational injuries and illnesses for each establishment. This summary shall consist of a copy of the year's totals from the form OSHA No. 200 and the following information from that form: Calendar year covered, company name establishment name, establishment address, certification signature, title, and date. A form OSHA No. 200 shall be used in presenting the summary. If no injuries or illnesses occurred in the year, zeros must be entered on the totals line, and the form must be posted."

REQUIREMENT SOURCE: 29CFR1904 Part 6

"Records provided for in §§1904.2, 1904.4, and 1904.5.... shall be retained in each establishment for 5 years following the end of the year to which they relate."

REQUIREMENT SOURCE: 29CFR1904 Part 7

"Each employer shall provide upon request, records provided for in §§ 1904.2, 1904.4, and 1904.5, for inspection and copying by any representative of the Secretary of Labor for the purpose of carrying out the provisions of the act..."

REQUIREMENT SOURCE: 29CFR1904 Part 7(b)(1)

"The log and summary of all recordable occupational injuries and illnesses... provided for in §1904.2 shall, upon request, be made available by the employer to any employee, former employee, and to their representatives for examination and copying in a reasonable manner and at reasonable times. The employee, former employee, and their representatives shall have access to the log for any establishment in which the employee is or has been employed."

REQUIREMENT SOURCE: 29CFR1904 Part 8

"Within 48 hours after the occurrence of an employment accident which is fatal to one or more employees or which results in hospitalization of five or more employees, the employer of any employees so injured or killed shall report the accident either orally or in writing to the nearest office of the Area Director of the Occupational Safety and Health Administration, U.S. Department of Labor."

REQUIREMENT SOURCE: DOE5480.10 Section 9.f(2)

"The industrial hygiene staff's evaluation of potential health hazards shall be documented in written reports. If a deficiency is identified the report shall recommend corrective actions. The report, along with any response from line management and/or documentation of corrective actions, shall be retained."

REQUIREMENT SOURCE: DOE5483.1A Chapter I, Section 5.d

"All contractor employees shall be informed that the contractor is required to monitor the employee's workplace for radiation exposure and known toxic materials or harmful physical agents which are used or produced at the GOCO facility, and to maintain records of the data as required by Title 29 CFR Part 1910.20, "Access to Employee Exposure and Medical

Records." Employees or their authorized representatives are to be provided with an opportunity to observe monitoring or measuring for toxic materials and harmful physical agents and to have access to the results thereof. Each employee or former employee or representative thereof, within 15 days of a written request, shall be provided access to or copies of any records of cumulative recorded occupational radiation dose or any monitoring or bioassay records relevant to potential exposure to toxic materials or harmful physical agents during employment. Employees will be notified of any information indicating that a radiation dose or an exposure to toxic materials or harmful physical agents may have exceeded the limits specified by the DOE-prescribed OSHA standards."

REQUIREMENT SOURCE: DOE5483.1A Chapter I, Section 5.e

"All contractor employees or former employees shall have access to their personal safety, health, and medical records consistent with the provisions of the Freedom of Information Act and the Privacy Act."

REQUIREMENT SOURCE: DOE5483.1A Chapter III, Section 2

"RECORDKEEPING.

a. Contractors subject to the provisions of DOE PR 9-50.704-2(a) shall be responsible for recording and reporting recordable occupational illnesses and injuries, as required by DOE 5484.1, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS, of 2-24-81.

b. All contractors shall be responsible for maintaining records of employees exposures to toxic materials or harmful physical agents as appropriate. Such records shall be maintained in perpetuity.

c. A central file of all violations of DOE-prescribed OSHA standards noted during inspections (and abatement actions) shall be maintained by field organizations. A central file also shall be maintained by the field organizations of formal employee safety and health complaints and their disposition. Upon request, any of these safety and health violation or complaint-related records shall be made available for review by employees directly affected by such information, or by their authorized representatives. DOE 1324.1, RECORDS DISPOSITION, of 5-28-80, Attachment IV, DOE Records Schedule 25, paragraph 1b, specifies the retention period for these records.

d. DOE contractors subject to the provisions of DOE PR 9-50.704-2(a) shall respond to requests for injury/illness recordkeeping information from the U.S. Department of Labor, Bureau of Labor Statistics, or the Bureau's cooperating State agencies, as appropriate. The information shall be returned to the requestor on OSHA Form 200-S (included with the request) in accordance with the instructions accompanying the request, and a copy thereof shall be provided to the safety and health director of the field organization. The contractor shall include a statement on the OSHA Form 200-S which states: "With respect to work performed under contract with the DOE at (name of contractor and/or GOCO facility) this employer is not subject to the Occupational Safety and Health Act of 1970, under section 4(b)(1) of that Act.""

19.6.2 Occurrence Reporting

These requirements are completely addressed by the Management Systems Functional Area.

19.7 KEY INTERFACES

19.7.1 **Engineering Program**

The Engineering Program Functional Area defines the processes necessary to design engineering controls for health and safety hazards. This interface is essential during the actual design or pre-engineering phase.

19.7.2 **Emergency Management**

The OS&H Program provides the Emergency Management Functional Area with the necessary emergency planning support to ensure proper use and delineation of OS&H regulations and procedures. The OS&H Organization shall also provide support for exercises and training.

19.7.3 **Maintenance**

The Maintenance Functional Area interfaces with the OS&H Program during all routine and non-routine maintenance activities. All personnel health and safety training shall be completed and hazard controls implemented prior to performing work.

19.7.4 **Operations**

The Operations Organization depends on the controls outlined in the Health and Safety Program to safety operate. Workplace hazard identification and assessment is accomplished through walkdown inspections, surveys, monitoring and surveillance. Based on the hazards identified the necessary controls are defined and implemented to ensure safe operations. The Operations Organization should work closely with the Occupational Safety and Health Program on all routine and non-routine operations.

19.7.5 **Radiation Protection**

Personnel working in radiological controlled areas must adhere to all As-Low-As-Reasonably-Achievable (ALARA) policies and Occupational Safety and Health Act (OSHA) controls. The Radiation Protection Functional Area must coordinate all routine and non-routine activities with the OS&H Program.

19.7.6 **Training and Qualification**

Training is an integral part of any effective health and safety program. The OS&H Program provides the necessary information and support to the training program to ensure that effective health and safety training is developed and conducted. The training organization shall properly document all health and safety training and maintain all such documentation in accordance with established procedures.

19.7.7 **Construction Program**

All construction activities shall adhere to the Federal OSHA Regulations 29CFR1926. The construction organization will interface with the PFP organization to ensure understanding and adherence with established health and safety controls.

19.7.8 **Management Systems**

The Management Systems Functional Area provides the necessary controls for developing, using, and maintaining facility policies and procedures. In addition, the Health and Safety Organization shall participate in occurrence/event reporting activities which are included in this area.

19.7.9 **Packaging and Transportation**

The packaging and transportation of materials (both nuclear and non-nuclear) involves significant interaction with the OSH Program. Specific subjects of concern include safe handling of hazardous materials and chemicals, hoisting and rigging, personal protective equipment, etc.

19.7.10 **Safeguards and Security**

The Safeguards and Security organization has a limited interaction with the OSH Program concerning the safe handling of firearms and explosives.

19.7.11 **Quality Assurance**

The Quality Assurance Function Area interfaces with the Occupational Safety and Health Functional Area by establishing the organization's approach to the management of quality (e.g., appropriate retention of documents and records, quality work processes, hardware quality requirements, and independent assessments).

19.7.12 **Fire Protection**

An integrated approach is taken between the Occupational Safety and Health Functional Area and the Fire Protection Function Area to ensure current standards and guidelines for protection of workers are appropriately coordinated.

19.7.13 **Waste Management**

The Waste Management Functional Area relies on the Occupational Safety and Health Functional Area for health and safety controls. The Occupational Safety and Health Functional Area provides implementing procedures to control hazardous or toxic materials; physical hazards; hazards identification, surveillance, and communication ; asbestos removal operations; hazardous materials handling and emergency response; posting of danger signs and tags; storage of pressurized gases; lockout and tag-out activities ; and explosive/combustible materials handling.

19.7.14 **Nuclear Safety**

Occupational Safety and Health provides information to the Nuclear Safety Functional Area regarding requirements to mitigate health related effects from hazardous substance and physical hazards.

19.7.15 **Environmental Protection**

The Occupational Safety and Health Functional Area routinely interfaces with the Environmental Protection Functional Area to ensure worker safety in responding to environmental incidents.

19.8 REFERENCES

19.8.1 **Requirement Source Documents**

The following documents were reviewed and incorporated for Regulatory Requirements and Industry Accepted Good Practices:

29CFR1904, Recording and Reporting Occupational Injuries and Illnesses, July 1, 1992.

29 CFR 1910, Occupational Safety and Health Standards. July 1, 1993, and July 1, 1994.

54 FR 3904, Safety and Health Program Management Guidelines; Issuance of Voluntary Guidelines; Notice, January 26, 1989.

DOE 1324.2A, Records Disposition, April 9, 1992.

DOE 5480.4, Environmental Protection, Safety, and Health, January 7, 1993.

DOE 5480.8A, Contractor Occupational medical Program, June 26, 1992.

DOE 5480.10, Contractor Industrial Hygiene Program, June 26, 1985.

DOE 5483.1A, Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities, June 22, 1983.

ANSI-Z88.2-1992, Laser Safety.

ANSI-Z136.1-1992, Respiratory Protection.

19.8.2 **Reviewed Documents Not Used as Requirement Sources**

The following documents were reviewed as requirement sources but were not used in the development of this S/RID:

29 CFR 1926, Occupational Safety and Health Administration, Labor, July 1, 1994.

WAC, Chapter 173, Washington Administrative Code, Dangerous Waste Regulations, June 1993.

WAC 296-24, Washington Administrative Code, Industrial Safety and Health Standards, June 1993.

WAC-296-155, Industrial Safety and Health Standards for construction, June 1993

DOE 5480.19, Conduct of Operations Requirements for DOE Facilities, May 19, 1992.

DOE 5480.20, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities, February 20, 1991.

DOE 5484.1, Environmental Protection, Safety and Health Protection Information Reporting Requirements, February 24, 1981.

DOE 6430.1A, General Design Criteria, April 6, 1981.

DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual, January 1993.

RLIP 5480.4C, Environmental Protection, Safety, and Health Protection Standards For RL, November 6, 1992.

DOE-STD-1030-92, Guide to Good Practices for Lockouts and Tagouts, United States Department of Energy, November 92.

EEI Guide to Effective Drug and Alcohol/Fitness for Duty Policy Development, August 1985.

DOE/EH 0135 Criteria for Technical Safety Appraisals. June 1990.

ANSI-Z244.1-1982, American National Standard for personnel protection, lockout/tagout of energy sources, minimum safety requirements, Approved March 8, 1982.

TABLE OF CONTENTS

20.0 ENVIRONMENTAL PROTECTION 1

20.1 ENVIRONMENTAL POLICY MANAGEMENT 2

20.1.1 National Environmental Policy Act 2
20.1.2 State Environmental Policy Act 5
20.1.3 Natural and Cultural Resources 6

20.2 PERMITS 7

20.2.1 Clean Water Permits 7

20.2.1.1 State Waste Discharge 7
20.2.1.2 Underground Injection Control (UIC) Registration 7
20.2.1.3 Domestic Sewage 8

20.2.2 Clean Air Permits 8

20.2.2.1 Nonradioactive Emissions 8
20.2.2.2 Radionuclide Emissions for New or Modified Sources 10

20.2.3 RCRA TSD Facility Permits 14
20.2.4 Underground Storage Tanks 15

20.3 ENVIRONMENTAL MONITORING, SURVEILLANCE AND INSPECTIONS 17

20.3.1 Radiological Effluents 18
20.3.2 Tank Systems 20

20.3.2.1 Dangerous/Mixed Waste Tank Systems 20
20.3.2.2 UST Systems 22

20.3.3 Monitoring, Surveillance and Inspection Plans and Procedures 27
20.3.4 Quality Assurance 28

20.4 ENVIRONMENTAL CONTROL STANDARDS 29

20.4.1 Air Quality 29
20.4.2 Radiological Effluents 31

20.5 POLLUTION PREVENTION 34

20.6 RECORDKEEPING, REPORTS AND NOTIFICATIONS 34

20.6.1 Incident Investigation and Reporting 35
20.6.2 Reporting Requirements 42

20.6.2.1 Radioactive Effluents 43
20.6.2.2 Treatment, Storage, and Disposal Units 43
20.6.2.3 Underground Storage Tanks 44

20.6.3 Records Management 49

20.7 KEY INTERFACES 52

20.7.1 Waste Management 52
20.7.2 Emergency Management 52
20.7.3 Occupational Safety and Health 52
20.7.4 Quality Assurance 53
20.7.5 Radiological Protection 53
20.7.6 Engineering Program 53
20.7.7 Operations 53
20.7.8 Training and Qualification 53
20.7.9 Nuclear Safety 53
20.7.10 Management Systems 53

20.8 REFERENCES 53

20.8.1 Requirement Source Documents 53
20.8.2 Reviewed Documents Not Used as Requirement Sources 54

20.0 ENVIRONMENTAL PROTECTION

INTRODUCTION

This Standards/Requirements Identification Document (S/RID) presents requirements applicable to the Plutonium Finishing Plant (PFP) and related structures. The Environmental Protection Functional Area describes the programmatic controls, activities, personnel, and programs involved in executing Environmental Protection activities, as such activities are included in the current mission of the facility.

This S/RID describes the PFP Environmental Protection Program as defined through the relevant U.S. Department of Energy (DOE) Orders, regulations, industry codes/standards, industry guidance documents and, as appropriate, good industry practice. The definition of a Environmental Protection Program, as specified by this document, is intended to address Defense Nuclear Facilities Safety Board Recommendation 90-2, which calls for the strengthening of DOE defense nuclear facility activities through the identification and application of relevant regulations and standards that supplement or exceed requirements mandated by DOE Orders.

The Environmental Protection Program, outlined in this document, is in general accordance with the Environment, Safety, and Health Configuration Guide, Revision 0, dated July 30, 1993, and is presented in program elements and subelements. The specific DOE Orders, regulations, industry codes/standards, guidance documents and good industry practices that serve as the basis for each element/subelement are identified and aligned accordingly. Additional subelements were added to the basic format for further definition and clarity.

The Plutonium Finishing Plant Transition Project (PFPTP) Mission is to prepare the PFPTP to implement the Record of Decision (ROD) resulting from the PFP Stabilization Environment Impact Statement, to provide interim storage for all Special Nuclear Materials (SNM) currently at PFP, and to deactivate all portions of the PFP not required for the storage of SNM or to implement the ROD.

SCOPE

The PFPTP Mission is to prepare and implement the ROD resulting from the PFP EIS. The activities evaluated by this EIS to be implemented at PFP include:

Stabilizing reactive residual plutonium-bearing materials at PFP to a form suitable for long-term storage;

Removing readily retrievable plutonium-bearing materials left behind in process equipment, process areas, and air quality and liquid waste management systems as a result of historic use; and,

Storing stabilized fissile material in existing vaults at the PFP pending a DOE decision on ultimate storage or disposition of the materials.

Interim actions to resolve immediate safety concerns are currently being taken. This includes stabilizing reactive scrap, removing ventilation ductwork, and cleanup of radioactive surface contamination as well as routine operations and maintenance.

20.1 ENVIRONMENTAL POLICY MANAGEMENT

The Environmental Policy Management element addresses the unique management and administrative requirements necessary for PFP to ensure the DOE is provided adequate information and documentation to support timely reviews of proposed actions. Policies presented in this element address the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA). General aspects of management policy, staffing, and training are covered in the Management Systems functional area.

20.1.1 National Environmental Policy Act

NEPA is the basic national charter for protection of the environment.

40 CFR 1500-1508 provides regulations applicable and binding on all federal agencies for implementing the provisions of NEPA. The DOE has codified NEPA requirements in 10 CFR 1021. The purpose of these requirements is to establish procedures that the DOE shall use to comply with Section 102(2) of NEPA and CEQ regulations for implementing the provisions of NEPA. DOE complies with 10 CFR 1021 in conjunction with the CEQ regulations to satisfy NEPA requirements.

10 CFR 1021 applies to any DOE action affecting the quality of the environment of the United States, its territories, or possessions. NEPA requirements are both procedural and technical. Although only DOE is able to implement the procedural requirements of NEPA, any contractor proposing to implement a DOE action is advised to be cognizant of the requirements. DOE normally relies on the DOE contractor proposing a DOE action to provide technical information in support of NEPA.

The NEPA requirements applicable to federal facilities (e.g., as delineated in 10 CFR 1021 and 10 CFR 1022) are applicable to PFP as a federal facility. The CEQ requirements (e.g., as delineated in 40 CFR 1500-1507) are also applicable to proposed actions at PFP. An EIS is currently being prepared to address cleanout and stabilization of the PFP.

REQUIREMENT SOURCE: 10CFR1021 Part 200

"(a) DOE shall provide for adequate and timely NEPA review of DOE proposals, including those for programs, policies, projects, regulations, orders, or legislation, in accordance with 40 CFR 1501.2 and this section. In its planning for each proposal, DOE shall include adequate time and funding for proper NEPA review and for preparation of anticipated NEPA documents.

(b) DOE shall begin its NEPA review as soon as possible after the time that DOE proposes an action or is presented with a proposal.

(c) DOE shall determine the level of NEPA review required for a proposal in accordance with Sec. 1021.300 and subpart D of this part.

(d) During the development and consideration of a DOE proposal, DOE shall review any relevant planning and decision making documents, whether prepared by DOE or another agency, to determine if the proposal or any of its alternatives are considered in a prior NEPA document. If so, DOE shall consider adopting the existing document, or any pertinent part thereof, in accordance with 40 CFR 1506.3."

RELATED REFERENCES

1. 40CFR1501 Part 2

2. 10CFR1021 Part 200(a)

REQUIREMENT SOURCE: 10CFR1021 Part 210

Author's Note: Section (e) is not applicable.

"(a) For each DOE proposal, DOE shall coordinate its NEPA review with its decision making. Sections 1021.211 through 1021.214 of this part specify how DOE will coordinate its NEPA review with decision points for certain types of proposals (40 CFR 1505.1(b)).

(b) DOE shall complete its NEPA review for each DOE proposal before making a decision on the proposal (e.g., normally in advance of, and for use in reaching, a decision to proceed with detailed design), except as provided in 40 CFR 1506.1 and Secs. 1021.211 and 1021.216 of this part.

(c) During the decision making process for each DOE proposal, DOE shall consider the relevant NEPA documents, public and agency comments, as part of its consideration of the proposal (40 CFR 1505.1(d)) and shall include such documents, comments, and responses as part of the administrative record (40 CFR 1505.1(c)).

(d) If an EIS or EA is prepared for a DOE proposal, DOE shall consider the alternatives analyzed in that EIS or EA before rendering a decision on that proposal; the decision on the proposal shall be within the range of alternatives analyzed in the EA or EIS (40 CFR 1505.1(e)).

(e) When DOE uses a broad decision (such as one on a policy or program) as a basis for a subsequent narrower decision (such as one on a project of other site-specific proposal), DOE may use tiering (40 CFR 1502.20) and incorporation of material by reference (40 CFR 1502.21) in the NEPA review for the subsequent narrower proposal."

REQUIREMENT SOURCE: 10CFR1021 Part 211

"Limitations on actions during the NEPA process.

While DOE is preparing an EIS that is required under 1021.300(a) of this part DOE shall take no action concerning the proposal that is the subject of the EIS before issuing an ROD except as provided at 40 CFR 1506.1. Actions that are covered by or are a part of a DOE proposal for which an EIS is being prepared shall not be categorically excluded under subpart D of these regulations unless they qualify as interim actions under 40 CFR 1506.1."

RELATED REFERENCES

1. 40CFR1506 Part 1(a)

REQUIREMENT SOURCE: 10CFR1021 Part 300

"(a) DOE shall determine, under the procedures in the CEQ Regulations and this part, whether any DOE proposal:

(1) Requires preparation of an EIS;

(2) Requires preparation of an EA; or

(3) Is categorically excluded from preparation of either an EIS or an EA. DOE shall prepare any pertinent documents as required by NEPA, the CEQ Regulations, or this part.

(b) Notwithstanding any other provision of these regulations, DOE may prepare a NEPA document for any DOE action at any time in order to further the purposes of NEPA. This may be done to analyze the consequences of ongoing activities, support DOE planning, assess the need for mitigation, fully disclose the potential environmental consequences of DOE actions, or for any other reason. Documents prepared under this paragraph shall be prepared in the same manner as DOE documents prepared under paragraph (a) of this section."

REQUIREMENT SOURCE: 10CFR1021 Part 315(b)

"If DOE decides to take action on a proposal covered by and EIS, a ROD shall be prepared as provided at 40 CFR 1505.2 (except as provided at 40 CFR 1506.1 and §1021.211 of this part). No action shall be taken until the decision has been made public."

RELATED REFERENCES

1. 40CFR1505 Part 2

REQUIREMENT SOURCE: 10CFR1021 Part 321

"Requirements for environmental assessments.

(a) When to prepare an EA. As required by 40 CFR 1501.4(b) DOE shall prepare an EA for a proposed DOE action that is described in the classes of actions listed in appendix C to subpart D of this part and for a proposed DOE action that is not described in any of the classes of actions listed in appendices A B, or D to subpart D except that an EA is not required if DOE has decided to prepare an EIS. DOE may prepare an EA on any action at any time in order to assist agency planning and descisionmaking.

(b) Purposes. A DOE EA shall serve the purposes identified in 40 CFR 1508.9(a) which include providing sufficient evidence and analysis for determining whether to prepare an EIS or to issue a FONSI. If appropriate a DOE EA shall also include any floodplain/wetlands assessment prepared under 10 CFR part 1022 and may include analyses needed for other environmental determinations.

(c) Content. A DOE EA shall comply with the requirements found at 40 CFR 1508.9. In addition to any other alternatives DOE shall assess the no action alternative in an EA even when the proposed action is specifically required by legislation or a court order."

RELATED REFERENCES

1. 40CFR1501 Part 4

REQUIREMENT SOURCE: 10CFR1021 Part 322(e)

"Upon issuance of the FONSI, DOE may proceed with the proposed action subject to any mitigation commitments expressed in the FONSI that are essential to render the impacts of the proposed action not significant."

REQUIREMENT SOURCE: 10CFR1021 Part 400

"Level of NEPA review.

(a) This subpart identifies DOE actions that normally:

(1) Do not require preparation of either and EIS or an EA (are categorically excluded from preparation of either document)(appendices A and B to this subpart D);

(2) Require preparation of an EA but not necessarily and EIS (appendix C to this subpart D); or

(3) Require preparation of an EIS (appendix D to this subpart D).

(b) Any completed valid NEPA review does not have to be repeated, and no completed NEPA documents need to be redone by reasons of these regulations except as provided in 1021.314.

(c) If a DOE proposal is encompassed within a class of actions listed in the appendices to this subpart D DOE shall proceed with the level of NEPA review indicated for that class of actions unless there are extraordinary circumstances related to the specific proposal that may affect the significance of the environmental effects of the proposal.

(d) If a DOE proposal is not encompassed within the classes of actions listed in the appendices to this subpart D or if there are extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal DOE shall either:

(1) Prepare an EA and on the basis of the EA, determine whether to prepare an EIS or a FONSI; or

(2) Prepare and EIS and ROD."

20.1.2 State Environmental Policy Act

State Environmental Policy Act (SEPA) activities are typically integrated with NEPA activities for proposed actions requiring state or local agency permits or approvals, which trigger the need for SEPA review. The purpose of SEPA is to integrate activities at the earliest possible time to ensure that planning and decision reflect environmental values, to avoid delays later in the process, and to seek to resolve potential problems early in the decisionmaking process.

Although the vocabulary used within NEPA and SEPA differs, the concepts and process for environmental reviews are similar (e.g.,threshold determinations and public scoping). Both NEPA and SEPA regulations state the intent to avoid unnecessary duplication of effort, excessive paperwork, and time delays. The SEPA regulations provide for the use of NEPA documents by state or local agencies. A NEPA environmental assessment may be adopted to satisfy SEPA requirements for a Determination of Nonsignificance (DNS) or a decision to proceed with an Environmental Impact Statement, if certain state requirements are met. NEPA also instructs federal agencies to reduce excessive paperwork by eliminating duplication with state and local procedures.

Agencies specify the amount of detail needed from applicants for early environmental review, consistent with WAC 197-11-100 and 197-11-335, in SEPA or permit procedures. The SEPA checklist used to provide information to the agencies is invoked by WAC 197-11-960. The SEPA process is combined with the existing agency review processes. Any environmental document in compliance with SEPA may be combined with any other agency documents to reduce duplication and paperwork and improve decisionmaking.

Requirements contained herein are taken from the Washington State Environmental Policy Act Rules (WAC 197-11) and from the Department of Ecology (Ecology) SEPA rules. As the facility determines that it will interface with other regulatory agencies (e.g., the Department of Natural Resources), specific agency SEPA rules must be evaluated (e.g., WAC 332-41).

REQUIREMENT SOURCE: WAC-197-11 Section 305

"Categorical exemptions.
(1) If a proposal fits within any of the provisions in Part Nine of these rules, the proposal shall be categorically exempt from threshold determination requirements (WAC 197-11-720) except as follows:

(a) The proposal is not exempt under WAC 197-11-908, environmentally sensitive areas.

(b) The proposal is a segment of a proposal that includes:

(i) A series of actions, physically or functionally related to each other, some of which are categorically exempt and some of which are not; or

(ii) A series of exempt actions that are physically or functionally related to each other, and that together may have a probable significant adverse environmental impact in the judgment of an agency with jurisdiction. If so, that agency shall be the lead agency, unless the agencies with jurisdiction agree that another agency should be the lead agency. Agencies may petition the department of ecology to resolve disputes (WAC 197-11-946). For such proposals, the agency or applicant may proceed with the exempt aspects of the proposals, prior to conducting environmental review, if the requirements of WAC 197-11-070 are met.

(2) An agency is not required to document that a proposal is categorically exempt. Agencies may note on an application that a proposal is categorically exempt or place such a determination in agency files."

REQUIREMENT SOURCE: WAC-197-11 Section 640

"Combining documents. The SEPA process shall be combined with the existing planning, review, and project approval processes being used by each agency with jurisdiction. When environmental documents are required, they shall accompany a proposal through the existing agency review processes. Any environmental document in compliance with SEPA may be combined with any other agency documents to reduce duplication and paperwork and improve decision making. The page limits in these rules shall be met, or the combined document shall contain, at or near the beginning of the document, a separate summary of environmental considerations, as specified by WAC 197-11-440(4). SEPA page limits need not be met for joint state-federal EISs prepared under both SEPA and NEPA, in which case the NEPA page restrictions (40 CFR 1502.7) shall apply."

REQUIREMENT SOURCE: WAC-197-11 Section 960, Paragraph 1

"Environmental Checklist. The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help (applicants) and the agency identify impacts from the proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required."

20.1.3 Natural and Cultural Resources

Although a Cultural Resources Review will be required prior to initiating any potential surface-disturbing activities onsite, or any modifications to facilities with the potential for inclusion on the National Historical register, PFP will not conduct the review. This review is conducted by Pacific Northwest Laboratories (PNL), and includes an assessment to determine

whether any planned activities have the potential to disturb critical habitat utilized by threatened and endangered species.

20.2 PERMITS

Element 20.2 includes requirements for determining the need for preparing and maintaining liquid effluent discharge permits, air emission permits, and solid waste handling permits. The Hanford Site currently has several site-wide permits and consent orders that include PFP (e.g., the Federal Facilities Agreement and Consent Order [referred to as the Tri-Party Agreement or TPA], the 216 Liquid Effluent Consent Order, the EPA General Stormwater Discharge permit for industrial activities, and the Permit for Emissions of Radionuclides [FF-01]). Wastewater discharges require regulatory authorization and many require specific discharge permits. The PFP wastewater streams are coordinated site-wide under the Plan and Schedule for Disposition of Miscellaneous Streams.

None of the PFP facilities are currently regulated by the Hanford Facility RCRA Permit. Therefore, none of the Hanford Facility RCRA Permit requirements are reflected in this S/RID. However, PFP does have facilities that require RCRA permitting; these facilities are currently operating under interim status provisions of RCRA.

20.2.1 Clean Water Permits

Wastewater discharges require regulatory authorization and many require specific discharge permits. The PFP wastewater streams are coordinated site-wide under the Plan and Schedule for Disposition of Miscellaneous Streams.

20.2.1.1 State Waste Discharge

State Waste Discharge permits are required for discharges into waters of the state, unless the discharges are allowed by an NPDES permit. Most wastewater from the PFP is discharged to the TEDF, which is permitted by 216 State Waste Discharge permit. TEDF wastewater acceptance criteria are imposed on PFP. An individual State Waste Discharge Permit for the PFP wastewater stream sent to TEDF is not necessary. PFP also has several miscellaneous wastewater streams addressed under the sitewide 216 Liquid Effluent Consent Order and Plan and Schedule for Disposition of Miscellaneous Streams.

20.2.1.2 Underground Injection Control (UIC) Registration

Subelement 20.2.1.2 identifies the requirements for injection of fluids through underground wells. Several of the PFP french drains are sized such that they are considered Underground Injection System. These streams are addressed in the sitewide Plan and Schedule for Disposition of Miscellaneous Streams.

REQUIREMENT SOURCE: WAC-173-218 Section 040

"No fluids may be injected through wells except as authorized pursuant to this chapter."

REQUIREMENT SOURCE: WAC-173-218 Section 100

"(1) Any permit issued by the department shall specify conditions necessary to prevent and control injection of fluids into the waters of the state, including the following, whenever applicable:

(a) All known, available, and reasonable methods of prevention, control, and treatment;

(b) Applicable requirements as contained in 40 Code of Federal Regulations Parts 124 and 144 as published in Federal Register Volume 48, #64 (April 1, 1983) and Part 146 as published in Federal Register Volume 45, #123 (June 24, 1980), Volume 46, #166(August 27, 1981) and Volume 47, #23 (February 3, 1982); and

(c) Any conditions necessary to preserve and protect USDW.

(2) Any injection well that causes or allows the movement of fluid into an USDW that may result in a violation of any primary drinking water standard under 40 Code of Federal Regulations Part 141 or that may otherwise adversely affect the beneficial use of an USDW is prohibited."

20.2.1.3 Domestic Sewage

In addition to State Waste Discharge Permit applications administered by Ecology, on-site sewage systems are also regulated by the Washington State Department of Health (DOH). The DOH permit requirements for on-site sewage systems (WAC 246-272) are implemented by the site utilities organization (e.g., Kaiser Engineering).

Author's Note: If a Large On-Site Sewage System (LOSS) is proposed in the future, requirements under WAC 246-247-08001(1)-(3) and WAC 246-247-09001(1) will be applicable to the PFP, and the S/RID will be revised accordingly.

20.2.2 Clean Air Permits

Subelement 20.2.2 addresses notifications, registrations, and permit applications for air emission sources. This subelement is divided into nonradioactive emissions requirements and requirements for radionuclide emission sources. PFP does not currently have priority pollutant emissions warranting a permit (e.g., Prevention of Significant Deterioration (PSD) permit). If it is determined during preparation of an NOC for any new or modified facilities that priority pollutants could be emitted in quantities warranting a permit, the PFP S/RID will be revised as appropriate.

Author's Note: DOE/RL-95-07, "Hanford Site Air Operating Permit Application," dated May 25, 1995, has been filed with the DOH/ECOLOGY. This permit application imposes commitments WHC, and other contractors on the Hanford Site also included in the application, intend to perform. The contents of this application may be revised during the permitting process. Anticipated issuance of the permit is end of FY97.

20.2.2.1 Nonradioactive Emissions

Construction of new facilities and modifications to existing facilities resulting in a change or increase in air emissions will be evaluated on a case-by-case basis for a determination of applicable requirements and/or coordination with the Environmental Protection Agency (EPA), Ecology, and/or DOH. Depending upon the type of facility and/or the significance of the emissions, an authorization to construct may be required prior to initiating construction. Subelement 20.2.2.1 includes the requirements for application to construct or modify.

REQUIREMENT SOURCE: LAPCA-REG1 Article 8, Section 8.02.A

"All asbestos removal projects under Section 8.01 and those which do not fall under Sections 8.01 or 8.02(B) but are greater than 20 square feet or 35 linear feet are subject to the notification requirements and fee schedule described in Section 10.07."

REQUIREMENT SOURCE: LAPCA-REG1 Article 8, Section 8.03

"A. In the event of an unexpected discovery of asbestos during a renovation or demolition project, which was originally thought to contain no asbestos, the requirements of either Section 8.01 or 8.02 are applicable, and all work must stop until these requirements have been met.

B. During an approved renovation or demolition project, if an unexpected discovery of additional asbestos is made which increases the project by 20% or greater than originally reported, an amendment or emergency waiver form must be filed with the Authority before work may continue."

REQUIREMENT SOURCE: WAC-173-400 Section 110(1)

"Applicability.

(a) A notice of construction application must be filed by the owner or operator and an order of approval issued by ecology or an authority prior to the establishment of any new source or emission unit or modification which is listed in WAC 173-400-100 or required to obtain a permit under RCW 70.94.161.

(b) Ecology or the authority may require that a notice of construction application be filed by the owner or operator of a proposed new source or modification and an order of approval issued by ecology or an authority prior to the establishment of any new source or emission unit or modification, other than a single family or a duplex dwelling.

(c) New source review of a modification shall be limited to the emission unit or units proposed to be added to an existing source or modified and the air contaminants whose emissions would increase as a result of the modification."

REQUIREMENT SOURCE: WAC-173-400 Section 110(5)

"(5) Portable sources. For portable sources which locate temporarily at particular sites, the owner(s) or operator(s) shall be allowed to operate at the temporary location without filing a notice of construction application, providing that the owner(s) or operator(s) notifies ecology or the authority of intent to operate at the new location at least thirty days prior to starting the operation, and supplies sufficient information to enable ecology or the authority to determine that the operation will comply with the emission standards for a new source, and will not cause a violation of applicable ambient air quality standards and, if in a nonattainment area, will not interfere with scheduled attainment of ambient standards. The permission to operate shall be for a limited period of time (one year or less) and ecology or the authority may set specific conditions for operation during that period. A temporary source shall be required to comply with all applicable emission standards."

REQUIREMENT SOURCE: WAC-173-400 Section 110(6)

"Approval to construct or modify a stationary source shall become invalid if construction is not commenced within eighteen months after receipt of such approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. Ecology or the authority may extend the eighteen-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within eighteen months of the projected and approved commencement date."

20.2.2.2 Radionuclide Emissions for New or Modified Sources

Subelement 20.2.2.2 includes requirements for new or modified sources of radionuclide emissions. On February 3, 1994, DOE-RL received a Compliance Order and Information Request from the Director of the Air and Toxics Division of the US EPA, Region 10. The Compliance Order required RL to evaluate all radionuclide emission points at the Hanford Site. If the emission point could potentially cause a member of the public to be exposed to >0.1 mrem/yr, the emission point is considered to be "designated" and is monitored continuously as specified in the standard. Results of the PFP stack evaluation indicate that the PFP 291-Z-1 stack is considered to be designated.

The requirements appropriate for inclusion in the subelement are derived primarily from the Permit for Radionuclide Emissions (FF-01) and DOH regulations found in WAC 246-247. These requirements are applicable to the facilities addressed in the site-wide permit and to radionuclide sources in general.

PFP completes a Notice of Construction (NOC) pursuant to WAC 246-247 and 40 CFR Part 61.96 for new construction activities. It is important to note that when an NOC is submitted and approved, the terms of the NOC are applicable for the life of the project.

REQUIREMENT SOURCE: 40CFR61 Part 9

"Notification of startup.
(a) The owner or operator of each stationary source which has an initial startup after the effective date of a standard shall furnish the Administrator with written notification as follows:

(1) A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days before that date.

(2) A notification of the actual date of initial startup of the source within 15 days after that date.

(b) If any State or local agency requires a notice which contains all the information required in the notification in paragraph (a) of this section, sending the Administrator a copy of that notification will satisfy paragraph (a) of this section."

REQUIREMENT SOURCE: 40CFR61 Part 96

"Applications to construct or modify.

(a) In addition to any activity that is defined as construction under 40 CFR part 61, subpart A, any fabrication, erection or installation of a new building or structure within a facility that emits radionuclides is also defined as new construction for purposes of 40 CFR part 61, subpart A.

(b) An application for approval under 61.07 or notification of startup under 61.09 does not need to be filed for any new construction of or modification within an existing facility if the effective dose equivalent, caused by all emissions from the new construction or modification, is less than 1% of the standard prescribed in 61.92. For purposes of this paragraph the effective dose equivalent shall be calculated using the source term derived using Appendix D as input to the dispersion and other computer models described in 61.93. DOE may, with prior approval from EPA, use another procedure for estimating the source term for use in this paragraph. A facility is eligible for this exemption only if, based on its last annual report, the facility is in compliance with this subpart.

(c) Conditions to approvals granted under 61.08 will not contain requirements for post approval reporting on operating conditions beyond those specified in 61.94."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 040(3)

"All new construction and significant modifications of emission units commenced after August 10, 1988 (the date this chapter originally became effective) shall utilize BARCT (see Appendix B)."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 060 Introduction

"This section describes the information requirements for approval to construct, modify, and operate an emission unit. Any notice of construction (NOC) requires the submittal of the information listed in Appendix A. Complex projects may require additional information. The applicant should contact the department early in the conceptual design phase for guidance on applicable control technologies to consider.

Appendices B and C outline the procedures to demonstrate compliance with the BARCT and ALARACT standards. Based on the Appendix A information provided, the department may advise the applicant which subset of technologies to consider as candidates for meeting BARCT or ALARACT requirements. For those facilities subject to the operating permit regulations in chapter 173-401 WAC, the radioactive air emissions license will be incorporated as an applicable portion of the air operating permit issued by the department of ecology or a local air pollution control authority. The department will be responsible for determining the facility's compliance with and enforcing the requirements of the radioactive air emissions license."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 060(1)

"Requirements for new construction or modification or emission units.

(a) Early in the design phase, the applicant shall submit a NOC containing the information required in Appendix A.

(b) Within thirty days of receipt of the NOC, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT have been met, or may require the applicant to submit a BARCT or ALARACT demonstration compatible with Appendix B or C, respectively. (c) Within sixty days of receipt of all required information, the department shall issue an approval or denial to construct. The department may require changes to the final proposed control technology.

(d) The applicant may request a phased approval process by so stating and submitting a limited application. The department may grant a conditional approval to construct for such activities as would not preclude the construction or installation of any control or monitoring equipment required after review of the completed application.

(e) The department shall issue a license, or amend an existing license, authorizing operation of the emission unit(s) when the proposed new construction or modification is complete. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. For new construction, this action shall constitute registration of the emission unit(s)."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 060(2)

"Requirements for modification of unregistered emission units that are not exempt from these regulations.

(a) The applicant shall submit an application containing the information required in Appendix A.

(b) Within thirty days of receipt of the application, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT demonstration compatible with Appendix B or C, respectively.

(c) Within sixty days of receipt of all required information, the department shall issue or amend the license. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. This action shall constitute registration of the mission unit(s). A determination of noncompliance may result in the issuance of a notice of violation.

(d) The department reserves the right to require the owner of an existing, unregistered emission unit to make modifications necessary to comply with the applicable standards of WAC 246-247-040."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 060(3)

"If an emission unit is in violation of any standards contained in WAC 246-247-040, the facility shall either submit a compliance plan which describes how it intends to achieve compliance with the standards, and/or cease operation of the emission unit(s). The facility shall submit the compliance plan within forty-five days of the notice of violation. The cessation of operation of the emission unit(s) shall not necessarily exempt the facility from the requirements of this chapter if active or passive ventilation and radioactive air emission controls will still be required. The department reserves the right to take further enforcement action, if necessary, in accordance with WAC 246-247-100."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 060(4)

"The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emission unit(s)."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 075(11)

"The planning for any proposed new construction or significant modification of the emission unit must address accidental releases with a probability of occurrence during the expected life of the emission unit of greater than one percent."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(1)

"The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data, and other records related to compliance with the requirements of this chapter. The department may require a demonstration of ALARACT at any time."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 120, Appendix B, Paragraph 1

"Purpose. A BARCT demonstration is used to choose control technologies for the mitigation of emissions of radioactive material from new emission units or significant modifications to emission units. The bases for the BARCT demonstration requirements are the BARCT standard given in WAC 246-247-040 , and the definition of BARCT given in WAC 246-247-030. This procedure incorporates certain implementing criteria that enable the department to evaluate a facility's compliance with the BARCT standard. It is the applicant's responsibility to demonstrate the effectiveness of their BARCT determination to the department. The facility should contact the department at the conceptual design phase for guidance on the BARCT demonstration requirements. The department may adjust this demonstration procedure on a case-by-case basis, as needed, to ensure compliance with the substantive standard."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 120, Appendix B, Paragraph 2

"Scope. The BARCT demonstration includes the abatement technology and indication devices that demonstrate the effectiveness of the abatement technology from entry of radionuclides into the ventilated vapor space to release to the environment. The applicant shall evaluate all available control technologies that can reduce the level of radionuclide emissions."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 130, Appendix C, Paragraph 1

"Purpose. An ALARACT demonstration is used for inspection or audit purposes, and to demonstrate compliance with the substantive ALARACT technology standard as required by this chapter. An ALARACT demonstration is used to evaluate the adequacy of control technology on existing emission units and to choose control technologies for proposed nonsignificant modifications of emission units. The bases for the ALARACT demonstration requirements are the ALARACT standards given in WAC 246-247-040 and the definition of ALARACT given in WAC 246-247-030. It is the applicant's responsibility to demonstrate the effectiveness of their ALARACT determination to the department. The department may adjust this demonstration procedure on a case-by-case basis, as needed, to ensure compliance with the substantive standard."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 130, Appendix C, Paragraph 2

"Scope. The ALARACT demonstration includes the abatement technology and indication devices, from entry of radionuclides into the ventilated vapor space to release to the environment. The facility shall evaluate the existing control system in relation to applicable technology standards, and other control technologies that have been successfully operated for similar applications."

20.2.3 RCRA TSD Facility Permits

Subelement 20.2.3 addresses the RCRA TSD facility permit. Permit No. WA7890008967, effective September 28, 1994, was issued to the DOE-RL as owner/operator, and its contractors as co-operators for the treatment, storage and disposal of dangerous waste at the Hanford facility.

Subelement 20.2.3 also addresses TPA requirements for the management and closure of TSD units. In addition to permit and TPA requirements, this subelement addresses requirements from WAC 173-303 relative to new facilities and standards applicable to interim status facilities until certification of final closure.

Author's Note: For activities regulated under interim status, PFP may make changes in accordance with WAC 173-303-805(7). If the changes will result in an increase in design capacity, the addition of a new dangerous waste management process, or an enlargement of land surface area from that described in the Part A, then the requirements of WAC 173-303-281 must be met.

REQUIREMENT SOURCE: TPA Attachment 2, Section 5.3, Paragraph 2

"Unless closed in accordance with Sections 6.3.1 or 6.3.3, TSD units shall be permitted for either operation or postclosure care pursuant to the authorized State Dangerous Waste Program (173-303 WAC) and HSWA. Prior to permitting or closure of TSD units, DOE shall achieve (in accordance with the work schedule contained in Appendix D) and maintain compliance with applicable interim status requirements. All TSD units that undergo closure, irrespective of permit status, shall be closed pursuant to the authorized State Dangerous Waste Program in accordance with 173-303-610 WAC."

REQUIREMENT SOURCE: TPA Attachment 2, Section 6.3

"TREATMENT, STORAGE, AND DISPOSAL CLOSURE PROCESS
The DOE will follow applicable Federal and State statutes, regulations and guidance documents, and written policy determinations that pertain to the closure process for TSD groups/units.

The TSD units containing mixed waste will normally be closed with consideration of all hazardous substances, which includes radioactive constituents. Hazardous substances not addressed as part of the TSD closure may be addressed under CERCLA past-practice (CPP) authority in accordance with the process defined in Section 7.0.

The following are examples of when a unit may be closed without addressing all hazardous substances (e.g., radioactive waste).

- For treatment or storage units within a radioactive structure [e.g., the Plutonium/Uranium Extraction (PUREX) Plant] it may be possible to remove all hazardous wastes and "clean close" (see Section 6.3.1). The radioactive constituent would then remain for a future decontamination and decommissioning effort of the entire structure.

- For a land disposal unit being closed in conjunction with an operable unit, initial investigation may show that the unit no longer contains hazardous waste or constituents. Therefore, the unit may be "clean closed" with no physical closure action. Any remaining CERCLA-only materials would be addressed as part of the past-practice process as designated for that operable unit.

Figure 6-2 depicts a flowchart of the closure process for TSD units. Two types of closures are shown."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 800(5)

"The owner/operator of a TSD facility is responsible for obtaining all other applicable federal, state, and local permits authorizing the development and operation of the TSD facility."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 800(7)(a)

"A permit for an on-site cleanup action may be exempted as provided in a consent decree or order signed by the department and issued pursuant to chapter 70.105D RCW."

20.2.4 Underground Storage Tanks

Subelement 20.2.4 includes requirements from WAC 173-360 associated with permitting and registering underground storage tanks (USTs). Currently PFP has two underground diesel storage tanks, one of which will be removed and one replaced. Requirements concerning the delivery of regulated substances into USTs are managed at the site level and are not included in this S/RID.

REQUIREMENT SOURCE: WAC-173-360 Section 110(1)

"The requirements of this chapter apply to all owners and operators of an underground storage tank (UST) system as defined in WAC 173-360-120 except as otherwise provided in subsections (2) and (3) of this section. It is the responsibility of owners and operators to ensure that any UST system service providers and supervisors they employ are properly licensed in accordance with WAC 173-360-600 through 173-360-690."

REQUIREMENT SOURCE: WAC-173-360 Section 110(3)

"Deferrals. The following UST systems are subject only to the requirements of WAC 173-360-130, 173-360-140, 173-360-160, 173-360-170, 173-360-190, 173-360-200, 173-360-372 and 173-360-385. Any new deferred UST systems shall also be subject to the performance standards of WAC 173-360-300:

(a) Wastewater treatment tank systems not regulated under section 307(b) or 402 of the Clean Water Act;

(b) Any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.);

(c) Any UST system that is part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR Part 50 Appendix A;

(d) Airport hydrant fuel distribution systems;

(e) UST systems with field-constructed tanks."

REQUIREMENT SOURCE: WAC-173-360 Section 130(1)

"Requirement for a permit. After July 1, 1991, no underground storage tank system, as defined in this chapter, shall be operated without a valid permit from the department. However, possession of a valid permit does not preclude enforcement against the owner or operator of the underground storage tank under this or other laws."

REQUIREMENT SOURCE: WAC-173-360 Section 130(2)

"Application for a permit. Permits for UST systems shall be obtained as follows:

(a) To apply for a permit for an UST system which is to be newly installed, the owner or operator shall complete a notice of intent to install an UST system, as specified in WAC 173-360-200 (1), and submit it to the department at least thirty days prior to installation of the system. An initial permit, valid for ninety days, will be provided by the department so the UST system can be tested and operation of the system can begin. If necessary, and if circumstances warrant, an additional permit valid for ninety days will be provided by the department. Upon receipt of the following items, a permit valid until the following June 30, if the UST system remains in compliance, will be provided by the department for the newly installed UST system:

(i) A properly completed UST notification form, as specified in WAC 173-360-200 (2); and

(ii) A properly completed installation checklist, as specified in WAC 173-360-200 (3).

(b) To apply for a permit for an existing UST system not previously reported to the department, the owner or operator shall complete a Washington state underground storage tank notification form, as specified in WAC 173-360-200 (2), and submit it to the department with a payment of the applicable annual fee, as specified in WAC 173-360-190, including any fees which should have been paid for earlier fiscal years if the UST system had been properly registered, but which were not paid.

(c) To apply for a permit for a tank which has been temporarily out of service, the owner or operator shall notify the department of the change in status and follow the provisions of WAC 173-360-380.

(d) Each year the department will request owners and operators of reported UST systems to certify compliance with the requirements of this chapter. UST systems which are in the department's notification data base when the department requests this certification will receive permits by July 1 of each year if:

(i) Adequate documentation of compliance, as specified by the department, is submitted to the department; and

(ii) The documentation of compliance is submitted by the deadline for submittal established by the department in its request."

REQUIREMENT SOURCE: WAC-173-360 Section 130(3)

"Eligibility for a permit. Tanks which are temporarily closed under WAC 173-360-380 are not eligible to receive permits. Underground storage tank systems are eligible for a permit if the following conditions are met:

(a) The owner or operator is in compliance with all requirements of this chapter, including the financial responsibility requirements, and chapter 173-340 WAC, if applicable, or the owner or operator is in conformance with a compliance schedule negotiated with and agreed to by the department;

(b) The storage tank system is not known by the owner or operator to be leaking; and

(c) All annual state tank fees and local environmentally sensitive area tank fees have been remitted."

REQUIREMENT SOURCE: WAC-173-360 Section 130(7)

"Delivery of regulated substances. If a confirmed release occurs from a permitted tank, in addition to meeting the reporting requirements of WAC 173-360-372, within twenty-four hours of having knowledge of the release the owner or operator shall lock the fill pipe and remove from display the permit for the tank from which the release has occurred. At no time can the owner or operator receive regulated substances, except as specified in subsection (10) of this section, until all the applicable requirements of this chapter and chapter 173-340 WAC have been met. If the department determines that reasonable progress is not being made in meeting these requirements it may request that the owner or operator surrender the permit, as specified in subsection (8) of this section, for the tank from which the release occurred."

REQUIREMENT SOURCE: WAC-173-360 Section 130(8)

"Permit revocation. The department may request the surrender of a permit for any tank which does not remain in compliance with the requirements of this chapter, including financial responsibility requirements and payment of fees, or for any violation of the chapter by an underground storage tank owner or operator, including refusal of access to property under WAC 173-360-140. Upon request of a representative of the department or delegated agency or upon receipt of a letter from the department or delegated agency requesting surrender of the permit, the owner or operator must return the permit to the department or delegated agency within seven days."

REQUIREMENT SOURCE: WAC-173-360 Section 130(9)

"When a tank is closed, any active permit must be returned to ecology within thirty days of the completion of the closure procedures."

REQUIREMENT SOURCE: WAC-173-360 Section 130(10)

"Appeals. The revocation of a permit may be appealed to the pollution control hearings board, pursuant to chapter 43.21B RCW."

20.3 ENVIRONMENTAL MONITORING, SURVEILLANCE AND INSPECTIONS

Element 20.3 includes requirements for monitoring, inspection, and surveillance activities associated with emission sources, liquid discharges, and waste management. Subelement 20.3.1 addresses requirements for radioactive effluents; Subelement 20.3.2 addresses tank systems; Subelement 20.3.3 addresses monitoring, surveillance, and inspection plans and procedures; and Subelement 20.3.4 addresses quality assurance requirements.

PFP has both a major and several minor air emission stacks listed in the Hazardous Air Pollutants Registered Stack Assessment. Only the major stack requires continuous sampling. PFP also has underground fuel tanks (one tank will be closed and one will be replaced by a new tank). In addition to registered and permitted stacks and fuel tanks, PFP has a RCRA treatment unit operating under interim status.

Although PFP is currently operating a treatment unit under interim status, the unit is not included in the Hanford Facility RCRA Permit. Interim status monitoring requirements are included herein. However, neither final status monitoring requirements nor monitoring requirements from the Hanford Facility RCRA Permit are included in Element 20.3. If the decision is made to incorporate the PFP treatment unit into the Hanford Facility RCRA Permit, the appropriate permit references will be added to this element.

Ambient water quality monitoring is not conducted under the management authority of PFP. Requirements associated with groundwater monitoring and site assessments are applicable to PFP but are implemented at the site level and are not included in this S/RID.

REQUIREMENT SOURCE: WAC-173-303(940523) Section 320(1)

"The owner or operator shall inspect his facility to prevent malfunctions and deterioration, operator errors, and discharges which may cause or lead to the release of dangerous waste constituents to the environment, or a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 320(2)

"The owner or operator shall develop and follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that help prevent, detect, or respond to hazards to the public health or the environment. In addition:

(a) He must keep the schedule at the facility;

(b) The schedule must identify the types of problems which are to be looked for during inspections;

(c) The schedule shall indicate the frequency of inspection for specific items. The frequency should be based on the rate of possible deterioration of equipment, and the probability of an environmental or human health incident. Areas subject to spills must be inspected daily when in use. At a minimum the inspection schedule shall also include the applicable items and frequencies required for the specific waste management methods described in 40 CFR Part 265 Subparts F through R for interim status facilities and in WAC 173-303-630 through 173-303-680 for final status facilities; and

(d) The owner or operator shall keep an inspection log or summary, including at least the date and time of the inspection, the printed name and the handwritten signature of the inspector, a notation of the observations made, an account of spills or discharges in accordance with WAC 173-303-145, and the date and nature of any repairs or remedial actions taken. The log or summary must be kept at the facility for at least five years from the date of inspection."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 320(3)

"The owner or operator shall remedy any problems revealed by the inspection, on a schedule which prevents hazards to the public health and environment. Where a hazard is imminent or has already occurred, remedial action must be taken immediately."

20.3.1 Radiological Effluents

Subelement 20.3.1 includes the requirements for the monitoring, surveillance, and inspection activities related to the discharge of radiological effluents and radiological air emissions.

REQUIREMENT SOURCE: DOE5400.1 Chapter IV, Section 7.a

"Radiological Monitoring - Requirements for the environmental monitoring of radioactive materials are to be found in DOE Orders in the 5400 series dealing with radiation protection of the public and the environment. Airborne radiation and radioactive materials discharged from

DOE facilities shall comply with the requirements of 40 CFR Part 61, "National Emission Standards for Hazardous Air Pollutants." Further, for those radioactive materials not regulated under the Clean Air Act, DOE has established standards to meet its responsibilities under the Atomic Energy Act."

REQUIREMENT SOURCE: DOE5400.1 Chapter IV, Section 7.b

"An assessment of the potential radiation dose to members of the public which could have resulted from site operations shall be made for facilities required to conduct effluent and environmental radiological monitoring. Assessments shall be made in accordance with the requirements of DOE Orders in the 5400 series dealing with radiation protection of the public and the environment."

REQUIREMENT SOURCE: DOE5400.5 Chapter II, Section 1.d

"Drinking Water Pathway Only. All DOE Sources of Radionuclides. It is the policy of DOE to provide a level of protection for persons consuming water from a public drinking water supply operated by the DOE, either directly or through a DOE contractor, that is equivalent to that provided to the public by the public community drinking water standards of 40 CFR part 141. These systems shall not cause persons consuming the water to receive an effective dose equivalent greater than 4 rem (0.04 mSv) in a year. Combined radium-226 and radium-228 shall not exceed 5E-9 micro Ci/mL and gross alpha activity (including radium-226 but excluding radon and uranium) shall not exceed 1.5E-8 micro Ci/mL.

(1) DOE Drinking Water Systems. The dose limit is consistent with the drinking water criteria in 40 CFR Part 141, "National Interim Primary Drinking Water Regulations (Safe Drinking Water Act)."

(2) Dose Components. The dose limit is the effective dose equivalent to individuals whose exclusive source of drinking water contain a radionuclide, or a mixture of radionuclide, at a monthly average level of four percent of the appropriate DCG value. For simplicity, it is assumed that site workers are also exposed to four percent of DCG values or the radium and gross alpha levels in II.1d for drinking water while away from the DOE site.

(3) Impact on Other Systems. The liquid effluents from DOE activities shall not cause private or public drinking water systems downstream of the facility discharge to exceed the drinking water radiological limits in 40 CFR Part 141."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 075(1)

"All radioactive air emissions monitoring, testing, and quality assurance requirements of 40 CFR 61, Subparts H and I published in the Federal Register on December 15, 1989, are adopted by reference, as applicable as specified by the referenced subparts."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 075(2)

"Equipment and procedures used for the continuous monitoring of radioactive air emissions shall conform, as applicable, to the guidance contained in ANSI N131, ANSI N42.18, ANSI N317, reference methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17 of 40 CFR Part 60, Appendix A, 40 CFR Part 52, Appendix E, and any other methods approved by the department."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 075(3)

"The operator of an emission unit with a potential-to-emit of less than 0.1 mrem/yr TEDE to the MEI may estimate those radionuclide emissions, in lieu of monitoring, in accordance with 40 CFR 61 Appendix D, or other procedure approved by the department. The department may require periodic confirmatory measurements (e.g., grab samples) during routine operations to verify the low emissions. Methods to implement periodic confirmatory monitoring shall be approved by the department."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 075(8)

"Facilities shall monitor nonpoint and fugitive emissions of radioactive material."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 075(13)

"All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(7)

"The facility shall maintain a log for each emission unit that has received categorical approval under WAC 246-247-060(8). The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid) and the type of emission control and monitoring equipment."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(9)

"The facility shall ensure all emission units are fully accessible to department inspectors. In the event the hazard associated with accessibility to a unit require training and/or restrictions or requirements for entry, the facility owner and operator shall inform the department, prior to arrival, to those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training escorts, and support services to allow the department to inspect the facility."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 085(1)

"All procedures for determining compliance with the dose equivalent standards of 40 CFR 61, Subparts H and I published in the Federal Register on December 15, 1989, are adopted by reference, as applicable as specified by the referenced subparts."

20.3.2 Tank Systems

Subelement 20.3.2 includes the requirements for the monitoring, inspection, and surveillance of tank systems.

20.3.2.1 Dangerous/Mixed Waste Tank Systems

Author's Note: For some systems, compliance with specific requirements of the regulations identified in this section is precluded by requirements under the AEA and by ALARA concerns. In such situations, waivers and/or alternate management methods are negotiated with regulatory agencies in accordance with their policies.

REQUIREMENT SOURCE: 40CFR265 Part 193(i)(2)

"For other than non-enterable underground tanks and for all ancillary equipment, an annual leak test, as described in paragraph (i)(1) of this section, or an internal inspection or other tank integrity examination by an independent, qualified, registered professional engineer that addresses cracks, leaks, corrosion, and erosion must be conducted at least annually. The owner or operator must remove the stored waste from the tank, if necessary, to allow the condition of all internal tank surfaces to be assessed.

Note: The practices described in the American Petroleum Institute (API) Publication Guide for Inspection of Refining Equipment, Chapter XIII, "Atmospheric and Low Pressure Storage Tanks," 4th edition, 1981, may be used, when applicable, as guidelines for assessing the overall condition of the tank system."

REQUIREMENT SOURCE: 40CFR265 Part 193(i)(3)

"The owner or operator must maintain on file at the facility a record of the results of the assessments conducted in accordance with paragraphs (i)(1) through (i)(3) of this section."

REQUIREMENT SOURCE: 40CFR265 Part 193(i)(4)

"If a tank system or component is found to be leaking or unfit-for-use as a result of the leak test or assessment in paragraphs (i)(1) through (i)(3) of this section, the owner or operator must comply with the requirements of 40 CFR 265.196."

REQUIREMENT SOURCE: 40CFR265 Part 195(a)

"The owner or operator must inspect, where present, at least once each operating day:

(1) Overfill/spill control equipment (e.g., waste-feed cutoff systems, bypass systems, and drainage systems) to ensure that it is in good working order;

(2) The aboveground portions of the tank system, if any, to detect corrosion or releases of waste;

(3) Data gathered from monitoring equipment and leak-detection equipment, (e.g., pressure and temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design; and

(4) The construction materials and the area immediately surrounding the externally accessible portion of the tank system including secondary containment structures (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation);

Note: Section 265.15(c) requires the owner or operator to remedy any deterioration or malfunction he finds. Section 265.196 requires the owner or operator to notify the Regional Administrator within 24 hours of confirming a release. Also, part 302 may require the owner or operator to notify the National Response Center of a release."

REQUIREMENT SOURCE: 40CFR265 Part 195(b)

"The owner or operator must inspect cathodic protection systems, if present, according to, at a minimum, the following schedule to ensure that they are functioning properly:

(1) The proper operation of the cathodic protection system must be confirmed within six months after initial installation, and annually thereafter; and

(2) All sources of impressed current must be inspected and/or tested, as appropriate, at least bimonthly (i.e., every other month).

Note: The practices described in the National Association of Corrosion Engineers (NACE) standard, "Recommended Practice (RP-02-85)-Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems."

REQUIREMENT SOURCE: 40CFR265 Part 195(c)

"The owner or operator must document in the operating record of the facility an inspection of those items in paragraphs (a) and (b) of this section."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 640(5)(d)

"All tank systems holding dangerous waste shall be marked with labels or signs to identify the waste contained in the tank. The label or sign shall be legible at a distance of at least fifty feet, and shall bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s).

(Note--If there already is a system in use that performs this function in accordance with local, state or federal regulations, then such system will be adequate.)"

20.3.2.2 UST Systems

REQUIREMENT SOURCE: WAC-173-360 Section 323

"Compatibility.
Owners and operators shall use an UST system made of or lined with materials that are compatible with and impermeable to the substance stored in the UST system.

Note: Owners and operators storing alcohol blends may use the following codes to comply with the requirements of this section:

(1) American Petroleum Institute Publication 1626, "Storing and Handling Ethanol and Gasoline-Ethanol Blends at Distribution Terminals and Service Stations"; and

(2) American Petroleum Institute Publication 1627, "Storage and Handling of Gasoline-Methanol/Cosolvent Blends at Distribution Terminals and Service Stations.""

REQUIREMENT SOURCE: WAC-173-360 Section 325(1)

"Repairs to UST systems shall be properly conducted by a licensed tank services provider in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory.

Note: The following codes and standards may be used to comply with subsection (1) of this section: National Fire Protection Association Standard 30, "Flammable and Combustible

Liquids Code"; American Petroleum Institute Publication 2200, "Repairing Crude Oil, Liquified Petroleum Gas, and Product Pipelines"; American Petroleum Institute Publication 1631, "Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks"; and National Leak Prevention Association Standard 631, "Spill Prevention, Minimum 10 Year Life Extension of Existing Steel Underground Tanks by Lining Without the Addition of Cathodic Protection.""

REQUIREMENT SOURCE: WAC-173-360 Section 325(3)

"Metal pipe sections and fittings that have released regulated substances as a result of corrosion or other damage shall be replaced. Fiberglass pipes and fittings may be repaired in accordance with the manufacturer's specifications."

REQUIREMENT SOURCE: WAC-173-360 Section 325(4)

"Repaired tanks and piping shall be tightness tested in accordance with WAC 173-360-345 (6)(d) and 173-360-350 (3)(b) within thirty days following the date of the completion of the repair except as provided in subsection (4) (a) through (c), of this section:

(a) The repaired tank is internally inspected in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory; or

(b) The repaired portion of the UST system is monitored monthly for releases in accordance with a method specified in WAC 173-360-345 (6)(e) through (6)(i); or

(c) Another test method is used that is determined by the department or delegated agency to be no less protective of human health and the environment than those listed above."

REQUIREMENT SOURCE: WAC-173-360 Section 325(5)

"Except as specified in subsection (6) of this section, within six months following the repair of any cathodically protected UST system, the cathodic protection system shall be tested in accordance with WAC 173-360-320 (2) and (3) to ensure that it is operating properly."

REQUIREMENT SOURCE: WAC-173-360 Section 325(6)

"Any repair to a cathodic protection system shall be tested in accordance with WAC 173-360-320 (2) and (3), at the time of the repair and again between one and six months following the repair."

REQUIREMENT SOURCE: WAC-173-360 Section 325(7)

"UST system owners and operators shall maintain records of each repair for the remaining operating life of the UST site that demonstrate compliance with the requirements of this section."

REQUIREMENT SOURCE: WAC-173-360 Section 335

"Release Detection For Petroleum UST Systems

(1) Owners and operators of new and existing petroleum UST systems shall provide a method, combination of methods, of release detection that:

(a) Can detect a release from any portion of the tank and the connected underground piping that routinely contains a regulated substance;

(b) Is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions, including routine maintenance and service checks for operability or running condition; and

(c) Meets the performance requirements in WAC 173-360-345 or 173-360-350.

(2) Owners and operators of petroleum UST systems shall monitor tanks and piping for releases as follows:

(a) Tanks. Tanks shall be monitored at least every thirty days for releases using one of the methods listed in WAC 173-360- 345(6)(e) through (6)(i) except as provided in WAC 173-360-345(2) through (5).

(b) Piping. Underground piping that routinely contains regulated substances shall be monitored for releases as required under WAC 173-360-350.

(3) Owners and operators of any existing UST system that cannot apply a method of release detection that complies with the applicable requirements of WAC 173-360-330 through 173-360-355 shall complete the closure procedures in WAC 173-360-380 through 173-360-398 by the date on which release detection is required for that UST system under WAC 173-360-330.

REQUIREMENT SOURCE: WAC-173-360 Section 370(1)

"System test. Owners and operators shall have a licensed tank services provider conduct tests (according to the requirements for tightness testing in WAC 173-360-345 (6)(d) and 173-360-350 (3)(b)) that determine whether a leak exists in any portions of the UST system that routinely contains a regulated substance, including the tank and the attached delivery piping, and in any connected tanks and piping that may or may not be in use. All such portions shall be tested either separately or together or in combinations thereof.

(a) Owners and operators shall have a licensed tank services provider repair, replace, upgrade, or close the UST system, and shall begin corrective action in accordance with WAC 173-360-399 if the test results for the system, tank, or delivery piping indicate that a leak exists.

(b) Further investigation is not required if the test results for the system, tank, and delivery piping do not indicate that a leak exists and if environmental contamination is not the basis for suspecting a release.

(c) Owners and operators shall conduct a site check in accordance with subsection (2) of this section if the test results for the system, tank, and delivery piping do not indicate that a leak exists but environmental contamination is the basis for suspecting a release."

REQUIREMENT SOURCE: WAC-173-360 Section 370(2)

"Site check. Owners and operators shall have a person registered by the department to perform site assessments, as specified in WAC 173-360-610, sample for the presence of a release. Such samples shall be taken, analyzed, and results reported to the department or delegated agency in accordance with the department's guidance document for site checks and site assessments, or as otherwise directed by the department or delegated agency, where contamination is most likely to be present at the UST site.

(a) If the site check results indicate that a release has occurred, owners and operators shall report to the department or delegated agency in accordance with WAC 173-360-372 and begin corrective action in accordance with WAC 173-360-399.

(b) If the site check results do not indicate that a release has occurred, further investigation is not required."

REQUIREMENT SOURCE: WAC-173-360 Section 370(3)

"Tank services providers who perform any of the tank services described in this section, and persons who perform site checks, shall certify that such services or site checks, as applicable, comply with the requirements of this section by submitting the appropriate checklist(s) to the department in accordance with WAC 173-360-630 (12)."

REQUIREMENT SOURCE: WAC-173-360 Section 380(1)

"When an UST system is temporarily closed, owners and operators shall continue operation and maintenance of corrosion protection in accordance with WAC 173-360-320, and any release detection in accordance with WAC 173-360-330 through 173-360-355. WAC 173-360-360 through 173-360-375 and 173-360-399 shall be complied with if a release is suspected or confirmed. However, release detection is not required as long as the UST system is empty. The UST system is empty when all materials have been removed using commonly employed practices so that no more than 2.5 centimeters (one inch) of residue, or 0.3 percent by weight of the total capacity of the UST system, remain in the system."

REQUIREMENT SOURCE: WAC-173-360 Section 380(2)

"When an UST system is temporarily closed for three months or more, owners and operators shall also comply with the following requirements:

(a) Leave vent lines open and functioning; and

(b) Cap and secure all other lines, pumps, entryways, and ancillary equipment."

REQUIREMENT SOURCE: WAC-173-360 Section 380(3)

"Any UST system temporarily closed for three months or more shall be tightness tested by a licensed tank services provider in accordance with WAC 173-360-345 (6)(d) and 173-360-350 (3)(b) prior to being put back into service unless the system is subject to and in compliance with the release detection requirements of WAC 173-360-330."

REQUIREMENT SOURCE: WAC-173-360 Section 380(4)

"When an UST system is temporarily closed for more than twelve months, owners and operators shall have a licensed tank services provider permanently close the UST system if it does not either meet the performance standards in WAC 173-360-305 for new UST systems or the upgrading requirements in WAC 173-360-310 (2) and (3). Such UST systems shall be permanently closed in accordance with WAC 173-360-385 through 173-360-398 at the end of the twelve-month period unless the department or delegated agency provides an extension before expiration of the twelve-month temporary closure period. Owners and operators shall have a site assessment completed in accordance with WAC 173-360-390 before such an extension is applied for."

REQUIREMENT SOURCE: WAC-173-360 Section 380(5)

"Tank services providers who perform any of the tank services described in this section, and persons who perform site assessments, shall certify that such services and site assessments, as applicable, comply with the requirements of this chapter by submitting the appropriate checklist(s) to the department in accordance with WAC 173-360-630 (12)."

REQUIREMENT SOURCE: WAC-173-360 Section 385(2)

"Permanent closure shall be completed by a licensed tank services provider within sixty days after expiration of the thirty-day notice, unless a written request for an extension, explaining the reason for the request, is approved by the department or delegated agency. Any UST system not permanently closed by a compliance date that the UST system is subject to, shall be in compliance with the requirement associated with the compliance date, including the payment of fees. Any UST system not in compliance with any such requirement will be subject to the penalties described in WAC 173-360-170."

REQUIREMENT SOURCE: WAC-173-360 Section 385(3)

"To permanently close an UST system, the tank services provider shall empty and clean the tank by removing all liquids and accumulated sludges.

Note: Any sludges removed must also be designated and disposed of in accordance with chapter 173-303 WAC."

REQUIREMENT SOURCE: WAC-173-360 Section 385(4)

"All tanks taken out of service permanently shall also be either removed from the ground or filled with an inert solid material. All piping shall either be capped (except any vent lines) or removed from the ground."

REQUIREMENT SOURCE: WAC-173-360 Section 385(6)

"Owners and operators are responsible for submitting checklists for any of the tank services described in this section. Any active tank permits for the systems being closed shall be returned to the department within thirty days of closure activities."

REQUIREMENT SOURCE: WAC-173-360 Section 390(1)

"Before permanent closure or a change-in-service is completed, except as specified in subsections (2), (3), and (4) of this section, owners and operators shall have a person registered by the department to perform site assessments, as specified in WAC 173-360-610, sample for the presence of a release. Such samples shall be taken, analyzed, and the results reported to the department or delegated agency in accordance with the department's guidance document for site assessments, or as otherwise directed by the department or delegated agency, where contamination is most likely to be present at the UST site."

REQUIREMENT SOURCE: WAC-173-360 Section 390(4)

"If contaminated soils, contaminated ground water, or free product is discovered under subsection (1) of this section, or by any other manner, owners and operators shall report to the department or delegated agency in accordance with WAC 173-360-372 and take appropriate action in accordance with WAC 173-360-399."

REQUIREMENT SOURCE: WAC-173-360 Section 390(5)

"Persons who perform site assessments shall certify that such site assessments comply with the requirements of this section by submitting the appropriate checklist to the department in accordance with WAC 173-360-630 (12)."

REQUIREMENT SOURCE: WAC-173-360 Section 399

"Corrective action requirements.
Except as provided in WAC 173-360-375, upon confirmation of a release in accordance with WAC 173-360-370 or 173-360-390, or after a release from the UST system is identified in any other manner, owners and operators shall immediately undertake appropriate measures in accordance with chapter 173-340 WAC and/or this chapter, and any additional measures as directed by the department under chapter 90.48 RCW. Owners and operators shall also report such releases to the department or delegated agency within twenty-four hours in accordance with WAC 173-360-372."

REQUIREMENT SOURCE: WAC-173-360(950131) Section 345(6)(i)

"Statistical inventory reconciliation. Statistical inventory reconciliation (SIR) shall meet the following requirements:

(i) Statistical inventory reconciliation must detect at least a 0.2 gallon per hour leak rate from any portion of the tank that routinely contains a regulated substance with a probability of detection of at least 0.95 and a probability of false alarm of no more than 0.05; and

(ii) Daily inventory control must be performed in accordance with the requirements of (a) of this subsection; and

(iii) Owners and operators must submit daily inventory records from at least the previous thirty days on a monthly basis to a SIR vendor whose statistical analysis method has been demonstrated to meet the performance standard of (i) of this subsection; and

(iv) The SIR vendor must perform an independent SIR analysis on the daily inventory records submitted and report the results to the owner or operator within fifteen days of receiving them; and

(v) If the results of a SIR analysis show a 0.2 gallon per hour or greater leak rate in any single month, from any portion of the tank that routinely contains a regulated substance with a probability of detection of at least 0.95 and a probability of false alarm of no more than 0.05, it shall be determined to be a "fail." If an owner or operator receives a "fail" for two consecutive months, the owner or operator shall have a tank tightness test conducted in accordance with (d) of this subsection within fifteen days of receiving the second "fail" from the SIR vendor."

20.3.3 Monitoring, Surveillance and Inspection Plans and Procedures

This subelement includes the requirements which define the methodologies and protocols for environmental monitoring, surveillance, and inspection plans and procedures. Implementation of these methodologies and protocols will prevent and/or detect releases of harmful materials into the environment.

REQUIREMENT SOURCE: DOE5400.1 Chapter IV, Section 4

"Environmental Monitoring Plans. A written environmental monitoring plan shall be prepared for each site, facility, or process that uses, generates, releases, or manages significant pollutants or hazardous materials. The plan shall contain the rationale and design criteria for the monitoring program, extent and frequency of monitoring and measurements, procedures for laboratory analyses, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of reports. The plan shall be approved by the appropriate Head of Field Organization, or his or her designee. The plan shall be reviewed annually and updated as needed. The plan shall identify and discuss two major activities: (a) effluent monitoring, and (b) environmental surveillance. The plan shall reflect the importance of monitoring as a critical element of an effective environmental protection program. The plan shall be reviewed annually and updated every 3 years."

20.3.4 Quality Assurance

Subelement 20.3.4 addresses quality assurance requirements for surveillance, monitoring, and testing activities. Quality Assurance Project Plans are to be developed for sample collection, preservation, transportation, analyses, and data validation activities to ensure information, data, and resulting decisions are technically sound, statistically valid, and properly documented.

Procedures for quality assurance and quality control are to be developed to ensure activities are performed in accordance with methods approved by the Washington Department of Ecology and the U.S. Environmental Protection Agency.

REQUIREMENT SOURCE: TPA Attachment 2, Section 6.5, Paragraph 1

"Quality Assurance
The level of quality assurance and quality control (QA/QC) for the collection, preservation, transportation, and analysis of each sample which is required for implementation of this Agreement shall be dependent upon the data quality objectives for the sample. Such data quality objectives shall be specified in RCRA closure plans, the RCRA permit, and any other relevant plans that may be used to describe sampling and analyses at RCRA TSD units."

REQUIREMENT SOURCE: TPA Attachment 2, Section 6.5, Paragraph 2

"The QA/QC requirements shall range from those necessary for non-laboratory field screening activities to those necessary to support a comprehensive laboratory analysis that will be used in final decision-making. This range of QA/QC options is included in the "Data Quality Strategy for Hanford Site Characterization" (as listed in Appendix F). This document is subject to approval by EPA and Ecology."

REQUIREMENT SOURCE: TPA Attachment 2, Section 6.5, Paragraph 3

"Based upon the data quality objectives, the DOE shall comply with EPA guidance documents for QA/QC and sampling and analysis activities which are taken to implement the Agreement. Such guidance includes:

- "Guidelines and Specifications for Preparing Quality Assurance Program Plans" (QAMS-004/80);

- "Interim Guidance and Specifications for Preparing Quality Assurance Project Plans" (QAMS-005/80);

- "Data Quality Objectives for Remedial Response Activities" (EPA/540/G-87/003 and 004); and

- "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA/SW-846)."

REQUIREMENT SOURCE: TPA Attachment 2, Section 6.5, Paragraph 4

"In some instances, RCRA TSD units are included in operable units and are scheduled for investigation and closure as part of the operable unit remedial action. DOE shall follow the provisions of Section 7.8 for QA/QC for sampling and analysis activities at these land disposal units."

REQUIREMENT SOURCE: TPA Part Five, Article XXXI, Section 105

"Throughout all sample collection, preservation, transportation, and analyses activities required to implement this Agreement, DOE shall use procedures for quality assurance, and for quality control, in accordance with approved EPA methods, including subsequent amendments to such procedures. The DOE shall comply with the "Data Quality Strategy for Hanford Site Characterization" (as listed in Appendix F of the Action Plan) and Sections 6.5 and 7.8 of the Action Plan. For special circumstances, other procedures approved by the lead regulatory agency may be used. The DOE shall use methods and analytical protocols for the parameters of concern in the media of interest within detection and quantification limits in accordance with both QA/QC procedures and data quality objectives approved in the work plan, RCRA closure plan or RCRA permit. The EPA or Ecology may require that DOE submit detailed information to demonstrate that any of its laboratories are qualified to conduct the work. The DOE shall assure that EPA and Ecology (including contractor personnel) have access to laboratory personnel, equipment and records related to sample collection, transportation, and analysis."

20.4 ENVIRONMENTAL CONTROL STANDARDS

Environmental control standards are media- and application-specific limits established for air emission sources, and waste management activities. Element 20.4 addresses air quality controls (subelement 20.4.1), and radiological effluent controls (subelement 20.4.2) applicable to PFP.

20.4.1 Air Quality

Author's Note: Subelement 20.4.1 includes controls to ensure air quality. Upon completion of the permitting process, the PFP S/RID will adopt permit-specific conditions by reference. Any PFP air permits received will be referenced as stand-alone documents.

The 40 CFR 82 requirements for handling ozone depleting substances (ODS) within the PFP systems are not listed here but are adopted by reference.

Site activities involving ODS are managed by ICF Kaiser in accordance with the applicable federal requirements and DOE/RL-94-86 management plan.

REQUIREMENT SOURCE: DOE5400.1 Chapter IV, Section 8.a(1)

"Air emission monitoring shall be in accordance with the requirements of applicable Federal, State, and local regulations authorized by the Clean Air Act (42 U.S.C. 7401, et. seq.). Section 118 of the Act specifically addresses the control of airborne pollution from federal

facilities. Design of air quality monitoring programs should be undertaken with a thorough understanding of the complex framework of air quality management."

REQUIREMENT SOURCE: WAC-173-400 Section 040

"General standards for maximum emissions.

All sources and emissions units are required to meet the emission standards of this chapter. Where an emission standard listed in another chapter is applicable to a specific emissions unit, such standard will take precedent over a general emission standard listed in this chapter. When two or more emissions units are connected to a common stack and the operator elects not to provide the means or facilities to sample emissions from the individual emissions units, and the relative contributions of the individual emissions units to the common discharge are not readily distinguishable, then the emissions of the common stack must meet the most restrictive standard of any of the connected emissions units. Further, all emissions units are required to use reasonably available control technology (RACT) which may be determined for some sources or source categories to be more stringent than the applicable emission limitations of any chapter of Title 173 WAC. Where current controls are determined to be less than RACT, ecology or the authority shall, as provided in section 8, chapter 252, Laws of 1993, define RACT for each source or source category and issue a rule or regulatory order requiring the installation of RACT."

REQUIREMENT SOURCE: WAC-173-400 Section 040(1)

"Visible emissions. No person shall cause or permit the emission for more than three minutes, in any one hour, of an air contaminant from any emissions unit which at the emission point, or within a reasonable distance of the emission point, exceeds twenty percent opacity except:

(a) When the emissions occur due to soot blowing/grate cleaning and the operator can demonstrate that the emissions will not exceed twenty percent opacity for more than fifteen minutes in any eight consecutive hours. The intent of this provision is to permit the soot blowing and grate cleaning necessary to the operation of boiler facilities. This practice, except for testing and trouble shooting, is to be scheduled for the same approximate times each day and ecology or the authority be advised of the schedule.

(b) When the owner or operator of a source supplies valid data to show that the presence of uncombined water is the only reason for the opacity to exceed twenty percent.

(c) When two or more sources are connected to a common stack, ecology or the authority may allow or require the use of an alternate time period if it is more representative of normal operations.

(d) When an alternate opacity limit has been established per RCW 70.94.331 (2)(c)."

REQUIREMENT SOURCE: WAC-173-400 Section 040(2)

"Fallout. No person shall cause or permit the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited."

REQUIREMENT SOURCE: WAC-173-400 Section 040(3)

"Fugitive emissions. The owner or operator of any emissions unit engaging in materials handling, construction, demolition or any other operation which is a source of fugitive emission:

(a) If located in an attainment area and not impacting any nonattainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation.

(b) If the emissions unit has been identified as a significant contributor to the nonattainment status of a designated nonattainment area, shall be required to use reasonable and available control methods, which shall include any necessary changes in technology, process, or other control strategies to control emissions of the contaminants for which nonattainment has been designated."

REQUIREMENT SOURCE: WAC-173-400 Section 040(4)

"Odors. Any person who shall cause or allow the generation of any odor from any source which may unreasonably interfere with any other property owner's use and enjoyment of his property must use recognized good practice and procedures to reduce these odors to a reasonable minimum."

REQUIREMENT SOURCE: WAC-173-400 Section 040(5)

"Emissions detrimental to persons or property. No person shall cause or permit the emission of any air contaminant from any source if it is detrimental to the health, safety, or welfare of any person, or causes damage to property or business."

REQUIREMENT SOURCE: WAC-173-400 Section 040(7)

"Concealment and masking. No person shall cause or permit the installation or use of any means which conceals or masks an emission of an air contaminant which would otherwise violate any provisions of this chapter."

REQUIREMENT SOURCE: WAC-173-400 Section 040(8)

"Fugitive dust sources.

(a) The owner or operator of a source of fugitive dust shall take reasonable precautions to prevent fugitive dust from becoming airborne and shall maintain and operate the source to minimize emissions.

(b) The owner(s) or operator(s) of any existing source(s) of fugitive dust that has been identified as a significant contributor to a PM-10 nonattainment area shall be required to use reasonably available control technology to control emissions. Significance will be determined by the criteria found in WAC 173-400-113(3)."

20.4.2 Radiological Effluents

Subelement 20.4.2 primarily addresses limits for effluent monitoring and residual contamination to assure that external exposures are within established limits. Although DOE Order 5820.2A is current, the exposure limits within the Order have become outdated. DOE Order 5820.2A Chapter III Section 3.a(2) is not applicable to new sources.

Author's Note: The requirements of DOE Order 5400.1 are cited in lieu of DOE Order 5400.5 and are located in Subelement 20.3.1, "Radiological Effluents". They will not be repeated here.

REQUIREMENT SOURCE: 40CFR61 Part 92

"Standard. Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr."

REQUIREMENT SOURCE: 40CFR61 Part 93(b)(1) and (2)

"Radionuclide emission rates from point sources (stacks or vents) shall be measured in accordance with the following requirements or other procedures for which EPA has granted prior approval:

(1) Effluent flow rate measurements shall be made using the following methods:

(i) Reference Method 2 of Appendix A to part 60 shall be used to determine velocity and volumetric flow rates for stacks and large vents.

(ii) Reference Method 2A of Appendix A to part 60 shall be used to measure flow rates through pipes and small vents.

(iii) The frequency of the flow rate measurements shall depend upon the variability of the effluent flow rate. For variable flow rates, continuous or frequent flow rate measurements shall be made. For relatively constant flow rates only periodic measurements are necessary.

(2) Radionuclides shall be directly monitored or extracted, collected and measured using the following methods:

(i) Reference Method 1 of Appendix A part 60 shall be used to select monitoring or sampling sites.

(ii) The effluent stream shall be directly monitored continuously with an in-line detector or representative samples of the effluent stream shall be withdrawn continuously from the sampling site following the guidance presented in ANSI N13.1-1969 "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities" (including the guidance presented in Appendix A of ANSI N13.1) (incorporated by reference-see 61.18). The requirements for continuous sampling are applicable to batch processes when the unit is operation. Periodic sampling (grab samples) may be used only with EPA's prior approval. Such approval may be granted in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. In such cases, grab samples shall be collected with sufficient frequency so as to provide a representative sample of the emissions.

(iii) Radionuclides shall be collected and measured using procedures based on the principles of measurement described on Appendix B, Method 114. Use of methods based on principles of measurement different from those described in Appendix B, Method 114 must have prior approval from the Administrator. EPA reserves the right to approve measurement procedures.

(iv) A quality assurance program shall be conducted that meets the performance requirements described in Appendix B, Method 114."

REQUIREMENT SOURCE: 40CFR61 Part 93(b)(3)

"When it is impractical to measure the effluent flow rate at an existing source in accordance with the requirements of paragraph (b)(1) of this section or to monitor or sample an effluent stream at an existing source in accordance with the site selection and sample extraction requirements of paragraph (b)(2) of this section, the facility owner or operator may use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures provided that:

(i) It can be shown that the requirements of paragraph (b) (1) or (2) of this section are impractical for the effluent stream.

(ii) The alternative procedure will not significantly underestimate the emissions.

(iii) The alternative procedure is fully documented.

(iv) The owner or operator has received prior approval from EPA."

REQUIREMENT SOURCE: 40CFR61 Part 93(b)(4)

"(i) Radionuclide emission measurements in conformance with the requirements of paragraph (b) of this section shall be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause an effective dose equivalent in excess of 1% of the standard. All radionuclides which could contribute greater than 10% of the potential effective dose equivalent for a release point shall be measured. With prior EPA approval, DOE may determine these emissions through alternative procedures. For other release points which have a potential to release radionuclides into the air, periodic confirmatory measurements shall be made to verify the low emissions.

(ii) To determine whether a release point is subject to the emission measurement requirements of paragraph (b) of this section, it is necessary to evaluate the potential for radionuclide emissions for that release point. In evaluating the potential of a release point to discharge radionuclides into the air for the purpose of this section, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facility operations were otherwise normal."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 040(1)

"Standards for radioactive air emissions in the state of Washington are contained in WAC 173-480-040, 173-480-050, and 173-480-060 and 40 CFR Part 61, subparts H and I published in the Federal Register on December 15, 1989. In accordance with WAC 173-480-050(3), the department shall enforce the most stringent standard in effect, notwithstanding any agreement between EPA and any other agency, including those agreements made pursuant to 42 USC 7412(d)(9)."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 040(4)

"All existing emission units and nonsignificant modifications shall utilize ALARACT (see Appendix C)."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 040(5)

"In order to implement these standards, the department may set limits on emission rates for specific radionuclides from specific emission units and/or set requirements and limitations on the operation of the emission units(s) as specified in a license."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 040(6)

"All emissions of radionuclides, including those due to emergency conditions resulting from startup, shutdown, maintenance activities, or process upsets are subject to the standards of this section and, therefore, subject to the enforcement actions of WAC 246-247-100."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 060(5)

"The license shall specify the requirements and limitations of operation to assure compliance with this chapter. The facility shall comply with the requirements and limitations of the license."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 085(2)

"Facilities subject to 40 CFR 61 shall use computer codes or procedures approved by the EPA to determine the TEDE to the MEI; all other facilities shall use computer codes or procedures approved by the department."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 085(3)

"The determination of compliance with the dose equivalent standard of WAC 246-247-040 shall include all radioactive air emissions resulting from routine and nonroutine operations for the past calendar year."

20.5 POLLUTION PREVENTION

REQUIREMENT SOURCE: WAC-173-307 Section 030 WAC Plans, Paragraph 1

"Plan requirements.
This section establishes the specific elements required to be included in a plan. The purpose of a plan is to require serious consideration of ways in which processes and procedures may be modified to reduce dependence upon hazardous substances and/or the generation of hazardous wastes. All plans must consider opportunities based on the following priorities: Hazardous substance use reduction and hazardous waste reduction, recycling, and treatment. The plans shall consist of the following parts:"

20.6 RECORDKEEPING, REPORTS AND NOTIFICATIONS

Element 20.6 includes requirements for recordkeeping, reporting, and notifications related to environmental protection. The creation, contents, maintenance, and disposition of records are addressed.

Reporting requirements are often shared by the Environmental Protection and Emergency Management Functional Areas. The requirements have been allocated to each of the Functional Areas according to the significance of the event. The intent is to capture relevant requirements and eliminate duplicating requirements between the Functional Areas.

Although facility-specific information is required to support reporting activities, incident reporting is coordinated site-wide. Therefore, requirements for activities necessitating facility-specific involvement to support site reporting activities are included herein even though certain elements of the requirement apply to the site and not the facility.

20.6.1 Incident Investigation and Reporting

Subelement 20.6.1 addresses immediate notification requirements and release reporting. Release reporting per WAC 173-340, additional reports per WAC 173-303, and radioactive material emission reporting per WAC 246-247 are applicable to PFP.

REQUIREMENT SOURCE: 40CFR302 Part 6(a)

"Notification requirements. Any person in charge of a vessel or an offshore or an onshore facility shall, as soon as he has knowledge of any release (other than a federally permitted release or application of a pesticide) of a hazardous substance from such vessel or facility in a quantity equal to or exceeding the reportable quantity determined by this part in any 24-hour period, immediately notify the National Response Center (800) 424-8802; in Washington, D.C. (202) 426-2675."

REQUIREMENT SOURCE: 40CFR302 Part 6(b)(1)

"Releases of mixtures or solutions (including hazardous waste streams) of:

Hazardous substances, except for radionuclides, are subject to the following notification requirements:

(i) if the quantity of all of the hazardous constituent(s) of the mixture or solution is known, notification is required where RQ or more of any hazardous constituent is released; or

(ii) if the quantity of one or more of the hazardous constituent(s) of the mixture or solution is unknown, notification is required where the total amount of the mixture or solution released equals or exceeds the RQ for the hazardous constituent with the lowest RQ."

REQUIREMENT SOURCE: 40CFR302 Part 6(b)(2)

"Releases of mixtures or solutions (including hazardous waste streams) of:

Radionuclides are subject to this section's notification requirements only in the following circumstances;

(i) If the identity and quantity (in curies) of each radionuclide in a released mixture or solution is known, the ratio between the quantity released (in curies) and the RQ for the radionuclide must be determined for each radionuclide. The only such releases subject to this section's notification requirements are those in which the sum of the ratios for the radionuclides in the mixture or solution released is equal to or greater than one.

(ii) If the identity of each radionuclide in a released mixture or solution is known but the quantity released (in curies) of one or more of the radionuclides is unknown, the only such releases subject to this section's notification requirements are those in which the total quantity (in curies) of the mixture or solution released is equal to or greater than the lowest RQ of any individual radionuclide in the mixture or solution.

(iii) If the identity of one or more radionuclides in a released mixture or solution is unknown (or if the identity of a radionuclide released by itself is unknown), the only such release subject

to this section's notification requirements are those in which the total quantity (in curies 0 released is equal to or greater than either one curie or the lowest RQ of any known individual radionuclide in the mixture or solution, whichever is lower."

REQUIREMENT SOURCE: 40CFR302 Part 6(c)

"The following categories of releases are exempt from the notification requirements of this section:

(1) Releases of those radionuclides that occur naturally in the soil from land holdings such as parks, golf courses, or other large tracts of land;

(2) releases of radionuclides occurring naturally from the disturbance of land for purposes other than mining, such as for agricultural or construction activities;

(3) releases of radionuclides from the dumping of coal an coal ash at utility and industrial facilities with coal-fired boilers; and

(4) releases of radionuclides, from coal and coal ash piles at utility and industrial facilities with coal-fired boilers."

REQUIREMENT SOURCE: 40CFR302 Part 6(d)

"Except for releases of radionuclides, notification of the release of an RQ of solid particles of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, or zinc is not required if the mean diameter of the particles released is larger than 100 micrometers (0.004 inches)."

REQUIREMENT SOURCE: 40CFR302 Part 7(a)(3)

"In charge of a facility from which a hazardous substance is released, other than a federally permitted release, in a quantity equal to or greater than that reportable quantity determined under this part who fails to notify immediately the National Response Center as soon as he has knowledge of such release shall be subject to all of the actions, including criminal penalties, set forth in section 103 of the Act with respect to such failure to notify."

REQUIREMENT SOURCE: 40CFR302 Part 8(a)

"Continuous releases.
Except as provided in paragraph (c) of this section, no notification is required for any release of a hazardous substance that is, pursuant to the definitions in paragraph (b) of this section, continuous and stable in quantity and rate."

REQUIREMENT SOURCE: 40CFR302 Part 8(c)

"Notification. The following notifications shall be given for any release qualifying for reduced reporting under this section:

(1) Initial telephone notification;

(2) Initial written notification within 30 days of the initial telephone notification;

(3) Follow-up notification within 30 days of the first anniversary date of the initial written notification;

(4) Notification of a change in the composition or source(s) of the release or in the other information submitted in the initial written notification of the release under paragraph (c)(2) of this section or the follow-up notification under paragraph (c)(3) of this section; and

(5) Notification at such times as an increase in the quantity of the hazardous substance being released during any 24-hour period represents a statistically significant increase as defined in paragraph (b) of this section."

REQUIREMENT SOURCE: 40CFR302 Part 8(d)

"Initial telephone notification. Prior to making an initial telephone notification of a continuous release, the person in charge of a facility or vessel must establish a sound basis for qualifying the release for reporting under CERCLA section 103(f)(2) by:

(1) Using release data, engineering estimates, knowledge of operating procedures, or best professional judgment to establish the continuity and stability of the release; or

(2) Reporting the release to the National Response Center for a period sufficient to establish the continuity and stability of the release.

(3) When a person in charge of the facility or vessel believes that a basis has been established to qualify the release for reduced reporting under this section, initial notification to the National Response Center shall be made by telephone. The person in charge must identify the notification as an initial continuous release notification report and provide the following information:

(i) The name and location of the facility or vessel; and

(ii) The name(s) and identity(ies) of the hazardous substance(s) being released."

REQUIREMENT SOURCE: 40CFR302 Part 8(e)

"Initial written notification. Initial written notification of a continuous release shall be made to the appropriate EPA Regional Office for the geographical area where the releasing facility or vessel is located. (Note: In addition to the requirements of this part, releases of CERCLA hazardous substances are also subject to the provisions of SARA Title III section 304, and EPA's implementing regulations codified at 40 CFR part 355, which require initial telephone and written notifications of continuous releases to be submitted to the appropriate State emergency response commission and local emergency planning committee.)"

REQUIREMENT SOURCE: 40CFR302 Part 8(f)

"Follow-up notification. Within 30 days of the first anniversary date of the initial written notification, the person in charge of the facility or vessel shall evaluate each hazardous substance release reported to verify and update the information submitted in the initial written notification. The follow-up notification shall include the following information:

(1) The name of the facility or vessel; the location, including the latitude and longitude; the case number assigned by the National Response Center or the Environmental Protection Agency; the Dun and Bradstreet number of the facility, if available; the port of registration of the vessel; the name and telephone number of the person in charge of the facility or vessel.

(2) The population density within a one-mile radius of the facility or vessel, described in terms of the following ranges: 0-50 persons, 51-100 persons, 101-500 persons, 501-1,000 persons, more than 1,000 persons.

(3) The identity and location of sensitive populations and ecosystems within a one-mile radius of the facility or vessel (e.g., elementary schools, hospitals, retirement communities, or wetlands).

(4) For each hazardous substance release claimed to qualify for reporting under CERCLA section 103(f)(2), the following information shall be supplied:

(i) The name/identity of the hazardous substance; the Chemical Abstracts Service Registry Number for the substance (if available); and if the substance being released is a mixture, the components of the mixture and their approximate concentrations and quantities, by weight.

(ii) The upper and lower bounds of the normal range of the release (in pounds or kilograms) over the previous year.

(iii) The source(s) of the release (e.g., valves, pump seals, storage tank vents, stacks). If the release is from a stack, the stack height (in feet or meters).

(iv) The frequency of the release and the fraction of the release from each release source and the specific period over which it occurs.

(v) A brief statement describing the basis for stating that the release is continuous and stable in quantity and rate.

(vi) An estimate of the total annual amount that was released in the previous year (in pounds or kilograms).

(vii) The environmental medium(a) affected by the release:

(A) If surface water, the name of the surface water body;

(B) If a stream, the stream order or average flowrate (in cubic feet/second) and designated use;

(C) If a lake, the surface area (in acres) and average depth (in feet or meters);

(D) If on or under ground, the location of public water supply wells within two miles.

(viii) A signed statement that the hazardous substance release(s) is(are) continuous and stable in quantity and rate under the definitions in paragraph

(a) of this section and that all reported information is accurate and current to the best knowledge of the person in charge."

REQUIREMENT SOURCE: 40CFR302 Part 8(g)

"Notification of changes in the release. If there is a change in the release, notification of the change, not otherwise reported, shall be provided in the following manner:

(1) Change in source or composition. If there is any change in the composition or source(s) of the release, the release is a new release and must be qualified for reporting under this section by the submission of initial telephone notification and initial written notification in accordance with paragraphs (c)(1) and (2) of this section as soon as there is a sufficient basis for asserting that the release is continuous and stable in quantity and rate;

(2) Change in the normal range. If there is a change in the release such that the quantity of the release exceeds the upper bound of the reported normal range, the release must be reported

as a statistically significant increase in the release. If a change will result in a number of releases that exceed the upper bound of the normal range, the person in charge of a facility or vessel may modify the normal range by:

(i) Reporting at least one statistically significant increase report as required under paragraph (c)(7) of this section and, at the same time, informing the National Response Center of the change in the normal range; and

(ii) Submitting, within 30 days of the telephone notification, written notification to the appropriate EPA Regional Office describing the new normal range, the reason for the change, and the basis for stating that the release in the increased amount is continuous and stable in quantity and rate under the definitions in paragraph (b) of this section.

(3) Changes in other reported information. If there is a change in any information submitted in the initial written notification or the follow-up notification other than a change in the source, composition, or quantity of the release, the person in charge of the facility or vessel shall provide written notification of the change to the EPA Region for the geographical area where the facility or vessel is located, within 30 days of determining that the information submitted previously is no longer valid. Notification shall include the reason for the change, and the basis for stating that the release is continuous and stable under the changed conditions.

(4) Notification of changes shall include the case number assigned by the National Response Center or the Environmental Protection Agency and also the signed certification statement required at (c)(2)(xi) of this section."

REQUIREMENT SOURCE: 40CFR302 Part 8(h)

"Notification of a statistically significant increase in a release. Notification of a statistically significant increase in a release shall be made to the National Response Center as soon as the person in charge of the facility or vessel has knowledge of the increase. The release must be identified as a statistically significant increase in a continuous release. A determination of whether an increase is a "statistically significant increase" shall be made based upon calculations or estimation procedures that will identify releases that exceed the upper bound of the reported normal range."

REQUIREMENT SOURCE: 40CFR302 Part 8(i)

"Annual evaluation of releases. Each hazardous substance release shall be evaluated annually to determine if changes have occurred in the information submitted in the initial written notification, the follow-up notification, and/or in a previous change notification."

REQUIREMENT SOURCE: 40CFR302 Part 8(j)

"Use of the SARA Title III section 313 form.
In lieu of an initial written report or a followup report, owners or operators of facilities subject to the requirements of SARA title III section 313 may submit to the appropriate EPA Regional Office for the geographical area where the facility is located, a copy of the Toxic Release Inventory form submitted under SARA Title III section 313 the previous July 1, provided that the following information is added;

(1) The population density within a one-mile radius of the facility or vessel, described in terms of the following ranges: 0-50 persons, 51-100 persons, 101-500 persons, 501-1,000 persons, more than 1,000 persons.

(2) The identity and location of sensitive populations and ecosystems within a one-mile radius of the facility or vessel (e.g., elementary schools, hospitals, retirement communities, or wetlands).

(3) For each hazardous substance release claimed to qualify for reporting under CERCLA section 103(f)(2), the following information must be supplied:

(i) The upper and lower bounds of the normal range of the release (in pounds or kilograms) over the previous year.

(ii) The frequency of the release and the fraction of the release from each release source and the specific period over which it occurs.

(iii) A brief statement describing the basis for stating that the release is continuous and stable in quantity and rate.

(iv) A signed statement that the hazardous substance release(s) is(are) continuous and stable in quantity and rate under the definitions in paragraph (b) of this section and that all reported information is accurate and current to the best knowledge of the person in charge."

REQUIREMENT SOURCE: 40CFR302 Part 8(k)

"Documentation supporting notification.
Where necessary to satisfy the requirements of this section, the person in charge may rely on recent release data, engineering estimates, the operating history of the facility or vessel, or other relevant information to support notification. All supporting documents, materials, and other information shall be kept on file at the facility, or in the case of a vessel, at an office within the United States in either a port of call, a place of regular berthing, or the headquarters of the business operating the vessel. Supporting materials shall be kept on file for a period of one year and shall substantiate the reported normal range of releases, the basis for stating that the release is continuous and stable in quantity and rate, and the other information in the initial written report, the followup report, and the annual evaluations required under paragraphs (e), (f), and (i), respectively. Such information shall be made available to EPA upon request as necessary to enforce the requirements of this section."

REQUIREMENT SOURCE: 40CFR302 Part 8(l)

"Multiple concurrent releases.
Multiple concurrent release of the same substance occurring at various locations with respect to contiguous plants or installations upon contiguous grounds that are under common ownership or control may be considsred [SIC] separately or added together in determining whether such releases constitute a continuous release or a statistically significant increase under the definitions in paragraph (b) of this section; whichever approach is elected for purposed of determining whether a release is continuous also must be used to determine a statistically significant increase in the release."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 145(1)

"Purpose and applicability. This section sets forth the requirements for any person responsible for a spill or discharge of a dangerous waste or hazardous substance into the environment, except when such release is otherwise permitted under state or federal law. For the purposes of complying with this section, a transporter who spills or discharges dangerous waste or hazardous substances during transportation will be considered the responsible person. This section shall apply when any dangerous waste or hazardous substance is intentionally or accidentally spilled or discharged into the environment (unless otherwise permitted) such that

human health or the environment is threatened, regardless of the quantity of dangerous waste or hazardous substance."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 145(2)

"Notification. Any person who is responsible for a spill or nonpermitted discharge shall immediately notify the individuals and authorities described for the following situations:

(a) For spills or discharges onto the ground or into groundwater or surface water, notify all local authorities in accordance with the local emergency plan. If necessary, check with the local emergency service coordinator and the fire department to determine all notification responsibilities under the local emergency plan. Also, notify the appropriate regional office of the department of ecology;

(b) For spills or discharges which result in emissions to the air, notify all local authorities in accordance with the local emergency plan. If necessary, check with the local emergency service coordinator and the fire department to determine all notification responsibilities under the local emergency plan. Also, in western Washington notify the local air pollution control authority, or in eastern Washington notify the appropriate regional office of the department of ecology."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 145(3)

"Mitigation and control. The person responsible for a spill or nonpermitted discharge shall take appropriate immediate action to protect human health and the environment (e.g., diking to prevent contamination of state waters, shutting of open valves).

(a) In addition, the person responsible for a spill or discharge shall:

(i) Clean up all released dangerous wastes or hazardous substances, or take such actions as may be required or approved by federal, state, or local officials acting within the scope of their official responsibilities. This may include complete or partial removal of released dangerous wastes or hazardous substances as may be justified by the nature of the released dangerous wastes or hazardous substances, the human and environmental circumstances of the incident, and protection required by the Water Pollution Control Act, chapter 90.48 RCW;

(ii) Designate and treat, store or dispose of all soils, waters, or other materials contaminated by the spill or discharge in accordance with this chapter 173-303 WAC. The department may require testing in order to determine the amount or extent of contaminated materials, and the appropriate designation, treatment, storage, or disposal for any materials resulting from clean-up; and

(iii) If the property on which the spill or discharge occurred is not owned or controlled by the person responsible for the incident, restore the area impacted by the spill or discharge, and replenish resources (e.g., fish, plants) in a manner acceptable to the department.

(b) Where immediate removal or temporary storage of spilled or discharged dangerous wastes or hazardous substances is necessary to protect human health or the environment, the department may direct that removal be accomplished without a manifest, by transporters who do not have EPA/state identification numbers."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 145(4)

"Nothing in WAC 173-303-145 shall eliminate any obligations to comply with reporting requirements which may exist in a permit or under other state or federal regulations."

REQUIREMENT SOURCE: WAC-173-340 Section 120(2)(a)

"Release reporting. A reporting program is established to help identify potential hazardous waste sites. Owners and operators who know of or discover a release of a hazardous substance due to past activities must report the release to the department within ninety days of discovery, under WAC 173-340-300. Most current releases of hazardous substances must be reported to the department under the state's hazardous waste, underground storage tank, or water quality laws. The term "hazardous substance" includes a broad range of substances as defined by Chapter 70.105D RCW."

REQUIREMENT SOURCE: WAC-173-340 Section 300(2)

"Release report. Any owner or operator who has information that a hazardous substance has been released to the environment at the owner or operator's facility and may be a threat to human health or the environment shall report such information to the department by June 1, 1990, or for discovery of releases after this date, within ninety days of discovery. Releases from underground storage tanks as described in the rules adopted under chapter 90.76 RCW must be reported within twenty-four hours of release confirmation, in accordance with WAC 173-340-450. The extent known, the report shall include: The identification and location of the hazardous substance, circumstances of the release and the discovery, and any remedial actions planned, completed, or underway. All other persons are encouraged to report such information to the department."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(5)

"The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements. If requested by the department, the facility shall submit a written report within ten days including known causes, corrective actions taken, and any preventive measures taken or planned to minimize or eliminate the chance of recurrence."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(11)

"The facility shall respond in writing in a timely manner, or within a time limit set by the department. The inspection results which require the facility to implement corrective actions or any other actions so directed by the department."

20.6.2 Reporting Requirements

Appropriate requirements for subelement 20.6.2 include those for groundwater reports, annual reporting, independent interim action reports, coordination with local emergency planning committees, and progress reports. Each of these reporting categories is applicable to PFP, however, many of the requirements are implemented at the Site level.

Author's Note: When referenced, please note that DOE Order 5000.3A has been replaced by DOE O 232.1 and associated manual DOE M 232.1-1.

REQUIREMENT SOURCE: DOE5400.1 Chapter II, Section 2.a

"Consistent with the notification requirements contained in DOE 5484.1 and DOE 5000.3A, and the DOE orders in the 5500 series dealing with emergency management, field organizations and DOE contractors shall notify the Headquarters Emergency Operations Center (EOC) of the significant nonroutine release of any pollutant or hazardous substance, e.g.,

releases of hazardous substances that are reported to the Environmental Protection Agency National Response Center as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Notification to the EOC shall be concurrent with notification to any regulatory agencies. Where applicable, existing reporting formats should be used. A written report of follow-up and resolution of any reported environmental occurrence which has environmental significance shall be prepared in accordance with the requirements of DOE 5484.1 and DOE 5000.3A."

REQUIREMENT SOURCE: DOE5400.1 Chapter II, Section 5.b

"Unplanned releases of radioactive materials in effluents, such as spills, leaks, etc., whether on-site or offsite, also shall be reported to the Information System Branch, EGG Idaho, Inc., on Form DOE F 5821.1. This is in addition to meeting the occurrence reporting requirements of DOE 5000.3A. Releases of no environmental concern, including those that are subsequently cleaned up, need not be reported."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(6)

"The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060."

20.6.2.1 Radioactive Effluents

REQUIREMENT SOURCE: 40CFR61 Part 94(a)

"Compliance and Reporting

(a) Compliance with this standard shall be determined by calculating the highest effective dose equivalent to any member of the public at any off-site point where there is a residence, school, business or office. The owners or operators of each facility shall submit an annual report to both EPA headquarters and the appropriate regional office by June 30 which includes the results of the monitoring as recorded in DOE's Effluent Information System and the dose calculations required by 61.93(a) for the previous calendar year."

20.6.2.2 Treatment, Storage, and Disposal Units

REQUIREMENT SOURCE: WAC-173-303 Section 360(2)(k)

"The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within fifteen days after the incident, he must submit a written report on the incident to the department. The report must include:

(i) Name, address, and telephone number of the owner or operator;

(ii) Name, address, and telephone number of the facility;

(iii) Date, time, and type of incident (e.g., fire, explosion);

(iv) Name and quantity of material(s) involved;

(v) The extent of injuries, if any;

(vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable;

(vii) Estimated quantity and disposition of recovered material that resulted from the incident;

(viii) Cause of incident; and

(ix) Description of corrective action taken to prevent reoccurrence of the incident."

20.6.2.3 Underground Storage Tanks

Subelement 20.6.2.3 includes requirements associated with reporting and notification of releases from USTs. Status reports and investigations per WAC 173-340 and release reporting per WAC 173-360 will be applicable to any new USTs at PFP.

Note: WAC 173-360(950131) Section 390(4) and (5) requirements, as located in subelement 20.3.2, are also applicable to this subelement.

Author's Note: For any UST that has a confirmed release which may pose a threat to the human health or the environment, the requirements of WAC 173-340-450 becomes applicable.

REQUIREMENT SOURCE: WAC-173-360 Section 200(4)

"Notification of existing UST systems. Owners of any existing UST system regulated under this chapter which has not previously been reported to the department shall provide notification regarding such UST system immediately, following the requirements of subsection (2) (a) through (e) of this section.

Note: Owners and operators of UST systems that were in the ground on or after May 8, 1986, unless taken out of operation on or before January 1, 1974, were required to notify the department in accordance with the Hazardous and Solid Waste Amendments of 1984, Public Law 98-616, on a form published by Washington state unless notice was given pursuant to section 103(c) of CERCLA."

REQUIREMENT SOURCE: WAC-173-360 Section 200(5)

"Emergency replacement of UST systems.
(a) An exception to the thirty-day notice requirement for new installations in subsection (1) of this section is allowed when an UST system is being replaced on an emergency basis due to a release from the system being replaced. An emergency shall be regarded as a newly discovered release from an UST system which is:

(i) In operation at the time of the release;

(ii) Located at an operating facility; and

(iii) Necessary for the normal operation of the facility.

(b) Under the circumstances described in (a) of this subsection, the notice of intent to install an UST system may be provided after the installation of the new system but no more than seven days after the installation is completed. The information which must be included in the notice of intent form is the same as in subsection (1) of this section. A site assessment meeting the requirements of WAC 173-360-390 shall be completed prior to installing a tank in the

excavation pit of a tank being replaced and prior to installing new piping in the piping trench of piping being replaced."

REQUIREMENT SOURCE: WAC-173-360 Section 200(6)

"Changes to UST systems. Any changes in the information initially reported in the notification form submitted under subsection (2), (4) or (5) of this section, including temporary closure of an UST system that was initially reported as being in use, shall be reported to the department or delegated agency by submitting a new notification form within thirty days after such changes occur."

REQUIREMENT SOURCE: WAC-173-360 Section 200(7)

"Beginning October 24, 1988, any person who sells a new tank which is intended to be used as an underground storage tank, or an existing UST system or property including an existing UST system which is intended to be used as an UST system, shall notify the purchaser of such tank or UST system of the owner's notification obligations under this section."

REQUIREMENT SOURCE: WAC-173-360 Section 210(1)

"Reporting. Owners and operators shall submit the information specified in (a) through (e) of this subsection to the department or delegated agency:

(a) Notification for all UST systems (WAC 173-360-200), which includes certification of installation for new UST systems (WAC 173-360-305(5));

(b) Reports of all suspected releases (WAC 173-360-360), confirmed releases (WAC 173-360-372), and spills and overfills (WAC 173-360-375);

(c) Reports required for corrective action under chapter 173-340 WAC;

(d) A notification before permanent closure or change-in-service (WAC 173-360-385); and

(e) The appropriate forms certificates of compliance, and evidence of financial responsibility (WAC 173-360-446).

(f) Checklists required for tank service activities, site checks, and site assessments shall be submitted by tank services providers or persons registered to perform site checks and site assessments, as applicable."

REQUIREMENT SOURCE: WAC-173-360 Section 210(2)

"Recordkeeping. Owners and operators shall maintain the following information:

(a) Documentation of operation of corrosion protection equipment (WAC 173-360-320);

(b) Documentation of UST system repairs (WAC 173-360-325(7));

(c) Recent compliance with release detection requirements (WAC 173-360-355);

(d) N/A

(e) Corrective action records in accordance with chapter 173-340 WAC;"

REQUIREMENT SOURCE: WAC-173-360 Section 210(3)

"Availability and maintenance of records. Owners and operators shall keep the records required either:

(a) At the UST site and immediately available for inspection by the department or delegated agency; or

(b) At a readily available alternative site and be provided for inspection to the department or delegated agency upon request."

REQUIREMENT SOURCE: WAC-173-360 Section 355(1)

"All written performance claims pertaining to any release detection system used, and the manner in which these claims have been justified or tested by the equipment manufacturer or installer, shall be maintained for five years, or for another reasonable period of time determined by the department or delegated agency, from the date of installation;"

REQUIREMENT SOURCE: WAC-173-360 Section 355(2)

"The results of any sampling, testing, or monitoring shall be maintained for at least five years, or for another reasonable period of time determined by the department or delegated agency, except that the results of tank tightness testing conducted in accordance with WAC 173-360-345(6)(d) shall be retained until the next test is conducted; and"

REQUIREMENT SOURCE: WAC-173-360 Section 355(3)

"Written documentation of all calibration, maintenance, and repair of release detection equipment permanently located on-site shall be maintained for at least five years after the servicing work is completed, or for another reasonable time period determined by the department or delegated agency. Any schedules or required calibration and maintenance provided by the release detection equipment manufacturer shall be retained for five years from the date of installation."

REQUIREMENT SOURCE: WAC-173-360 Section 360

"Reporting of Suspected Releases

Owners and Operators of UST systems shall report to the department or delegated agency within twenty-four hours, or another reasonable time period specified by the department or delegated agency, and follow the procedures in WAC 173-360-370 when any of the following conditions apply:

(1) Owners and operators or others discover released regulated substances at the UST site or in the surrounding area (including but not limited to the presence of free product or its constituents in soils, basements, sewer and utility lines, ground water, and/or surface water).

(2) Unusual operating conditions are observed by owners or operators (such as the erratic behavior of product dispensing equipment, the sudden loss of a regulated substance from the UST system, or an unexplained presence of water in the tank), unless system equipment is found to be defective but not leaking, and is immediately repaired or replaced; or

(3) Monitoring results from a release detection method required under WAC 173-360-355 and 173-360-340 indicate that a release may have occurred unless:

(b) The monitoring device is found to be defective, and is immediately repaired, recalibrated or replaced, and additional monitoring does not confirm the initial result; or

(c) In the case of inventory control, a second month of data does not confirm the initial result, except that owners and operators shall immediately investigate all larger-than-normal or reoccurring variations in inventory control results, and report such variations if they are unaccounted for, without waiting to obtain a second month of data."

REQUIREMENT SOURCE: WAC-173-360 Section 370(2)

"Site check. Owners and operators shall have a person registered by the department to perform site assessments, as specified in WAC 173-360-610, sample for the presence of a release. Such samples shall be taken, analyzed, and results reported to the department or delegated agency in accordance with the department's guidance document for site checks and site assessments, or as otherwise directed by the department or delegated agency, where contamination is most likely to be present at the UST site.

(a) If the site check results indicate that a release has occurred, owners and operators shall report to the department or delegated agency in accordance with WAC 173-360-372 and begin corrective action in accordance with WAC 173-360-399.

(b) If the site check results do not indicate that a release has occurred, further investigation is not required."

REQUIREMENT SOURCE: WAC-173-360 Section 372

"Reporting of confirmed releases.
Owners and operators shall report all confirmed releases, including but not limited to those confirmed in accordance with WAC 173-360-370 and 173-360-390, and those required to be reported under WAC 173-360-375, to the department or delegated agency within twenty-four hours.

Note: Other federal, state, and local laws also require reporting, and in some cases cleanup, of confirmed releases."

REQUIREMENT SOURCE: WAC-173-360 Section 375(1)

"Owners and operators of UST systems shall immediately contain and clean up any spill or overfill of petroleum or hazardous substances in accordance with subsections (2) and (3) of this section. Spills and overfills shall also be reported as follows:

(a) Owners and operators shall immediately report any spill or overfill of petroleum and the results of any related cleanup to the department or delegated agency if the spill or overfill comes in contact with soil, ground water, or surface water. Spills or overfills of petroleum which are above a de minimis amount but do not come in contact with soil, ground water, or surface water shall be reported within twenty-four hours. A de minimis amount of petroleum is any amount that immediately evaporates or that is specified by the department or delegated agency through guidance documents. Spills or overfills of petroleum which do not exceed a de minimis amount and do not come in contact with soil, ground water, or surface water are not required to be reported.

(b) Owners and operators shall immediately report any spill or overfill of a hazardous substance and the results of any related cleanup to the department or delegated agency if the spill or overfill comes in contact with soil, ground water, or surface water. Spills or overfills of hazardous substances which are above a de minimis amount but which do not come in

contact with soil, ground water, or surface water shall also be reported immediately. A de minimis amount of a hazardous substance is any amount that is below the specified reportable quantity under CERCLA. Spills or overfills of hazardous substances which do not exceed a de minimis amount and do not come in contact with soil, ground water, or surface water are not required to be reported.

Note: A release of a hazardous substance equal to or in excess of its reportable quantity under CERCLA (40 CFR 302) must also be reported immediately to the National Response Center under sections 102 and 103 of CERCLA (40 CFR 302.6) and to the appropriate state and local authorities under Title III of the Superfund Amendments and Reauthorization Act of 1986 (40 CFR 355.40)."

REQUIREMENT SOURCE: WAC-173-360 Section 375(2)

"Containment and cleanup shall include the following actions:

(a) Visually inspect and take immediate action to prevent any further release and/or spreading of the regulated substance into the environment, including surrounding soils, ground water, and surface water;

(b) Eliminate or minimize any fire, explosion, and vapor hazards, and absorb or otherwise contain all free product and provide for proper disposal of such product and any used absorbent materials in accordance with all applicable federal, state, and local requirements. Free product shall not be flushed into storm drains, catch basins, dry wells, monitoring wells, or other locations with a possible connection to surrounding soils, ground water, or surface water; and

(c) Provide for proper disposal of, or treat, any contaminated soils in accordance with all applicable federal, state, and local requirements."

REQUIREMENT SOURCE: WAC-173-360 Section 375(3)

"Owners and operators shall take appropriate action in accordance with WAC 173-360-399 in the following cases:

(a) A spill or overfill of petroleum that results in a release to the environment of less than twenty-five gallons or another reasonable amount specified by the department or delegated agency, if cleanup is not or cannot be accomplished within twenty-four hours or another reasonable time period established by the department or delegated agency;

(b) A spill or overfill of petroleum that results in a release to the environment that exceeds twenty-five gallons or another reasonable amount specified by the department or delegated agency;

(c) A spill or overfill of petroleum, regardless of amount, that results in ground water contamination or causes a sheen on ground water or surface water, including such water in dry wells;

(d) A spill or overfill of a hazardous substance that results in a release to the environment that is less than the reportable quantity under CERCLA, if cleanup is not or cannot be accomplished within twenty-four hours or another reasonable time period established by the department or delegated agency; and

(e) A spill or overfill of a hazardous substance that results in a release to the environment that equals or exceeds its reportable quantity under CERCLA (40 CFR 302)."

REQUIREMENT SOURCE: WAC-173-360 Section 390(1)

"Before permanent closure or a change-in-service is completed, except as specified in subsections (2), (3), and (4) of this section, owners and operators shall have a person registered by the department to perform site assessments, as specified in WAC 173-360-610, sample for the presence of a release. Such samples shall be taken, analyzed, and the results reported to the department or delegated agency in accordance with the department's guidance document for site assessments, or as otherwise directed by the department or delegated agency, where contamination is most likely to be present at the UST site."

REQUIREMENT SOURCE: WAC-173-360 Section 390(2)

"The requirements of this section are satisfied if one of the external release detection methods allowed in WAC 173-360-345 (6)(f) and (g) is employed for the UST system being closed or undergoing a change-in-service, if the following conditions are met:

(a) The external release detection method is operating, at the time of closure or change-in-service, in accordance with the requirements of WAC 173-360-345 (6)(f) or (g), as applicable; and

(b) A report is provided to the department with sufficient information to clearly demonstrate that:

(i) The external release detection method employed was appropriately designed, installed, and operated to adequately detect any releases from the UST system; and

(ii) No release was detected from the UST system."

20.6.3 Records Management

Subelement 20.6.4 includes requirements associated with management of records. Groundwater monitoring records pertinent to PFP are maintained by the site organization which performs the monitoring and therefore, are not included in this S/RID.

REQUIREMENT SOURCE: 40CFR372 Part 10(b)

"Each person subject to the notification requirements of this part must retain the following records for a period of 3 years from the date of the submission of a notification under 372.45.

(1) All supporting materials and documentation used by the person to determine whether a notice is required under §372.45.

(2) All supporting materials and documentation used in developing each required notice under §372.45 and a copy of each notice."

REQUIREMENT SOURCE: 40CFR372 Part 10(c)

"Records retained under this section must be maintained at the facility to which the report applies or from which a notification was provided. Such records must be readily available for purposes of inspection by EPA."

REQUIREMENT SOURCE: 40CFR372 Part 10(d)

"Each owner or operator who determines that the owner operator may apply the alternate threshold as specified under §372.27(a) must retain the following records for a period of 3 years from the date of the submission of the certification statement as required under §372.27(b):

(1) A copy of each certification statement submitted by the person under §372.27(b).

(2) All supporting materials and documentation used by the person to make the compliance determination that the facility or establishment is eligible to apply the alternate threshold as specified in §372.27.

(3) Documentation supporting the certification statement submitted under §372.27(b) including:

(i) Data supporting the determination of whether the alternate threshold specified under §372.27(a) applies for each toxic chemical.

(ii) Documentation supporting the calculation of annual reportable amount, as defined in §372.27(a), for each toxic chemical, including documentation supporting the calculations and the calculations of each data element combined for the annual reportable amount."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 380(1)

"Operating record. The owner or operator of a facility shall keep a written operating record at his facility. The following information shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(a) A description of and the quantity of each dangerous waste received or managed on-site, and the method(s) and date(s) of its treatment, storage, or disposal at the facility as required by subsection (2) of this section, recordkeeping instructions;

(b) The location of each dangerous waste within the facility and the quantity at each location. For disposal facilities, the location and quantity of each dangerous waste must be recorded on a map or diagram of each cell or disposal area. For all facilities, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

(c) Records and results of waste analyses required by WAC 173-303-300, General waste analysis;

(d) Summary reports and details of all incidents that require implementing the contingency plan, as specified in WAC 173-303-360 (2)(k);

(e) Records and results of inspections as required by WAC 173-303-320 (2)(d), General inspection (except such information need be kept only for five years);

(f) Monitoring, testing, or analytical data, and corrective action where required by 40 CFR Part 265 Subparts F through R for interim status facilities, and by WAC 173-303-630 through 173-303-680 for final status facilities;

(g) All closure and post-closure cost estimates required for the facility; and

(h) For off-site facilities, copies of notices to generators informing them that the facility has all appropriate permits, as required by WAC 173-303-290, Required notices."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 380(2) Introduction

"Recordkeeping instructions. This paragraph provides instructions for recording the portions of the operating record which are related to describing the types, quantities, and management of dangerous wastes at the facility. This information shall be kept in the operating record, as follows:"

REQUIREMENT SOURCE: WAC-173-303(940523) Section 380(2)(a)

"Each dangerous waste received or managed shall be described by its common name and by its dangerous waste number(s) from WAC 173-303-080 through 173-303-104. Where a dangerous waste contains more than one process waste or waste constituent the waste description must include all applicable dangerous waste numbers. If the dangerous waste number is not listed then the waste description shall include the process which generated the waste;"

REQUIREMENT SOURCE: WAC-173-303(940523) Section 380(2)(b)

"The waste description shall include the waste's physical form (i.e., liquid, solid, sludge, or gas);"

REQUIREMENT SOURCE: WAC-173-303(940523) Section 380(2)(c)

"The weight, or volume and density, of the dangerous waste shall be recorded, using one of the units of measure specified in Table 1,..."

REQUIREMENT SOURCE: WAC-173-303(940523) Section 380(2)(d)

"And, the date(s) and method(s) of management for each dangerous waste received or managed (treated, recycled, stored, or disposed of) shall be recorded, using the handling code(s) specified in Table 2,..."

REQUIREMENT SOURCE: WAC-173-400(950322) Section 105 Introduction

"The owner or operator of a source shall upon notification by the director of ecology, maintain records on the type and quantity of emissions from the source and other information deemed necessary to determine whether the source is in compliance with applicable emission limitations and control measures."

REQUIREMENT SOURCE: WAC-173-400(950322) Section 105(1)

"Emission inventory. The owner(s) or operator(s) of any air contaminant source shall submit an inventory of emissions from the source each year. The inventory may include stack and fugitive emissions of particulate matter, PM10, sulfur dioxide, carbon monoxide, total reduced sulfur compounds (TRS), fluorides, lead, VOCs, and other contaminants, and shall be submitted (when required) no later than one hundred five days after the end of the calendar year. The owner(s) or operator(s) shall maintain records of information necessary to substantiate any reported emissions, consistent with the averaging times for the applicable standards."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(2)

"All reporting and recordkeeping requirements of 40 CFR 61, subparts H and I published in the Federal Register on December 15, 1989, are adopted by reference, as applicable as specified by the reference subparts."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(8)

"The facility shall maintain readily retrievable storage areas for all records and documents related to, and which may help establish compliance with, the requirements of the chapter. The facility shall keep these records available for department inspection for at least five years."

REQUIREMENT SOURCE: WAC-246-247(940131) Section 080(10)

"The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and demonstrable need-to-know."

20.7 KEY INTERFACES

This element describes key functional area interfaces including waste management, emergency management, occupational safety and health, quality assurance, and radiological protection. These interfaces represent areas where there is the potential for overlap of requirements, and the need for review of more than one functional area to appreciate the total program in any one functional area.

20.7.1 Waste Management

The EP functional area provides for the development and implementation of programs for protection of the environment. This program provides oversight to the waste management functional area which focuses more narrowly on the identification, characterization, and management of dangerous wastes.

20.7.2 Emergency Management

The emergency management functional area defines the emergency planning, preparedness, and response activities which are required by the various permits and plans included in the EP functional area. The emergency management functional area focuses on the preparation for and response to off-normal events.

20.7.3 Occupational Safety and Health

The occupational safety and health functional area focuses on the programs and procedures for protection of workers and the public. These programs interface routinely with the EP programs, to provide protection to workers responding to incidents or routinely operating processes which have the potential to threaten the environment.

20.7.4 Quality Assurance

The quality assurance functional and its requirements apply to all items, activities, and processes managed by Hanford facilities. The quality assurance functional area is integrated into the EP programs through management, performance, and assessment.

20.7.5 Radiological Protection

The radiological protection functional area provides the control standards with which the EP programs must comply to provide protection to human health and the environment.

20.7.6 Engineering Program

The Environmental Protection Functional Area specifies design criteria to the Engineering Program to minimize effluent discharges. The Engineering Program performs analysis to ensure waste streams are optimized and waste minimization is achieved.

20.7.7 Operations

Environmental Protection interfaces with Operations to ensure requirements are incorporated into operating procedures and other control documents.

20.7.8 Training and Qualification

Formal training in the area of Environmental Protection is defined by the management of the Environmental Protection Functional Area. Key areas should include: monitoring and surveillance systems, inspection requirements, permit management, pollution control, records and reports, pollution prevention techniques, waste minimization, quality of records, procedural adherence, safety, ALARA, emergency response, contingency planning, and other related topics.

20.7.9 Nuclear Safety

Environmental Protection supplies information to NS to show how their periodic monitoring programs confirm that the assumptions of the SAR are working out in practice. If there are any deviations from expected results, the two groups will investigate to determine the cause and a course of corrective action.

20.7.10 Management Systems

Management Systems establishes overall management policy, commitment, accountability and resources to implement the Environmental Protection Program.

20.8 REFERENCES

20.8.1 Requirement Source Documents

10 CFR 1021, Compliance with the National Environmental Policy Act, U.S. Department of Energy, amendments as of April 24, 1992

40 CFR 61, National Emission Standards for Hazardous Air Pollutants, U.S. Environmental Protection Agency, amendments as of July 15, 1994

40 CFR 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities, amendments as of September 19, 1994

40 CFR 302, Designation, Reportable Quantities, and Notification, U.S. Environmental Protection Agency, amendments as of June 20, 1994

40 CFR 372, Toxic Chemical Release Reporting: Community Right-To-Know, U.S. Environmental Protection Agency, amendments as of November 30, 1994

DOE 5400.1, General Environmental Protection Program, DOE Order 5400.1, U.S. Department of Energy, November 9, 1988

DOE 5400.5, Radiation Protection of the Public and Environment, DOE Order 5400.5, U.S. Department of Energy, February 8, 1990

DOE 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements, DOE Order 5484.1, U.S. Department of Energy, February 24, 1981

LAPCA-REG1, General Regulation 1, Benton County Clean Air Authority, effective October 7, 1993

TPA, Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement [TPA]), U.S. Department of Energy, U.S. Environmental Protection Agency, Washington State Department of Ecology, July 1995

WAC 173-218, Underground Injection Control Program, WAC Title 173, Chapter 218, Washington State Department of Ecology, amendments as of March 30, 1984

WAC 173-303, Dangerous Waste Regulations, WAC Title 173 Chapter 303, Washington State Department of Ecology, amendments as of June 23, 1994

WAC 173-307, Plans, WAC Title 173 Chapter 307, Washington State Department of Ecology, amendments as of November 1, 1991

WAC 173-340, Cleanup Process, WAC Title 173 Chapter 340, Washington State Department of Ecology, amendments as of December 25, 1993

WAC 173-360, Underground Storage Tank Regulations, WAC Title 173 Chapter 360, Washington State Department of Ecology, amendments as of November 29, 1991

WAC 173-400, General Regulations for Air Pollution Sources, WAC Title 173 Chapter 400, Washington State Department of Ecology, amendments as of March 22, 1995

WAC 197-11, Washington State Environmental Policy Act Rules, WAC 197 Chapter 11, Council on Environmental Policy, amendments as of April 4, 1984

WAC 246-247, Radioactive Air Emissions, WAC Title 246 Chapter 247, Washington State Department of Health, amendments as of January 31, 1994

20.8.2 **Reviewed Documents Not Used as Requirement Sources**

40 CFR 6, Procedures for Implementing the Requirements of the Council on Environmental Quality on the National Environmental Policy Act, U.S. Environmental Protection Agency, amendments as of November 30, 1993

40 CFR 281, Approval of State Underground Storage Tank Programs, U.S. Environmental Protection Agency, amendments as of July 25, 1993. 40 CFR 281 specifies requirements that state programs must meet for approval under section 9004 of RCRA. State requirements address PFP tank requirements.

40 CFR 355, Emergency Planning and Notification, U.S. Environmental Protection Agency, amendments as of October 12, 1994

40 CFR 1500, National Environmental Policy Act Procedures, U.S. Environmental Protection Agency, amendments as of July 1, 1991

40 CFR 1501, NEPA and Agency Planning, Council on Environmental Quality, amendments as of May 24, 1977

40 CFR 1506, Other Requirements of NEPA, Council on Environmental Quality, amendments as of July 30, 1979

40 CFR 1508, Terminology and Index, Council on Environmental Quality, amendments as of May 24, 1977

42 USC 7671, Clean Air Act, United States Code, Title 42 Part 7671, November 15, 1990

42 USC 13106, Pollution Prevention Act of 1990, United States Code, Title 42 Part 13106, November 5, 1990

DOE 5820.2A, Radioactive Waste Management, DOE Order 5820.2A, U.S. Department of Energy, September 26, 1988

DOE-RL-91-28, Hanford Facility Dangerous Waste Permit Application, General Information, Revision 1, May 1992

FF-01, Permit for Radioactive Airborne Emission Sources, FF-01, Washington State Department of Health, November 19, 1993

WAC 173-401, Operating Permit Regulations, WAC Title 173 Chapter 401, Washington State Department of Ecology, amendments as of May 17, 1994

WAC 173-406, Acid Rain Regulations, WAC 173-406, Washington State Department of Ecology, November 23, 1994. Not applicable to PFP. The purpose of the regulation is to establish emission control requirements for large fossil fuel-fired boilers. PFP is not a large fossil fuel-fired boiler.

WAC 173-460, Controls for New Sources of Toxic Air Pollutants, WAC Title 173 Chapter 460, Washington State Department of Ecology, amendments as of February 14, 1994

WAC 173-463, General and Operating Permit Regulations for Air Pollution Sources, Energy Facility Site Evaluation Council. This regulation applies to sources under the jurisdiction of the energy facility siting council and does not apply to facilities incorporated by reference in chapters 173-400 and 173-401 WAC.

WAC 173-802, SEPA Procedures, WAC 173-802, Washington State Department of Ecology, amendments as of June 15, 1984

WAC 246-272, On-Site Sewage Systems, amendments as of April 11, 1995

WAR-00-00F, Authorization to Discharge Under the NPDES for Stormwater Discharge Associated with Industrial Activities, Permit No. WAR-00-00F, U.S. Environmental Protection Agency, September 9, 1992

RCRA-B(DW), Dangerous Waste Portion of the RCRA Permit for the Treatment, Storage and Disposal of Hazardous Waste, WA7890008967, Washington State Department of Ecology, Rev. 2

FFCA, Federal Facility Compliance Agreement for Radionuclide NESHAP (FFCA), Washington State Department of Health, February 7, 1994

EO 12843, Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances, Executive Order, April 21, 1993

EO 12873, Federal Acquisition, Recycling, and Waste Prevention, Executive Order, October 20, 1993

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