

5. PERSONAL PROTECTIVE EQUIPMENT

Radiological, chemical, and physical hazards will be encountered in conjunction with routine construction and operational activities as presented in Section 2. Where hazards cannot be eliminated through engineering or administrative controls, PPE will be used to protect personnel.

Project operations personnel and visitors who enter the project construction and operational areas must be protected against potential safety, health, and radiological hazards. The requirements in “Activity Level Hazard Identification, Analysis, and Control” (PRD-25) will be used to evaluate all activities and define the appropriate PPE for all operational activities and areas in accordance with “Personal Protective Equipment” (29 CFR 1910, Subpart I) hazard assessment requirements. This section provides guidance for the selection and use of PPE to be worn for project construction and operations, and contingencies for upgrading or downgrading PPE. The actual PPE requirement for specific Accelerated Retrieval Project operational tasks will be specified in applicable JSAs, TPRs, work packages, SWPs, or RWPs.

The purpose of PPE is to shield or isolate personnel from radiological, nonradiological, physical, and biological hazards that cannot be eliminated through engineering or other controls. It is important to realize that no single PPE ensemble can protect against all hazards under all conditions and that proper work practices and adequate training will serve to augment PPE to provide the greatest level of protection to workers. The PPE will be selected, issued, used, and maintained in accordance with “Personal Protective Equipment” (PRD-5121) for operations and maintenance and “Personal Protective Equipment” (PRD-2001) for construction. Radiological decontamination clothing requirements will be developed in accordance with “Radiological Personal Protective Equipment”(MCP-432) and listed on the RWP.

The PPE is generally divided into two broad categories: (1) respiratory protective equipment and (2) personal protective clothing. Table 5-1 provides guidance in the selection process for respiratory and protective clothing. Listed PPE levels may be augmented by SWP- or RWP-specific requirements. Project construction and operations will be evaluated by IH, Industrial Safety, and RadCon to determine the most appropriate PPE levels and any modifications required. Potential exposures and hazards associated with project activities will be monitored (as discussed in Section 3) during the course of the project to evaluate changing conditions and to determine PPE level adequacy and the need for modifications.

Table 5-1. Respiratory and protective clothing selection guidance.

Hazard	Level of Protection
Respiratory Personal Protective Equipment Selection^a	
Not IDLH or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate, and aerosol chemicals or radionuclides.	<p>Level C—full-face piece, as determined by the industrial hygienist or radiological control technician. The high-efficiency particulate air and chemical combination cartridge for concentrations up to the protection factor of an air-purifying full-face piece respirator and within the assigned derived air concentration^b value.</p> <p>Level B—full-face piece, supplied air respirator with an air-purifying escape cartridge or air hood (bubble hood).</p>
IDLH or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate, and aerosol chemicals or radionuclides.	<p>Level B—full-face piece, supplied air respirator with an escape-only self-contained breathing apparatus or</p> <p>Level A—Self-contained breathing apparatus.</p>

Table 5-1. (continued).

Hazard	Level of Protection
Protective Clothing Selection	
Low atmospheric-contaminant levels that are present under stable conditions. No anticipated immersion, splashes, or potential for unexpected contact with radiological or nonradiological contaminants.	Level D.
Moderate atmospheric contaminants under relatively stable conditions; liquid splashes or other direct contact that do not have corrosive characteristics or can be absorbed by exposed skin. Low-radionuclide contamination and airborne radioactivity levels. ^c	Level C.
Moderate-to-high atmospheric contaminants under unstable conditions; potential for contact with wet contaminated surfaces and material that can saturate or permeate Level C protective clothing. Moderate radionuclide contamination and airborne radioactivity levels. ^c	Level B.
High and unknown atmospheric contaminants; potential for contact with substances that pose a high hazard potential to the skin; high potential for splash, immersion, or exposure to unexpected vapor, gas, aerosol, or dust that might present an IDLH situation and be readily absorbed through the skin. High-radionuclide contamination and airborne radioactivity levels. ^c	Level A ^d (not anticipated).

a. A high-efficiency particulate air or multichemical and high-efficiency particulate air combination cartridge may be selected by industrial hygienist and Radiological Control personnel based on specific hazards

b. Derived air concentration based on specific radionuclides

c. Contamination levels and airborne radioactivity as defined by “Radiological Areas and Radioactive Material Areas” (10 CFR 835.603[d] 9)

d. Level A personal protective equipment is not anticipated to be required for personnel conducting project operations.

IDLH = immediately dangerous to life or health

5.1 Respiratory Protection

The primary objective will be to prevent or significantly reduce inhalation of potential toxic substances. The Retrieval Enclosure design and planned operational approach for the Accelerated Retrieval Project require the use of supplied air respiratory protection for initial operations in the Retrieval Enclosure during waste excavation in accordance with “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120). This requirement will be evaluated by IH and RadCon to

determine appropriateness if additional information becomes available or is developed during the project operations.

Supplied air respiratory protection also will be required in all high-contamination areas as documented on the RWP, TPR, or JSA. The level and type of respiratory protection for other Accelerated Retrieval Project operational or construction activities and areas will be as determined by IH, RadCon, and Industrial Safety and will be documented in the TPR, work order, JSA, RWP, or SWP. Assigned protection factors for respiratory devices are listed in Appendix B of “Respiratory Protection” (MCP-2726).

All personnel required to wear respirators shall complete training and be fit tested before being assigned a respirator. Requirements for respirator use, emergency use, storage, cleaning, and maintenance, as stated in “Respiratory Protection” (MCP-2726) for operations and “Respiratory Protection” (PRD-2109) for construction, shall be followed.

5.2 Personal Protective Equipment Levels

The following sections provide general guidance on typical hazardous waste operations and emergency response (HAZWOPER) levels of PPE. Project operational activities will be evaluated to determine the most appropriate PPE, which may or may not incorporate traditional HAZWOPER levels. When required to be worn, PPE requirements will be specified on applicable TPRs, work orders, JSAs, RWPs, or SWPs.

Table 5-2 lists PPE items typically included for three traditional HAZWOPER levels of PPE. These PPE-level ensemble requirements will be determined by assigned project safety and health professionals in consultation with RadCon personnel based on the hazards presents, monitoring results, and nature of the operational task. Modifications to PPE levels will be made based on changing operational conditions and monitoring results. Such modifications are routinely employed to maximize efficiency and to meet operational-specific needs without compromising personnel safety and health.

Table 5-2. Levels and options of personal protective equipment.

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
D	<p>Coveralls or standard work clothes (coverall material type based on IH determination).</p> <p>Hardhat (based on task-specific overhead hazards as required by Industrial Safety) meeting “Safety Requirements for Industrial Head Protection” (ANSI Z89.1-1969).</p> <p>Eye protection based on task-specific hazards (safety glasses meeting “Practice for Occupational and Educational Eye and Face Protection” [ANSI Z87.1-1968] requirements as a minimum).</p> <p>Hand protection (material based on type of work and hazardous materials being handled).</p> <p>Safety toe boots (steel or protective toe) meeting “Men’s Safety-Toe Footwear” (ANSI Z41.1-1967) requirements for all operations and maintenance personnel. Sturdy leather or substantial footwear above the ankle for visitors, nonworkers, and construction tasks.</p>	<p>Chemical or radiological protective clothing (Tyvek or Saranex) by IH or RCT.</p> <p>Chemically resistant hand and foot protection (e.g., inner and outer gloves and boot liners).</p> <p>Radiological modesty garments under outer protective clothing (as required by the RWP).</p> <p>Any specialized protective equipment (e.g., hearing protection, cryogenic gloves, face shields, welding goggles, and aprons).</p>

Table 5-2. (continued).

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
C	<p>Level D ensemble with the following respiratory and whole-body protection upgrades:^b</p> <ul style="list-style-type: none"> • Full-face piece air-purifying respirator equipped with a National-Institute-of-Occupational-Safety-and-Health-approved HEPA filter or chemical and HEPA combination cartridge (IH to specify cartridge type) • Standard Tyvek (or equivalent) coverall. <p><u>OR</u></p> <ul style="list-style-type: none"> • Chemical-resistant coveralls (e.g., Tyvek QC, Tychem 7500, or Saranex-23-P) (IH to specify material). 	<p>Chemical-resistant outer shoe or boot cover (IH or RCT to specify material).</p> <p>Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP).</p> <p>Outer chemical-resistant gloves (as determined by the IH).</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP).</p> <p>Any specialized protective equipment (e.g., hearing protection, welding lens, and aprons). (Safety glasses not required if wearing a full-face respirator.)</p>
B	<p>Level C ensemble with the following respiratory and whole-body protection upgrades:^{b,c}</p> <ul style="list-style-type: none"> • Supplied breathing air system with escape capability. <p><u>OR</u> (for immediately-dangerous-to-life-or-health environment)</p> <ul style="list-style-type: none"> • Full-face piece supplied air respirator with a 10-minute escape bottle or an escape air-purifying combination HEPA or chemical cartridge (except for oxygen-deficient atmospheres). <p><u>OR</u></p> <ul style="list-style-type: none"> • Self-contained breathing apparatus. • Chemical-resistant coveralls or encapsulating suit (Tyvek QC, Tychem 7500, Saranex 23-C, or equivalent).^d • Any other chemical or radiological personal protective equipment prescribed in site-specific RWP or safe work permit. • Chemical-resistant butyl or one-time-use natural latex outer boots (as determined by the IH and RWP). • Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP). Outer chemical-resistant Viton or polyvinyl alcohol gloves (as determined by the IH). 	<p>Chemical-resistant outer shoe or boot cover (IH or RCT to specify material).</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP).</p> <p>Any specialized protective equipment (e.g., hearing protection, welding lens, and aprons).</p>
A	<p>Not anticipated for Accelerated Retrieval Project operations.</p>	<p>Not anticipated for Accelerated Retrieval Project operations.</p>

Note: All seams must be taped and secured to prevent skin contact from hazardous substances in a soil, liquid, mist, or aerosolized form.

Table 5-2. (continued).

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
	<p>a. The personal protective equipment ensemble may be modified by the IH or RCT to provide protection from skin or other physical hazards.</p> <p>b. Upgrades are determined by the IH in conjunction with other environment, safety, and health professionals.</p> <p>c. Level B and A work will require approval from the project operations manager and coordination with the Idaho National Engineering and Environmental Laboratory fire department.</p> <p>d. Supplied air respirator hose length no more than manufacturer’s specification and under no circumstances greater than 91.4 m (300 ft).</p>	
	<p>HEPA = high-efficiency particulate air IH = industrial hygienist</p>	<p>RCT = radiological control technician RWP = radiological work permit</p>

Note: Personnel must inspect all PPE before donning and entry into any work area. Items found to be defective or that become unserviceable during use will be doffed and disposed of in accordance with posted procedures and placed into the appropriate waste stream.

5.2.1 Level D Personal Protective Equipment

Level D PPE will only be selected for protective clothing and not for Accelerated Retrieval Project operations with respiratory or skin absorption hazards requiring whole-body protection. Level D PPE provides no protection against airborne chemical hazards but rather is used for protection against surface contamination and physical hazards. Level D PPE will only be allowed in areas that have been characterized as having limited contamination hazards, such as Accelerated Retrieval Project operational support areas.

5.2.2 Level C Personal Protective Equipment

Level C PPE will be worn when the task site chemical or radiological contaminants have been well characterized, indicating that personnel are protected from airborne exposures by wearing an air-purifying respirator with the appropriate cartridges, no oxygen-deficient environments exist (less than 19.5% at sea level), and that no conditions exist that pose IDLH. The site hazards must be fully characterized, and air-purifying respiratory protection must protect to the adequate levels as evaluated by IH and RadCon in accordance with “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120).

5.2.3 Level B Personal Protective Equipment

Level B PPE will be worn when personnel cannot be adequately protected with air-purifying respirator because there are high levels of contaminants present, the appropriate respirator cartridges or combination are not available, a significant hazard exists for skin exposure, or IDLH or oxygen-deficient conditions exist. If IDLH conditions do not exist, then an escape air-purifying cartridge may be substituted for the escape bottle. The Retrieval Enclosure design and planned operational approach for the Accelerated Retrieval Project requires the use of supplied-air respiratory protection for initial operations in the Retrieval Enclosure during waste excavation in accordance with “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120). This requirement will be evaluated by IH and RadCon to determine appropriateness if additional information becomes available or is developed during project operations. Supplied-air respiratory protection also will be required in all high-contamination areas as documented on the RWP, TPR, work order, or JSA.

5.2.4 Level A Personal Protective Equipment

Level A PPE is not anticipated for Accelerated Retrieval Project operations.

5.3 Personal Protective Clothing Upgrading and Downgrading

The assigned IH, Industrial Safety, and RadCon personnel will be responsible for determining when to upgrade or downgrade PPE requirements. Upgrading or downgrading of PPE is based on changing operational conditions (e.g., equipment, waste types, and location of tasks) and is a normal occurrence. If changing conditions are encountered, work control documents (e.g., work order, RWP, and JSA) may need to be updated to reflect these changes or augmented by an SWP. Additional reasons for upgrading or downgrading are listed in the following subsections.

5.4 Inspection of Personal Protective Equipment

All PPE ensemble components must be inspected before use and when in use during Accelerated Retrieval Project construction and operations in accordance with “Personal Protective Equipment” (PRD-5121) for operations or “Personal Protective Equipment” (PRD-2001) for construction activities. Once PPE is donned, self-inspection will serve as the principal form of inspection. If PPE should become damaged or degradation or permeation is suspected, the individual wearing the PPE will inform others of the problem and proceed directly to the work-area exit point. Following required surveys (as required), PPE will be doffed and replaced. In addition, all PPE that becomes grossly contaminated or presents a potential source for the spread of such contamination will be required to be decontaminated or replaced.

Table 5-3 provides a general inspection checklist for common PPE items. Not all PPE ensemble items listed may be required for Accelerated Retrieval Project construction or operational tasks. Where specialized protective clothing or respiratory protection is used or required, the manufacturer’s inspection requirements in conjunction with regulatory or industry inspection practices will be followed. The assigned IH, safety professional, or RCT should be consulted about specific PPE inspection criteria.

Table 5-3. Inspection checklist for personal protection equipment.

Personal Protection Equipment Item	Inspection
Respirators (full-face piece air-purifying and supplied air respirators with escape-only self-contained breathing apparatus bottles or escape cartridges)	<p>Before use:</p> <ul style="list-style-type: none"> • Verify that respirator is within 3 years of shelf life • Ensure airline matches the airline respirator to be used • Inspect airline hose connections (sections of hose) to ensure all are threaded or permanent metal-to-metal connections (no quick disconnect pieces) • Check condition of the face piece, head straps, valves, connecting lines, fittings, and all connections for tightness • Check cartridge to ensure proper type or combination is being used for atmospheric hazards to be encountered, and inspect threads and O-rings for pliability, deterioration, and distortion • Check for proper setting and operation of regulators and valves, check all hose connections back to the breathing-air compressor, and check the pressure to the airline station and on individual airline connections to ensure pressure is within required range (in accordance with the manufacturer’s specifications). <p>Before entry into Level B area:</p> <ul style="list-style-type: none"> • Ensure air compressor is providing adequate airflow when all personnel have airlines hooked up to the compressor manifold in accordance with “Respiratory Protection” (MCP-2726).
Air hoods	<p>Before use:</p> <ul style="list-style-type: none"> • Ensure airline matches the air hood to be used • Visually inspect all seams and surfaces for tears and cracks • Pressurize air hood to check for pinholes or defective seams (no air should leak out when choking clear hood piece). <p>Before entry into contaminated area:</p> <ul style="list-style-type: none"> • Inspect all airline connections for tight fit (pull connections three times) • Ensure air compressor is providing adequate airflow when all personnel have airlines hooked up to the compressor manifold.
Level D, C, and B clothing	<p>Before use:</p> <ul style="list-style-type: none"> • Visually inspect for imperfect seams, nonuniform coatings, and tears • Hold personal protective equipment up to the light and inspect for pinholes, deterioration, stiffness, and cracks. <p>While wearing in the work zone:</p> <ul style="list-style-type: none"> • Inspect for evidence of chemical attack such as discoloration, swelling, softening, and material degradation • Inspect for tears, punctures, and zipper or seam damage • Check all taped areas to ensure they are still intact.

Table 5-3. (continued).

Personal Protection Equipment Item	Inspection
Gloves	<p data-bbox="568 306 707 331">Before use:</p> <ul data-bbox="568 346 1433 410" style="list-style-type: none"><li data-bbox="568 346 1433 410">• Pressurize rubber gloves to check for pinholes: Trap air in glove and roll to inflate glove for inspection. No air should escape. <p data-bbox="568 425 753 451">Leather gloves:</p> <ul data-bbox="568 466 1433 527" style="list-style-type: none"><li data-bbox="568 466 1433 527">• Inspect seams and glove surface for tears and splitting and verify no permeation has taken place.

6. PERSONNEL TRAINING

Training of Accelerated Retrieval Project construction and operations personnel is a key element of the hazard identification and mitigation process. In addition to required project position-based training, all assigned personnel who access the construction or operations areas will be trained in requirements contained in this HASP and other safety and health documents. Personnel will receive training, as specified in the applicable section of the HAZWOPER standard (29 CFR 1910.120) and RWMC, DOE, federal, state, and INEEL companywide manuals as applicable.

All training will be developed, conducted, and maintained in accordance with *Training and Qualification* (Manual 12) and Accelerated Retrieval Project or applicable facility supplemental training procedures. The *Training and Qualification* manual describes the INEEL processes that ensure the INEEL work force is properly trained to work effectively and safely and ensures that all personnel in the company understand their roles, the role of management, and the role of the training directorate in training INEEL employees.

The Accelerated Retrieval Project nuclear facility manager (NFM) or project operations manager controls all support activities, including training, necessary to operate and maintain the project. The NFM and operations manager are responsible for all aspects of efficient facility operation and maintenance and are responsible to ensure that all operational personnel are properly trained.

6.1 Training

Training personnel ensure that Accelerated Retrieval Project personnel receive the training necessary to perform their job assignments safely and effectively. The training directorate oversees and coordinates training analysis, design, development, implementation, and evaluation, in close association with responsible management. The training directorate also ensures that employees who require qualification or certification meet the minimum qualification requirements and receive appropriate training. Other activities include tracking and maintaining training records.

Training settings and methods are carefully selected to optimize the trainee learning experiences. They may include classroom training, web-based instruction, self-study, and on-the-job training as appropriate.

6.2 Personnel Selection

Personnel selection for the Accelerated Retrieval Project complies with the company staffing procedures. Employee position descriptions are used for personnel selection, and these position descriptions identify entry-level requirements for all INEEL personnel.

6.3 Qualification and Certification Processes

Qualification requires demonstration and documentation of experience, physical attributes, training, knowledge, and skills necessary to perform a specific job function. Supervisors are qualified by meeting entry-level requirements associated with the supervisory position and as identified in the project training implementation matrix. This ensures that supervisors possess the required knowledge and skills, when combined with their previous education, experience, and training, to perform responsibilities specific to their position. Positions that require qualification for the Accelerated Retrieval Project operations include excavator operator, operators, radiological personnel, shift supervisors, and operations foremen.

Certification is the formal endorsement by facility management of an individual who has completed the qualification(s) and other requirements (e.g., a physical examination, written examination, operational evaluation, and oral examination) related to a specific position. Examples of positions that require certification for the Accelerated Retrieval Project include shift supervisor and excavator operator. The project operation's training implementation matrix details positions of responsibility and those requiring additional training and certification.

6.4 Implementation of Training

The Accelerated Retrieval Project operations manager is responsible for ensuring that crafts and maintenance personnel assigned to work at the Accelerated Retrieval Project have the skills necessary for their particular craft. The Accelerated Retrieval Project facility manager is responsible for ensuring that crafts and maintenance personnel are qualified to perform assigned work at the facility in accordance with *Training and Qualification* (Manual 12).

Facility prejob briefings and facility-specific CERCLA, hazard communication, and HAZWOPER training courses satisfy requirements of "Hazard Communication" (29 CFR 1910.1200) and "Hazardous Waste Operations and Emergency Response" (29 CFR 1910.120), respectively. Radiological Control personnel assigned to support Accelerated Retrieval Project operations will participate in an ongoing training program in accordance with "Occupational Radiation Protection" (10 CFR 835) in addition to Accelerated Retrieval Project operations-specific training. Operators and shift supervisors have fissile material handling as a collateral duty and will receive fissile-material-handling training.

The operations manager is responsible to ensure that personnel have an adequate level of facility knowledge, including a general overview of the facility, facility-specific hazards, safety, and applicable procedures. A thorough analysis of course work and other associated training required for Accelerated Retrieval Project operations personnel requiring certifications or qualifications will be performed, and a formal continuing training program for Accelerated Retrieval Project will be developed. The project training implementation matrix details positions of responsibility and positions requiring additional training and certification.

Table 6-1 is a training guide provided to address basic HAZWOPER and radiological training requirements based on entry to Accelerated Retrieval Project operations areas. This is not intended to be a complete list of Accelerated Retrieval Project operational training requirements for all assigned personnel but lists the HAZWOPER access requirements for entry into the general operational areas. Individual training plans that reflect required training for individual employees will be developed for Accelerated Retrieval Project operations personnel that specify required qualification and certification requirements. Individual training plans are revised at least annually or as needed.

Personnel requiring Accelerated Retrieval Project operation- or position-specific qualifications or certifications will complete the necessary training before beginning their project activities. As appropriate, a qualified instructor or subject matter expert will conduct the training and document it in accordance with companywide procedures, or formal on-the-job training will be conducted in accordance with "Conduct and Evaluation of On-the-Job Training" (MCP-61).

Table 6-1. Minimum required training for access to Accelerated Retrieval Project construction and operational areas.

Personnel and Operational Areas to be Accessed (unless specific positions are listed, minimum access requirements apply to all other operations personnel and visitors)	Shift Supervisor, ^a Subcontractor Technical Representative, ^a Operations Foremen, Operations Heavy-Equipment Operators, Accelerated Retrieval Operators, and Assigned Industrial Hygiene and Radiological Control Personnel	Project Construction Areas ^b (Subsurface Disposal Area construction areas)	Retrieval Enclosure (exclusion zone) and Airlock (contamination reduction zone) Facilities ^b	Accelerated Retrieval Project Subsurface Disposal Area Operations Controlled Areas and Operational Support Facilities (support zone)
Required Training				
40-hour HAZWOPER ^c — Operations	Yes	Yes ^h	Yes	
24-hour HAZWOPER ^c — Operations				Yes ^h
Project Health and Safety Plan Training ^c	Yes	Yes	Yes	Yes
Project-Site Orientation Briefing ^f		Yes		
Radiological Worker I or II ^g	Radiological Worker II	Escort or Radiological Worker II	Radiological Worker II	Radiological Worker II
Respiratory Protection	Yes ^d	Yes ^d	Yes ^d	Yes ^d

Note: Shaded fields indicate specific training is not required or applicable.

a. Will be trained to the HAZWOPER supervisor level.
b. Required training after construction removal of overburden and after start of operations waste retrieval activities. Contact the Radioactive Waste Management Complex shift supervisor for current status and additional training requirements.
c. Includes 8-hour HAZWOPER refresher training as applicable and supervised field experience as follows:
40-hour HAZWOPER = 24-hour supervised field experience and 24-hour HAZWOPER = 8-hour supervised field experience.
d. Respirator training is not required unless individual is required to wear a respirator. Respiratory protection training and fit test are required before donning a respirator.
e. Includes project-specific hazards communications (29 CFR 1910.120), site access and security, and decontamination and emergency response actions, as required by “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120[e]).
f. Orientation includes construction briefing of site hazards, designated work areas, emergency response actions, and personal protective equipment requirements. Personnel receiving project-site orientation briefing only are limited to the areas outside designated work areas and must be escorted by a project supervisor or designee who is fully trained on the requirements of the health and safety plan.
g. Training requirements and allowances for escort into radiologically controlled areas are provided in “Radiological Control Manual” (PRD-183). Source-user training is required for personnel directly handling radioactive sources in accordance with “Radioactive Source Accountability and Control” (MCP-137).
h. Visitors on official business may be escorted by a fully trained employee into the general Subsurface Disposal Area construction areas and operational support trailers without 24- or 40-hour HAZWOPER training but may not enter the Retrieval Enclosure or airlock structure after start of waste retrieval operations without 40-hour HAZWOPER training. Visitors must have prior authorization from the Radioactive Waste Management Complex shift supervisor with concurrence of the health and safety officer, and the facility operations must not present a risk of visitor exposure to potential contaminants of concern.

HAZWOPER = hazardous waste operations and emergency response

6.5 Project Operations-Specific Training

As part of Accelerated Retrieval Project construction and operations access training, personnel will receive HASP training. After completing HASP training, project personnel will sign “Group Read and Sign Training Roster” (Form 361.25) computer-based required reading acknowledgement, or equivalent computer-based training, indicating that they have received this training, understand the project tasks, associated hazards and mitigations, and agree to follow all HASP and other applicable work control and safety requirements. The “Group Read and Sign Training Roster” (Form 361.25) (or equivalent) training forms are available on the INEEL Intranet under Forms.

A trained HAZWOPER 8-hour supervisor (shift supervisor, STR, or other person who has been trained by the HAZWOPER supervisor) will monitor the performance of each newly 24- or 40-hour trained worker to meet the 1 or 3 days of supervised field experience, respectively, in accordance with “Hazardous Waste Operations and Emergency Response” (29 CFR 1920.120[e]). Following the supervised field experience period, the supervisor will complete “Hazardous Waste Operations (HazWoper) Supervised Field Experience Verification 29 CFR 1910.120” (Form 361.47), or equivalent, to document the supervised field experience.

Note 1: Supervised field experience is only required if personnel have not previously completed this training at another CERCLA (42 USC § 9601 et seq., 1980) site (documented) or if they are upgrading from 24- to 40-hour HAZWOPER training. A copy of the training record must be kept at the Accelerated Retrieval Project site as evidence of training or be available electronically in Training Records and Information Network (Training Records and Information System).

Note 2: Completed supervised field experience training forms (“Hazardous Waste Operations (HazWoper) Supervised Field Experience Verification 29 CFR 1910.120” [Form 361.47], or equivalent) should be submitted to the Accelerated Retrieval Project training coordinator for inclusion in the Training Records and Information System.

6.6 Prejob and Postjob Briefings and Safety Meetings

All Accelerated Retrieval Project construction and operational activities performed in accordance with companywide requirement documents will require a prejob briefing conducted by a supervisor. During this briefing, tasks associated with project will be outlined, hazards identified, hazard controls and mitigation reviewed, PPE requirements discussed, waste minimization opportunities communicated, and employees’ questions answered. Following the completion of operational activities, a postjob briefing will be conducted with particular emphasis of capturing lessons learned and process improvement for future operations.

Other safety meetings on various subjects will be conducted periodically for operations personnel to reinforce specific safety topics. A shift supervisor, assigned safety and health operations personnel, or worker may conduct a safety meeting. Attendance at the safety meetings will be documented on an applicable form and submitted to training personnel for entry into Training Records and Information System.

7. SITE CONTROL AND SECURITY

The Accelerated Retrieval Project areas will be fenced or roped to prevent unauthorized entry into construction or operations areas. Entry into and exit out of the Accelerated Retrieval Project areas will be controlled through the appropriate use of barriers, signs, and other measures in accordance with “Accident Prevention Signs, Tags, Barriers, and Color Codes” (PRD-5117) for operations and “Safety Signs, Color Codes, and Barriers” (PRD-2022) for construction areas. Radiological controlled areas will be established by RadCon personnel in accordance with the “Posting Radiological Control Areas” (MCP-187).

Personnel not directly involved with Accelerated Retrieval Project construction or operations shall be excluded from entering the controlled areas. Visitors, such as inspectors, may be authorized to enter the established Accelerated Retrieval Project construction and operations area provided they are conducting official business and have met the minimum Accelerated Retrieval Project training requirements for the area to be accessed (as listed on Table 6-1 and as posted). Nonoperational personnel will not be allowed access to active construction or operational areas without processing through the RWMC shift supervisor. All training for access into the requested area will be verified. Nonoperational personnel will only be allowed into operational areas to perform the specific function for which access was granted and may be limited in these areas because of operational activities and associated hazards (at the discretion of the shift supervisor).

The Accelerated Retrieval Project construction area will be clearly posted as a construction area, and operations areas in the SDA will be posted and controlled as CERCLA-regulated areas. These areas are discussed in Sections 7.1, 7.2, 7.3, and 7.4.

7.1 Exclusion Zone

The Retrieval Enclosure will be posted and controlled as an exclusion zone after the start of waste retrieval operations. Personnel must have required PPE in accordance with the TPR, JSA, work order, or RWP as appropriate before entry into the exclusion zone. The shift supervisor must authorize personnel entry into the exclusion zone. Radiological controlled areas will be established by RadCon personnel in accordance with “Posting Radiological Control Areas” (MCP-187). The buddy system is required anytime entry into the exclusion zone is made.

7.2 Contamination Reduction Zone

The airlock structure will be posted as a contamination reduction zone after the start of waste retrieval operations. Personnel must have required PPE in accordance with the TPR, JSA, work order, or RWP as appropriate before entry into the contamination reduction zone. The shift supervisor must authorize personnel entry into the contamination reduction zone. Radiological controlled areas will be established by RadCon personnel in accordance with “Posting Radiological Control Areas” (MCP-187). The buddy system is required anytime entry into high-contamination areas is made in the airlock.

7.3 Support Zone

The SDA area immediately around the Retrieval Enclosure will be roped and posted as the support zone in accordance with HSO direction. Personnel must have required PPE in accordance with the TPR, JSA, work order, or RWP as appropriate before entry into the support zone. Personnel entering the SDA and support zone must comply with all radiological postings and CERCLA signs.

7.4 Construction Area

The Accelerated Retrieval Project construction area will be clearly roped and posted with access requirement signs. During overburden removal, these access requirements will include restricted access to only personnel authorized by the STR. Radiological controlled areas will be established by RadCon personnel in accordance with "Posting Radiological Control Areas" (MCP-187). Personnel entering the SDA and construction area must comply with all radiological postings and CERCLA signs.

7.5 Site Security

The Accelerated Retrieval Project is secured and controlled with the existing RWMC fence and through appropriate posting to prevent entry into Accelerated Retrieval Project construction and operational areas. Additionally, INEEL security forces will provide general facility security in conjunction with RWMC operations.

Note: Signs are routinely lost because of high winds and will be replaced as soon as possible the next workday following discovery.

7.6 Wash Facilities and Sanitation

Project construction and operations will involve close contact with waste or potentially contaminated materials. Personnel will obey all radiological survey requirements to prevent inadvertent uptakes of radiological or chemical contaminants. Ingestion of hazardous substances is more likely when workers do not practice good personal hygiene habits during and following activities in the construction and operations areas of the project. It is important to wash hands, face, and other exposed skin areas thoroughly after completion of work and before smoking, eating, or chewing gum or tobacco.

Sanitation and shower facilities will be available for Accelerated Retrieval Project operations personnel within RWMC facility areas.

Note: No smoking, chewing, eating, or applying lip balm is allowed within CERCLA-regulated areas and radiologically controlled areas. A designated drinking area may be established in the support zone for heat stress prevention in accordance with IH and RadCon foreman review and restrictions.

7.7 Designated Eating Areas and Smoking Areas

The designated eating areas for construction and operations personnel will be established in the RWMC operations or administrative areas and includes the RWMC cafeteria (located in WMF-637) and designated eating areas.

Smoking will only be permitted in designated smoking areas outside the RWMC SDA. Personnel will comply with all INEEL smoking policies, including disposal of smoking materials in the proper receptacles. All "Idaho National Engineering and Environmental Laboratory Wildland Fire Management Guide" (GDE-7063) requirements related to smoking at the INEEL will be practiced.

8. OCCUPATIONAL MEDICAL SURVEILLANCE

The Accelerated Retrieval Project operations personnel shall participate in the INEEL OMP, defined in “Occupational Health Program” (PDD-61) to implement the requirements of “Worker Protection Management for DOE Federal and Contractor Employees” (DOE O 440.1A), “Contractor Occupational Medical Program Guide for Use with DOE Order 440.1” (DOE G 440.1-4), and “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120[f]). Medical surveillance examinations will be provided at the following times:

- Before assignment
- At least once every 12 months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is acceptable
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last 6 months
- At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary
- Personnel who are or may be exposed to hazardous substances at or above the OSHA permissible exposure limit (PEL), or published exposure limits, without regard to respirator use for 30 or more days per year
- All employees who are injured, become ill, or develop signs or symptoms because of possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation
- All employees who wear a respirator for 30 days or more a year or as required by “Respiratory Protection” (29 CFR 1910.134).

Personnel who wear a respirator in performance of their job or who are required to take respirator training to perform their duties under this plan must participate in the medical evaluation program for respirator use at least annually as required by “Respiratory Protection” (MCP-2726).

If the OMP does not have sufficient information to complete a medical evaluation before respirator training, the employee’s supervisor will be notified. The employee will not be permitted to fit test until the needed information is provided and any additional examination or testing is completed.

A single copy of the Accelerated Retrieval HASP, JSA requirements, required PPE, and other exposure-related information will be made available, upon request, to the INEEL OMP physician (and subcontractor physicians) conducting medical surveillance for employees participating in project operations. Exposure monitoring results and hazard information furnished to the OMP physician will be supplemented or updated annually if required (as stated in Section 12) as long as the employee is required to maintain a hazardous waste and material employee medical clearance. The OMP physician will then evaluate the physical ability of an employee to perform the work assigned.

The OMP physician shall evaluate the physical ability of Accelerated Retrieval Project operations personnel to perform the work assigned, as identified in this HASP; other project facility-related documentation; and individual training plans. A documented medical clearance (e.g., a physician’s written opinion) will be provided to the employee and supervisor stating whether the employee has any

detected medical condition that would place him or her at increased risk of health impairment from project operations, emergency response operations, respirator use, and radiological work, as applicable. The OMP responsibilities, with regard to personnel assigned to project operations, include, but are not limited to, the following:

- Providing current comprehensive medical examinations (as determined by the examining physician) at an INEEL medical facility for full-time project operations personnel
- Obtaining records or reports from an employee's private physicians, as required by the OMP director
- Performing a medical evaluation on return-to-work cases following an absence in excess of 1 workweek (40 consecutive work hours) resulting from illness or injury
- Conducting a medical evaluation in the event that management questions the ability of an employee to work or if an employee questions his or her own ability to work.

Personnel are responsible for communicating any work or medical restrictions to their supervisor so modified work assignments can be made, if necessary. During the "Performing Pre-Job Briefings and Documenting Feedback" (MCP-3003) prejob briefing, the supervisor conducting the briefing should ask workers if they have any work restrictions. However, it is the responsibility of each employee to inform the supervisor of any work or medical restrictions.

Note: All managers, supervisors, and foremen have access to employees' current medical restrictions, certifications, and surveillances through the OMP database on the Safety and Health homepage or OMP reports link: <http://webhome4/OMPReports/>. This allows management to review medical restrictions, surveillances, and certifications before assigning work tasks to employees.

8.1 Project Operations Subcontractor Workers

If subcontractors participate in Accelerated Retrieval Project construction or operations or may be exposed to Accelerated Retrieval Project hazardous substances or health hazards at or above the established permissible exposure limit for these substances without regard to the use of respirators for 30 days or more a year, they shall participate in a subcontractor medical surveillance program that satisfies the requirements of "Hazardous Waste Operations and Emergency Response" (29 CFR 1910.120[f]). The physician's written opinion will serve as documentation that subcontractor personnel are fit for duty.

Medical data from the subcontractor employee's private physician, collected pursuant to hazardous material worker qualification, shall be made available to the INEEL OMP physicians, upon request. A subcontractor employee's past radiation exposure history may be requested and, if so, will be submitted to the INEEL radiation dosimetry and records section in accordance with "Issuing TLDs and Obtaining Personnel Dose History" (MCP-188) and "Personnel Exposure Questionnaire" (MCP-2381).

8.2 Injuries at the Accelerated Retrieval Project Site

It is policy that an INEEL OMP physician examines all Bechtel BWXT Idaho, LLC, injured personnel for the following reasons:

- An employee is injured on the job

- An employee is experiencing signs and symptoms consistent with exposure to a hazardous material
- An employee is believed to have been exposed to toxic substances or physical or radiological agents in excess of allowable limits during the course of a project at the INEEL.

Note: In the event of an illness or injury, the decision to provide first aid and transport to the nearest medical facility or whether to immediately request an ambulance and continue to stabilize and provide first aid should be based on the nature of the injury or illness and likelihood that transporting the individual may cause further injury or harm. Most likely, the person making this decision only will be trained to the medic first or CPR level and should contact the Central Facilities Area medical facility at 777 or 526-1515 for further guidance if there is any question as to the extent of injury or potential to cause further harm by movement of the injured individual.

In the event of a known or suspected injury or illness caused by exposure to a hazardous substance or physical or radiological agent, the employee will be transported to the nearest INEEL medical facility for evaluation and treatment. The shift supervisor is responsible for obtaining as much of the following information as is available to accompany the individual to the medical facility:

- Name, job title, work location, and supervisor’s name and phone number
- Substance, physical or radiological agent exposed to (known or suspected), and MSDS, if available
- Nature of the incident and injury or exposure and associated signs or symptoms of exposure
- First aid or other measures taken
- Locations, dates, and results of any relevant personal or area exposure monitoring or sampling
- List of PPE worn during this work (e.g., type of respirator and cartridge used).

Further medical evaluation will be determined by the treating or examining physician in accordance with the signs and symptoms observed, hazard involved, exposure level, and specific medical surveillance requirements established by the OMP director in compliance with “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120).

Note: In the event of an illness or injury to a subcontractor employee, the employee will be transported to the nearest INEEL medical facility (CFA-1612) as appropriate based on injury severity to have the injury stabilized. The employee then will be transported to the subcontractor’s treating physician or off-Site medical facility.

The Accelerated Retrieval Project shift supervisor will be contacted if any injury or illness occurs to personnel working for the Accelerated Retrieval Project. As soon as possible after an injured employee has been transported to the INEEL medical facility, the shift supervisor or designee will make additional notifications to management personnel.

Radiological Control personnel will evaluate all actual and suspected radiological exposures in excess of allowable limits and will establish follow-up actions. For internal uptakes (as calculated committed effective dose equivalent values), the “Established Levels of Radionuclide Intakes for Consideration of Medical Intervention” (EDF-INEL-003) will be used as the basis for this evaluation and follow-up actions. All wounds will be examined by an OMP physician to determine the nature and extent

of the injury. The RadCon supervisor in conjunction with an OMP physician will determine whether the wound can be bandaged adequately for entry into a radiological contamination area in accordance with Article 542 of the “Radiological Control Manual” (PRD-183).

8.3 Substance-Specific Medical Surveillance

Project operations will involve the excavation, handling, sampling, packaging, decontamination, and storage of SDA waste contaminated with radiological and chemical constituents. Several of the nonradiological waste constituents have OSHA substance-specific standards that govern the manner that personnel monitoring and medical surveillance are conducted. These substances have exposure action levels. The assigned IH will evaluate and document potential exposures to hazardous substances that trigger medical surveillance requirements. Based on the Industrial Hygiene exposure assessment, construction and operations personnel may be entered into the applicable medical surveillance programs.

All Accelerated Retrieval Project construction and operations will be evaluated to determine the hazards and potential exposures to operations personnel in accordance with “Activity Level Hazard Identification, Analysis, and Control” (PRD-25). The IH and RadCon personnel will conduct exposure assessments for each operation to determine the potential for exceeding exposure limits. The regulatory requirements for each OSHA-mandated substance-specific standard will be reviewed against exposure monitoring data (where available) and in the context of the exposure potential using professional judgment. Accelerated Retrieval Project operations involving chemicals listed in “13 Carcinogens” (29 CFR 1910.1003) and “Carcinogens” (MCP-2703) will require implementation of a carcinogen control program.

All exposures to ionizing radiation will be evaluated in accordance with the “Radiological Control Manual” (PRD-183) and, where deemed appropriate, be controlled through the use of an RWP in accordance with “Radiological Work Permit” (MCP-7).

If new Accelerated Retrieval Project waste forms or streams are identified or operational chemicals are introduced during the course of operations, then exposures will be evaluated and quantified to determine if a substance-specific standard applies. If regulatory, mandated, substance-specific standard action levels are triggered, then affected personnel will be enrolled in applicable substance-specific medical surveillance programs.

9. PERSONNEL ROLES AND RESPONSIBILITIES

The organizational structure for Accelerated Retrieval Project construction and operations reflects the resources and expertise required to operate the facility while minimizing risks to worker health and safety, the environment, and the general public. Job titles of the individuals in key roles at the Accelerated Retrieval Project are shown on the organizational chart in Figure 9-1. The operations organization includes project operations management and supervision; operators and technicians; environment, safety, health, and quality assurance representatives; and support personnel. The NFM and the Accelerated Retrieval Project manager will interface to determine the most appropriate use of these resources.

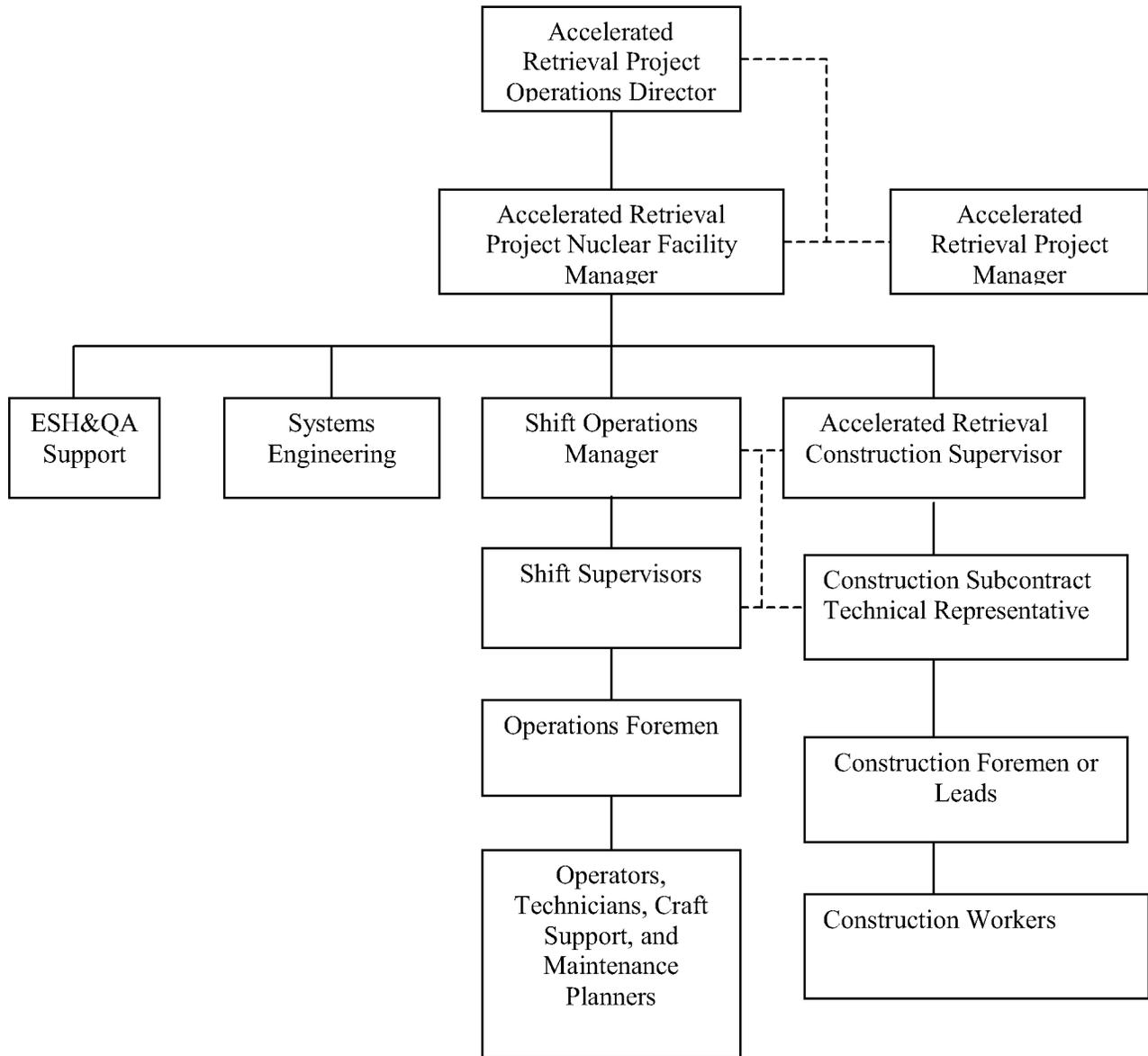


Figure 9-1. Organizational interfaces for the Accelerated Retrieval Project.

9.1 Project Operations Personnel

9.1.1 Project Operations Management

9.1.1.1 Accelerated Retrieval Project Operations Director. Because construction; operations; and deactivation, decontamination, and decommissioning activities for the Accelerated Retrieval Project will occur within the RWMC operations boundary, the Accelerated Retrieval Project operations director will serve as the operations director for all Accelerated Retrieval Project field tasks.

The operations director will provide infrastructure programs to support facility safety and work processes for personnel assigned to the Accelerated Retrieval Project area. These programs include supplying support services (e.g., maintenance craft skills, RadCon personnel, and engineering support), equipment (e.g., forklifts and water trucks), and document control and records management functions. The RWMC operations director also establishes and staffs an Emergency Response Organization (ERO), which includes developing site-specific emergency plans and maintaining a command post and support equipment.

9.1.1.2 Accelerated Retrieval Project Nuclear Facility Manager. The Accelerated Retrieval Project NFM is responsible for all Accelerated Retrieval Project area operational activities and supports the project for startup, operations, and maintenance activities related to Accelerated Retrieval Project scope, schedule, and budget performance. The NFM will ensure that documents identified within the Accelerated Retrieval Project authorization basis (i.e., safety analysis report, technical safety requirement, and permits) remain current and adequately address the scope and hazards encountered for activities within the scope of the Accelerated Retrieval Project. The NFM is responsible for the safe operation of Accelerated Retrieval Project equipment and facilities and for ensuring that safety systems protect human health and the environment.

9.1.1.3 Shift Operations Manager. The shift operations manager is responsible for the day-to-day operational activities of the Accelerated Retrieval Project and is the designated NFM alternate, with signature authority for all matters regarding operations and nuclear facility management. Specific duties and responsibilities include directing performance of operational activities in accordance with the approved schedule, communicating expectations to the crews, assessing their readiness to perform work in a manner consistent with all applicable safety and health requirements and company procedures, and managing the operational shift crews.

9.1.2 Shift Operations

9.1.2.1 Shift Supervisor. The shift supervisor is the individual responsible on-shift during Accelerated Retrieval Project construction and operations and has authority to act for management during normal and abnormal operations. The on-duty shift supervisor is the project safety and health official located onsite at all times at RWMC. The on-duty shift supervisor has the responsibility, authority, and knowledge necessary to implement the HASP and verify compliance with applicable safety and health requirements. Specific duties and responsibilities include ensuring the safe and efficient execution of work for waste retrieval, segregation, handling, and storage and ensuring conduct of operations is performed in such a way as to protect human health and the environment.

9.1.2.2 Operations Foremen. Operations foremen are responsible for on-shift waste handling operations and maintenance activities and for reporting to the RWMC shift supervisor. The foreman ensures the efficient execution of work and ensures conduct of operations is performed safely and protective of human health and the environment.

9.1.2.3 Operators (Retrieval, Soil Handling, and Material Handling). Operators are assigned to each shift to perform retrieval, soil handling, and glovebox operations. Operators will be fully qualified to perform their prescribed duties. In addition, a roving operator is assigned to assist with drum-out operations and fissile monitoring and will support these activities as required.

9.1.2.4 Data Recorder. The data recorder will assist with the identification and characterization of waste in the Packaging Glovebox System, record data, enter data into the drum tracking system and, when required, act as a verifier of waste disposition locations.

9.1.2.5 Laborers and Heavy-Equipment Operators. Specific duties and responsibilities include operating the excavator, forklifts, and flatbed to transport drums; handling the drums within the secondary confinement area; and understanding and applying Accelerated-Retrieval-Project-specific safety and health policies.

9.1.2.6 System Engineers (Shift Technical Advisor). System engineers are responsible to the operations manager and the NFM and will receive day-to-day direction through the lead system engineer. Specific duties and responsibilities include the following:

- Verifying that all proposed design changes meet all applicable requirements
- Establishing and maintaining technical baselines
- Managing the engineering change control process
- Implementing configuration management for each structure, system, and component for which the system engineer is or will be responsible.

9.1.2.7 Radiological Control Technicians. Radiological control technicians report directly to the facility RCT foreman and are responsible for ensuring compliance with the INEEL RadCon program within the Accelerated Retrieval Project, including acting as a RadCon information resource for project personnel. Also, during emergencies, RCTs are responsible for stopping work or ordering an area evacuated when an imminent radiation hazard exists and such actions are necessary to ensure worker safety.

9.1.2.8 Radiological Control Technician Foreman. Specific duties and responsibilities of the RCT foreman include directing and supervising day-to-day activities for RCTs, reviewing RWPs, and ensuring that requirements of applicable DOE orders, company programs, and the “Radiological Control Manual” (PRD-183) are properly incorporated into project-specific procedures, practices, and controls.

9.1.2.9 Mechanics and Instrument Technicians. Maintenance personnel are responsible for maintenance and repair of project operations mechanical and electrical equipment. Personnel in this category include all maintenance crafts, life safety systems technicians, and their line management. Technicians are responsible for specific maintenance and monitoring activities that include equipment maintenance, troubleshooting, repair, testing, instrument calibration, inspections, and data surveys.

9.1.3 Environment, Safety, Health, and Quality Assurance

9.1.3.1 Health and Safety Officer. The HSO will be onsite during all construction and operations field tasks to assess and resolve safety and health issues. The HSO must have the knowledge necessary to implement the HASP and verify compliance with the applicable health and safety requirements. The HSO may be assigned other duties, as long as the duties do not interfere with the primary responsibilities of

HSO. This position may be executed by the shift supervisor or project safety engineer as determined appropriate by the NFM.

9.1.3.2 Radiological Engineer. The radiological engineer provides radiological engineering support within the project. Specific duties and responsibilities include acting as point of contact for all radiation protection issues related to the project, ensuring that radiological hazards are identified and appropriate controls are implemented to maintain worker exposure to those hazards ALARA, and identifying conditions that may impede implementation of company standards for safety, quality, and operations and maintenance. The radiological engineer is also responsible for initiating actions to correct conditions, including stopping work if necessary, that adversely impact safety, quality, or operations and maintenance.

9.1.3.3 Environmental Engineer. Responsibilities of the environmental engineer include providing overall technical expertise with respect to regulatory issues, natural and cultural resources, and risk assessment for the Accelerated Retrieval Project. The environmental engineer identifies environmental and regulatory issues that affect operations and develops solutions in coordination with the Accelerated Retrieval Project engineer and other project task leads. The environmental engineer also works with the project task leads and management to develop appropriate mitigation measures that minimize potential noncompliance with environmental requirements when environmental issues are identified.

9.1.3.4 Safety Engineer. The assigned construction and project safety engineer(s) reviews work packages, observes construction and operational activities, assesses compliance with the safety and health manuals, signs SWPs, advises the shift supervisor on required safety equipment, answers questions on safety issues and concerns, and recommends solutions to safety issues and concerns that arise during operations. The safety professional may conduct periodic inspections in accordance with “Safety and Health Inspections” (MCP-3449) and may have other duties at the task site as specified in other sections of this HASP or in INEEL program requirements documents or MCPs. Additionally, the safety professional will support Accelerated Retrieval Project facility and project management by investigating accidents and injuries and preparing written reports to project and facility management related to hazard identification and appropriate mitigation efforts.

9.1.3.5 Industrial Hygienist. The assigned IH(s) is the primary source for information about nonradiological hazardous and toxic agents during operations. The IH assesses the potential for worker exposures to hazardous agents in accordance with the INEEL safety and health manual MCPs and accepted industry Industrial Hygiene practices and protocol. By participating in work control development and approval process, the IH assesses and recommends appropriate hazard controls for the protection of operations personnel, operates and maintains airborne sampling and monitoring equipment, reviews for effectiveness, and recommends and assesses the use of PPE required in this HASP (recommending changes as appropriate to facility management).

9.1.3.6 Quality Assurance Engineer. Duties and responsibilities of the quality assurance engineer include implementing internal quality monitoring, assessment, and surveillance by establishing and maintaining an internal assessment and monitoring schedule, reviewing design and performance specifications and other design documents to determine if quality requirements are properly included, and ensuring quality assurance compliance is achieved in accordance with applicable requirements established by the company, DOE, state, and federal regulations.

9.1.4 Operations Support

9.1.4.1 Operations Integration Specialist. Specific duties and responsibilities of the operations integration specialist include interfacing between operations and all other project teams (e.g., project management, design, safety, and health, environmental, criticality protection, radiological controls, records management, and document control) to help ensure that operations is informed of requirements that impact operational activities; the underlying driver for all requirements impacting operational activities is known and understood; and Accelerated Retrieval Project deliverables that are not created by operations, but impact operations documents and responsibilities, are coordinated and scheduled for delivery in time to support operational deadlines.

9.1.4.2 Safety Analyst. The safety analyst performs nuclear safety analyses and prepares and maintains the nuclear safety analysis documents required by “Safety Basis Requirements” (10 CFR 830, Subpart B). Specific duties and responsibilities include acting as the point of contact for safety analysis issues related to the Accelerated Retrieval Project, scheduling and tracking safety analysis work, preparing and maintaining documented safety analyses and technical safety analysis requirements, and preparing unreviewed safety question screens and evaluations.

9.1.4.3 Waste Generator Services Facility Representative and Technical Specialist. Duties and responsibilities of the Waste Generator Services facility representative and technical specialist include the following:

- Collaborating with project personnel to complete initial evaluation of waste types generated as part of process operations
- Assigning a probable waste type
- Maintaining the waste management records in the INEEL Integrated Waste Tracking System database
- Meeting with the waste generator to obtain and document the following information:
 - Identification of the waste generation process, schedule, and potential pollution prevention opportunities
 - Identification of starting materials for the waste generation process
 - Definition of the expected waste material components and characteristics, and all process knowledge data.

The Waste Generator Services facility representative and technical specialist assumes cradle-to-grave responsibilities for a given waste stream and ensures that all activities in this process are completed.

9.1.4.4 Radioactive Waste Management Complex Classification Officer and Security Personnel. The RWMC security personnel provide facility security, review procedures and plans before waste retrieval or relocation, and address security concerns expressed by Accelerated Retrieval Project personnel. In addition, these personnel conduct damage assessments in the event of a security incident, coordinate with U.S. Department of Energy Idaho Operations Office Security and the Classification Officer, and identify any added security measures required.

9.1.4.5 Training Specialist. Duties and responsibilities include supporting line management through training analysis, design, development, implementation, and evaluation to ensure all personnel on the Accelerated Retrieval Project are properly trained and qualified to perform their assigned tasks.

9.1.4.6 Administrative Support. Administrative support and office personnel are responsible for support functions that do not involve actual facility operations. Activities performed, such as word processing, filing, stocking office supplies, and answering the phone, are performed exclusively in an office environment.

9.1.5 Visitors

All visitors with official business in the Accelerated Retrieval Project construction and operational areas (including INEEL personnel, representatives of DOE, and state or federal regulatory agencies) may not proceed into the controlled area without having the appropriate training (see Table 6-1) as described below:

- Receiving training
- Signing applicable entry logs and work control documents (for the area to be accessed)
- Wearing the appropriate PPE.

A fully trained Accelerated Retrieval Project representative (e.g., shift supervisor or operator) will escort visitors entering the project operational areas.

Note 1: Visitors may not be allowed into the Accelerated Retrieval Project during certain activities to minimize safety, health, and radiological hazards to the visitors. The determination as to any visitor's demonstrated need for access into the construction or operational area will be made by the shift supervisor in consultation with RadCon personnel and assigned safety and health professionals.

Note 2: Visitors with no official business at project operations areas will not be permitted.

10. EMERGENCY RESPONSE PLAN

This emergency response plan defines the roles and responsibilities of Accelerated Retrieval Project operations personnel during an emergency. Such an emergency could be within the Accelerated Retrieval Project operations area, at the RWMC, or a Sitewide emergency. This section provides emergency plan contingencies at a project level and is a HAZWOPER-mandated supplemental plan to the “INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan” (PLN-114). The “INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan” (PLN-114) describes the overall process developed to respond to and mitigate consequences of emergencies that might arise at the INEEL. This section defines the responsibilities of Accelerated Retrieval operations personnel and their interface with the INEEL ERO by providing guidance for responding to abnormal events during project operational activities.

The “INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan” (PLN-114) may be activated in response to events occurring at the RWMC, at the Accelerated Retrieval Project complex, or at the discretion of the emergency coordinator. Once the INEEL plan is activated, Accelerated Retrieval Project operations personnel will follow the direction and guidance communicated by the emergency coordinator.

Note: The OSHA HAZWOPER definition of an emergency is not defined the same as in “Comprehensive Emergency Management System” (DOE O 151.1B) and “Occurrence Reporting and Processing of Operations Information” (DOE O 232.1A). For this reason, the term event will be used in this section when referring to project operational HAZWOPER emergencies.

10.1 Preemergency Planning

The “INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan” (PLN-114) provides the basis for preplanning all INEEL emergency events. This base plan is supplemented with INEEL facility-specific addendums. This preplanning makes it possible for the project to anticipate and appropriately respond to abnormal events that can affect operational activities. Preplanning also ensures that this project operations emergency response plan (Section 10) is integrated with the INEEL and RWMC emergency response programs. Specific procedures for addressing emergency events and actions to be taken are further described in the facility-specific emergency implementing procedures. Finally, this HASP addresses operational-specific hazards, potential emergency events, and the protective actions to take following such events. Emergency response program planning elements that must be completed before the initiation of project operations include the following:

- Establishing emergency warning signals and evacuation routes
- Establishing effective site communications
- Establishing requirements for emergency equipment and supplies
- Implementing personnel accountability procedures
- Identifying an adequate number of CPR and medic first-aid-trained personnel
- Establishing the preferred means for notifying the INEEL ERO of abnormal events.

Note: All Accelerated Retrieval Project operational emergencies will be reported through the RWMC shift supervisor to the ERO for classification in accordance with Section 4 of “INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan” (PLN-114). If the RWMC ERO is activated, site emergency response will follow “INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan” (PLN-114) and “Emergency Management Addendum 3—RWMC” (PLN-114-3).

10.2 Emergency Preparation and Recognition

The HASP sections for hazards identification and mitigation (Section 2) and accident prevention (Section 4) provided the strategy that will be followed at Accelerated Retrieval Project areas to prevent accidents. Similarly, emergency preparation and recognition also will require operations personnel to be constantly alert for potentially hazardous situations and signs and symptoms of chemical exposure or releases. All Accelerated Retrieval Project personnel should be familiar with the techniques for hazard recognition and the associated response, including proper operational notifications. Emergency phone numbers and evacuation route maps will be located throughout project operational areas.

Preparation and training on emergencies will include proper project access and egress procedures in response to project operational events and INEEL emergencies as part of the HASP training and project operations area access training where applicable. Visitors also will receive a briefing on emergency procedures during the hazard and general operations orientation briefing (see Table 6-1) and potentially complete HASP training depending on the project operations area to be accessed. Visitor emergency actions briefing will include alarm identification, location and use of communication equipment, location of site emergency equipment, and evacuation.

On-scene response to and mitigation of operational emergencies could require the expertise of INEEL fire department and medical personnel. Emergencies that could occur include the following:

- Accidents resulting in injury
- Fires
- Spills of hazardous or radiological materials
- Tornadoes, earthquakes, and other adverse natural phenomena
- Vehicle or transportation emergencies
- Safeguard and security emergencies
- Emergencies at nearby facilities that could prompt evacuation or take-cover actions at the task site.

10.3 Emergency Facilities and Equipment

Emergency response equipment, including the items described in Table 10-1, will be maintained within the Accelerated Retrieval Project area. The “Emergency Management Addendum 3—RWMC” (PLN-114-3) lists emergency equipment available at RWMC. This includes the emergency command post located in WMF-637 and equipment located in WMF-601 at RWMC. Additional heavy construction and other equipment listed in “Emergency Management Addendum 3—RWMC” (PLN-114-3) is available for use during emergencies.

The INEEL fire department maintains an emergency hazardous material response van that can be used to respond to an event or emergency within the project operations areas. Fire department personnel also are trained to provide medical services and immediate response to hazardous material spills. Additionally, the CFA-1612 medical facility is manned by medical personnel to evaluate and stabilize injured personnel or those experiencing signs and symptoms of exposure. At least two individuals with current medic and first-aid training will be present within the Accelerated Retrieval Project construction and operations area during field activities.

Table 10-1. Emergency response equipment to be maintained at the Accelerated Retrieval Project site during construction and operations.

Equipment Name and Quantity Required	Location at Operable Unit 7-10 Project	Responsible	
		Person	Frequency of Inspection
Fire extinguishers ^a	Located throughout the construction and operations area, administration buildings, Retrieval Enclosure, in each Storage Enclosure, and on each piece of industrial and heavy equipment.	STR or shift supervisor	Monthly
First-aid supplies	Designated administrative trailer.	STR or shift supervisor	Monthly
Eyewash station	At designated operational area in airlock (after construction). In construction area where there is a significant eye hazard (as determined by the industrial hygienist and safety professional).	STR or shift supervisor	Monthly or the frequency determined by the manufacturer
Eyewash bottle ^b	At strategic locations throughout the construction area as determined by the industrial hygienist and safety professional.	STR	Monthly or replace after use
Hazardous materials spill kit	Contamination reduction zone or construction area as determined by health and safety officer.	STR or shift supervisor	Monthly
Communication equipment available	In all construction and operational areas or in possession of STR an operations foreman.	STR or operations foreman	Availability and daily functional check

a. 10A or 60BC extinguishers or as specified by the Radioactive Waste Management Complex fire protection engineer.

b. An eyewash bottle will be used to provide an immediate eye flush if required. Portable eyewash stations that meet the “Emergency Eyewash and Shower Equipment” (ANSI Z358.1-1998) requirement are available at the Radioactive Waste Management Complex and other locations as determined by the industrial hygienist and safety professional. Employees are instructed to use the bottles and immediately proceed to the decontamination and treatment facility permanent eyewash station. Eyewash stations will be located within 30.5 m (100 ft) or 10 seconds from significant eye hazard operations as determined by the industrial hygienist and safety professional.

STR = subcontractor technical representative

10.4 Emergency Communications

In the event of an emergency, capability to perform the following actions is required:

- Summon INEEL emergency response resources
- Immediately notify operations personnel
- Inform others of the emergency.

Communications equipment within the Accelerated Retrieval Project operations areas will include a combination of radios, telephones (i.e., mobile, cellular, or hardline), and pagers. The shift supervisor will be notified of any project emergency event, and the shift supervisor will then make the required RWMC shift supervisor and INEEL ERO notifications.

10.4.1 Notifications

During emergency situations, the shift supervisor will be notified of any operational emergency event. The shift supervisor will then notify the RWMC shift supervisor who will make the required ERO and Warning Communications Center (WCC) notifications. The following information should be communicated, as available, to the RWMC shift supervisor:

- The caller's name, title (e.g., operations foreman or STR), telephone number, and pager number
- Exact location of the emergency
- Nature of the emergency including time of occurrence, current site conditions, and special hazards in the area
- Injuries, if any, including number of injured, types of injuries, and conditions of injured personnel
- Emergency response resources required (e.g., fire, hazardous material, and ambulance)
- Additional information as requested.

Note: If the shift supervisor cannot be contacted, then the WCC will be notified of the emergency event, and the information listed above will be communicated. The WCC also must be told that notification to the shift supervisor and emergency coordinator has not been made.

10.5 Personnel Roles, Lines of Authority, and Training

10.5.1 Idaho National Engineering and Environmental Laboratory Emergency Response Organization

The INEEL ERO structures are based on the incident command system and are described in "Emergency Management Addendum 3—RWMC" (PLN-114-3) and facility-specific addendums to that plan.

10.5.2 Role of Operations Personnel in Emergencies

Depending on the event, a graded response and subsequent notifications will take place. The shift supervisor and operations personnel responsibilities are described in Sections 10.5.2.1 and 10.5.2.2. Operations personnel will respond to emergencies only within the limits of their training and designated by their position. All personnel are trained to the Accelerated Retrieval Project and RWMC-specific emergency actions as part of the access training or will be escorted by someone who has been trained.

10.5.2.1 Accelerated Retrieval Project Shift Supervisor. The operations shift supervisor is responsible for initiating all requests for emergency services (e.g., fire and medical) and for notifying the RWMC shift supervisor of abnormal or potential abnormal events occurring within the project operations area. In addition, the shift supervisor or trained alternate will serve as the area warden. The area warden is

responsible for conducting personnel accountability for all operations areas. This will be accomplished by completing sweeps of all Accelerated Retrieval Project buildings and areas to ensure personnel are aware of the emergency event. Following notification of the emergency event, operations personnel will be directed to the designated assembly point where the attendance log (or equivalent) will be used to determine what personnel are onsite (role call). The Accelerated Retrieval Project shift supervisor then will report accountability status to the RWMC shift supervisor, who will in turn communicate this information to the RWMC emergency coordinator.

Additionally, the Accelerated Retrieval Project shift supervisor will control the scene of any emergency event (from a safe distance) until a member of the Incident Command System authority arrives at the scene to take control as the on-scene commander. When communicating emergency information to the on-scene commander, the Accelerated Retrieval Project shift supervisor will provide all requested information about the nature of the event, potential hazards, and other information requested by the on-scene commander.

10.5.2.2 Personnel Accountability and Area Warden. The Accelerated Retrieval Project personnel are required to TAKE COVER within the project area or may be required to evacuate the project operations area or RWMC in response to an EVACUATION. In each case, the shift supervisor, STR, or trained alternate shall account for the people present within the operations area. The shift supervisor, STR, or trained alternate will serve as the area warden for project operations and complete the personnel accountability (following positive sweeps of Accelerated Retrieval Project buildings and areas). The results of this accountability will then be reported to the RWMC shift supervisor or emergency coordinator (if the emergency coordinator has been formed).

10.5.2.3 Spills. If the material spilled is known and is small enough to be safely contained, project operations personnel will handle spill control within their level of training (as described in Sections 10.5.2.3.1 and 10.5.2.3.2) using spill supplies in the project operational area. The spill will be immediately reported to the RWMC shift supervisor. Reporting requirements will be determined by the RWMC emergency coordinator in accordance with “Event Investigation and Occurrence Reporting” (MCP-190). If any release of a hazardous material occurs, task site personnel will comply with the following immediate spill response actions.

10.5.2.3.1 Untrained Initial Responder—The requirements for the untrained initial responder (or if the material characteristics are unknown) are listed below:

- Place equipment in a safe configuration (as applicable)
- **Evacuate** and **isolate** the immediate area
- Notify and then **seek help** from and **warn** others in the area
- Notify the shift supervisor.

10.5.2.3.2 Trained Responder—The requirements for the trained responder where material characteristics are known and no additional PPE is required are listed below:

- Place all equipment in a secure configuration (as applicable)
- **Seek help** from and **warn** others in the area

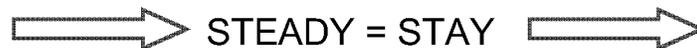
- **Stop** the spill if it can be done without risk (e.g., returning the container to the upright position, closing valve, and shutting off power)
- **Provide** pertinent information to the shift supervisor
- **Secure** any release paths if safe to do so.

10.6 Emergency Alerting, Responses, and Sheltering

10.6.1 Alarms

Alarms and signals are used at the Accelerated Retrieval Project and the INEEL to notify personnel of abnormal conditions requiring a specific response. These include radiation-monitoring alarms denoted by fast-ringing bells and fire alarms that may vary from building to building within the RWMC and Accelerated Retrieval Project areas. Responses to these alarms are addressed in the general employee and site-access training for environment, safety, and health employees. In addition to these alarms, emergency sirens located throughout the RWMC serve as the primary means for signaling emergency TAKE COVER or EVACUATION protective actions.

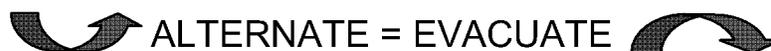
10.6.1.1 Take Cover—Continuous Siren. Radiation or hazardous material releases, adverse weather conditions, or other event or emergency conditions may require that all personnel take cover indoors in the nearest building. A TAKE COVER protective action may be initiated as part of a broader response to an emergency situation and may precede an evacuation order. The order to TAKE COVER is usually announced by activating the emergency siren. The signal to take cover is a CONTINUOUS SIREN. The order to TAKE COVER is usually announced by activating the RWMC emergency siren.



TAKE COVER also can be given by word of mouth, radio, or voice paging system. When ordered to TAKE COVER, project personnel will place project operations equipment in a safe configuration (as applicable) and then seek shelter in project operations or administrative buildings (if outdoors). Eating, drinking, and smoking are not permitted during take-cover conditions.

Radiological Control personnel will assist and direct all workers exiting from radiological contamination areas during a TAKE COVER alarm.

10.6.1.2 Total Area Evacuation—Alternating Siren. A total area evacuation is the complete withdrawal of personnel from the entire project operations and RWMC area. The evacuation signal is an ALTERNATING SIREN.



When ordered to EVACUATE, operations personnel will place project operations equipment in a safe configuration (as applicable) and then proceed along the specified evacuation route to the designated assembly area or as directed by the emergency coordinator. For total area evacuations, the RWMC command post is activated and all personnel will gather at the primary RWMC evacuation assembly area or the location designated by the emergency coordinator. The shift supervisor or trained alternate will then complete the personnel accountability and report the result of the accountability process to the RWMC emergency coordinator. Radiological Control personnel will assist and direct all workers exiting

from radionuclide-contamination areas during an EVACUATION alarm. Eating, drinking, and smoking are not permitted during emergency evacuations.

10.6.1.3 Local Area (Operable Unit 7-10 Project Operations Area) Evacuation. A local area evacuation is the complete withdrawal of personnel from a portion of or all Accelerated Retrieval Project areas, but it does not necessarily require the complete evacuation of the entire RWMC. The order to evacuate project areas also can be given by word of mouth, radio, or voice paging system. When ordered to evacuate the project area, personnel shall place the project equipment in a safe condition (as applicable) and then proceed along the specified evacuation route to the assembly area designated for local area evacuations, or as directed by the shift supervisor or STR. (Emergency evacuation routes for each project building will be developed and posted following construction.) The shift supervisor or STR will then conduct personnel accountability and report the emergency event to the RWMC shift supervisor as described above. Eating, drinking, and smoking are not permitted during emergency evacuations. Radiological Control personnel will assist and direct all workers exiting from radiological contamination areas during a local area evacuation alarm.

10.7 Evacuation Assembly Areas and Central Facilities Area Medical Facility

The RWMC maintains primary and secondary evacuation routes and assembly areas. These routes may be used in response to a total facility evacuation as directed by the RWMC emergency coordinator. Copies of the following figures will be available in the project area. Figure 10-1 contains a map showing the location of the CFA-1612 medical facility, and Figure 10-2 shows the RWMC evacuation and assembly areas.

In the event that the project operational area is evacuated, personnel shall assemble in the designated assembly area, or as directed by the shift supervisor (local area evacuation) or RWMC emergency coordinator. If a total area evacuation of the RWMC is ordered, then project personnel shall relocate to the RWMC primary evacuation assembly area (see Figure 10-2) or as directed by the emergency coordinator.

10.8 Medical Emergencies and Decontamination

Medical emergencies and responses to injuries or suspected exposures will be handled as stated in Section 8.2. Decontamination of personnel and equipment is described in Section 11.2.

10.9 Reentry, Recovery, and Site Control

All reentry and recovery activities will follow general Site security and control requirements identified in Section 7 unless conducted as part of an emergency response action. All entries into Accelerated Retrieval Project areas performed in support of emergency actions will be controlled by the on-scene commander.

10.9.1 Reentry

During an emergency response, it is sometimes necessary to reenter the scene of the event. Reasons for performing a reentry may include:

- Performing personnel search and rescues

- Responding to medical first-aid needs
- Performing safe shutdown actions of operational equipment or processes
- Performing mitigating actions
- Evaluating and preparing damage reports
- Performing radiation or hazardous material surveys.

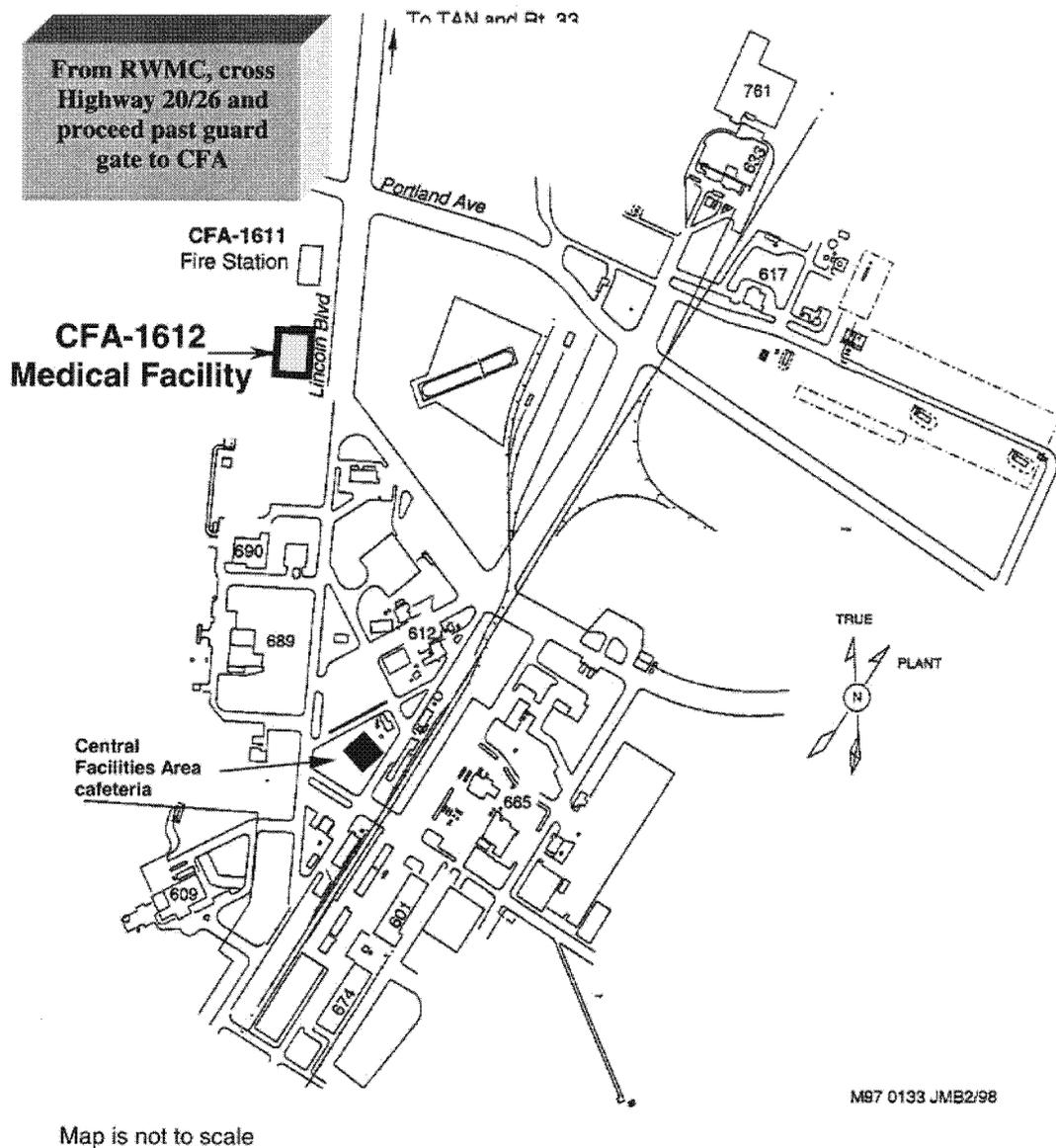


Figure 10-1. Map showing the route to the nearest medical facility (CFA-1612).

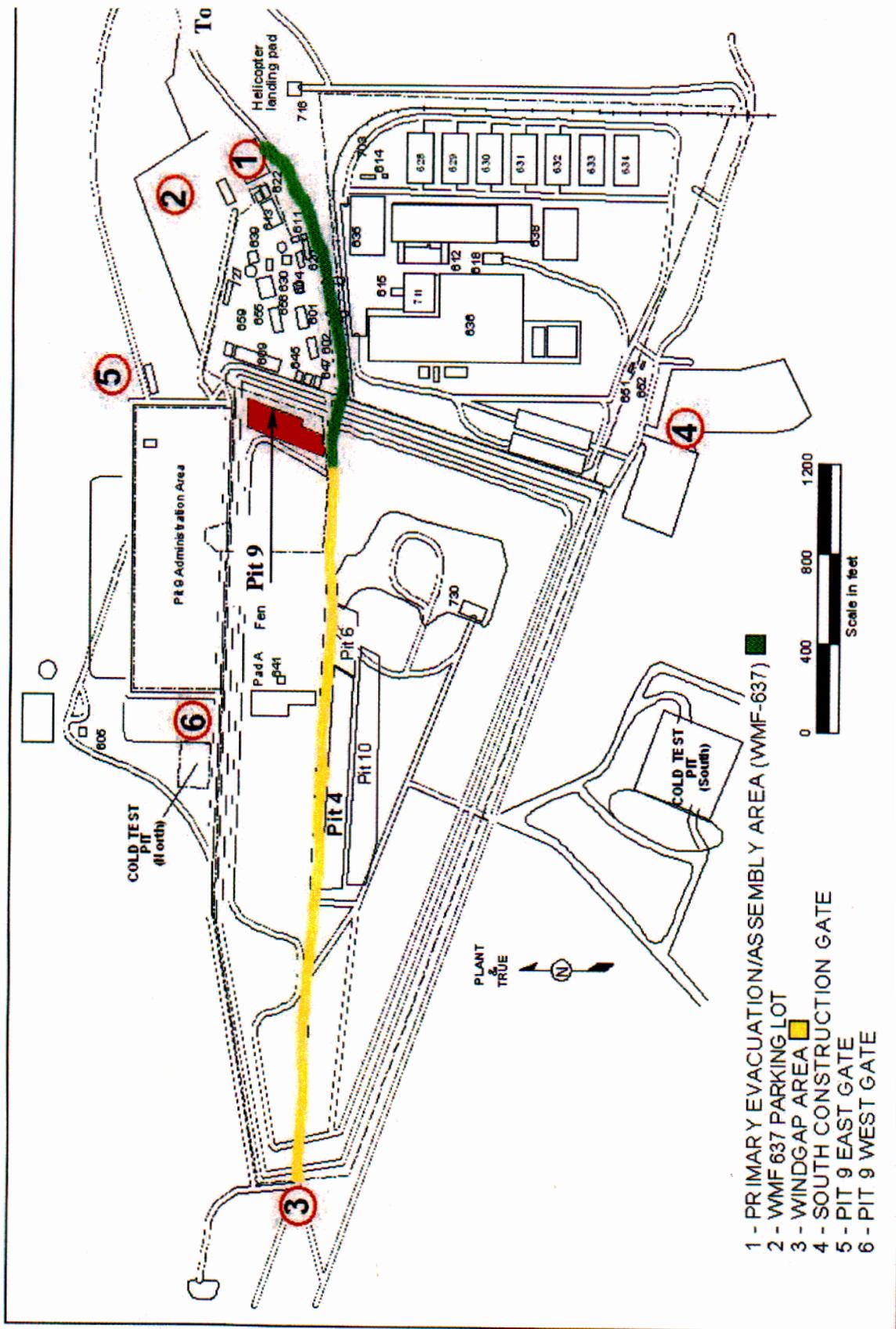


Figure 10-2. Evacuation and assembly areas at the Radioactive Waste Management Complex.

Reentries will be carefully planned to ensure that personnel are protected from harm and to prevent initiating another emergency event. Reentry planning is undertaken on a graded approach and will be based on the nature of the initiating event, hazards to personnel and structures, and purpose for the reentry. All reentries will be approved by the emergency coordinator in accordance with Emergency Plan Implementing Procedure-77, "Reentry."

10.9.2 Recovery

After the initial corrective actions have been taken and effective control established, response efforts will shift toward recovery. Recovery is the process of (1) assessing postevent and postemergency conditions, (2) developing a plan for returning to preevent and preemergency operating conditions, when possible, and (3) following the plan to completion. The RWMC emergency coordinator, in consultation with the project NFM, operations manager, and RWMC operations director, is responsible for determining when an emergency situation is sufficiently stable to terminate the emergency and enter the recovery phase. The emergency coordinator, in accordance with Emergency Plan Implementing Procedure-78, "Emergency Event Termination," will consult with the NFM, operations manager, and RWMC operations director and, with concurrence of the emergency director, will decide on termination of the emergency event. The emergency coordinator will conduct a turnover with the assigned recovery manager, who will implement the recovery phase of the event. The emergency coordinator, in accordance with Emergency Plan Implementing Procedure-80, "Recovery," and with concurrence of the emergency director, will appoint a recovery manager. The emergency coordinator will consult with the NFM, operations manager, and operations director to obtain their recommendation for a recovery manager.

Where a restart of Accelerated Retrieval Project operations is required following a shutdown, all operational restart requirements of "Startup and Restart of Nuclear Facilities" (MCP-2783) will be followed.

10.10 Critique of Response and Follow-up

A review and critique will be conducted following all emergency events, drills, and exercises at the INEEL. In some cases, an investigation may be required before commencing recovery actions. For this reason, care should be exercised to preserve evidence when appropriate. The Accelerated Retrieval Project NFM or operations manager will lead all critique of Accelerated Retrieval Project events requiring a critique in accordance with "INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan" (PLN-114).

10.11 Telephone and Radio Contact Reference List

A list of the points of contact for the Accelerated Retrieval Project construction and operations will be maintained at the RWMC shift desk.

11. DECONTAMINATION PROCEDURES

The Accelerated Retrieval Project operations will involve decontamination of exterior waste containers, equipment, building surfaces, other contaminated items requiring decontamination, and potentially some degree of personnel decontamination. Every effort will be made to prevent contamination of Accelerated Retrieval Project personnel and equipment through the use of engineering controls, isolation of source materials, contaminant monitoring, personnel contamination control training, and by following material-handling requirements and procedures for contaminated or potentially contaminated materials. Where contact with potentially contaminated surfaces or entry into known contaminated areas is anticipated, additional radiological monitoring as described in Section 3 in combination with use of PPE will be necessary to control the hazard. This section provides guidance on how decontamination will be performed.

The Accelerated Retrieval Project facility engineering design features in conjunction with contamination prevention and control practices and proper protective clothing donning and doffing procedures will serve as the primary means to eliminate the need for personnel decontamination. Where decontamination is required, decontamination procedures will be used. "Personnel Decontamination" (MCP-148) contains information on personnel radionuclide decontamination. Radionuclide decontamination operations required for equipment or areas will be performed in accordance with Chapter 4 of "Radiological Control Manual" (PRD-183) and at the direction of RadCon personnel.

11.1 Contamination Control and Prevention

Contamination control and prevention procedures will be implemented to minimize Accelerated Retrieval Project construction and operations personnel contact with contaminated surfaces that will be encountered during project activities. The use of engineering controls, protective barriers, protective clothing, modified work control practices, or addition of hold points and surveys will all be used to minimize direct contact with contaminated surfaces. The following contamination control and prevention measures will be employed:

- Identify potential sources of contamination and design containment, isolation, and engineering controls to eliminate or mitigate any potential for contact or release of contaminants (where feasible)
- Preplan all operational activities where contact with contamination is anticipated, and conduct dry runs to validate operating procedures or maintenance activities as deemed appropriate
- Sleeve or place a disposable barrier between equipment and tools and the contaminated surface or environment (where feasible)
- Limit the number of personnel, equipment, and materials that enter the contaminated area
- Wear disposable outer garments and use disposable equipment (where possible)
- Use hold points defined in procedures and work orders to monitor for contamination where anticipated
- Implement immediate decontamination procedures to prevent the spread of contamination where contamination is found on the outer surfaces of equipment or grossly contaminated clothing during operational activities (including decontamination tasks)

- Use only the established radiological entry and exit control points when accessing contaminated areas to minimize the potential for cross-contamination and expedite contamination control surveys.

11.2 Equipment and Personnel Decontamination

The Accelerated Retrieval Project operational decontamination procedures will be used for routine decontamination of the Packaging Glovebox System and other areas where contamination is anticipated (waste handling and packaging areas) to prevent the spread of contamination and to meet Accelerated Retrieval Project requirements.

Radionuclide decontamination operations for equipment or areas will be performed in accordance with Chapter 4 of the “Radiological Control Manual” (PRD-183) and at the direction of RadCon personnel. Nonradionuclide decontamination will be conducted in accordance with established project procedures or on a case-by-case basis under the direction of Industrial Hygiene personnel to determine the most appropriate PPE. In all cases, the collection, storage, and disposal of decontamination waste will be addressed before the generation of such waste and stored as described in Section 11.5. Protective clothing and respiratory protection selected for decontamination tasks will be based on the contaminant being decontaminated and as described in Section 5.

11.2.1 Equipment Decontamination

The Accelerated Retrieval Project facility engineered isolation controls have been established, where feasible, to prevent contamination of project equipment and facilities from known or suspected sources of contamination. These controls will serve to isolate and eliminate or mitigate many of the potential contamination pathways to prevent equipment contamination and greatly reduce the need for decontamination.

When conducted, equipment decontamination will be performed in accordance with established project decontamination procedures. Low-cost consumable items will be discarded if initial decontamination efforts fail or extensive decontamination is required that is not in accordance with ALARA principles.

11.2.2 Personnel Decontamination

Engineering controls, in conjunction with facility contamination prevention and control practices and proper protective clothing donning and doffing procedures, will serve as the primary means to eliminate the need for personnel decontamination. The PPE selection, as identified in the RWP and JSA, will provide for the layered barriers required to prevent permeation and minimize external surface contamination.

Instructions for donning and doffing radiological protective clothing will be posted at the entry and exit control points to all contamination areas in accordance with “Radiological Control Manual” (PRD-183). Before donning PPE, all items will be inspected. One of the greatest potentials for personnel contamination exists from improper doffing of contaminated PPE when exiting a contamination area. All operations personnel who enter radiological contamination areas will doff PPE following the posted instructions. If questions or problems arise while doffing (such as tearing protective clothing), guidance and assistance on how to proceed should be requested from the assigned RCT.

11.2.3 Decontamination in Medical Emergencies

Injured or ill personnel should be immediately evaluated by first-aid-trained personnel (within their level of training and on a voluntary basis) within the project operations area where the incident occurred. The shift supervisor will contact the RWMC shift supervisor or the WCC (if the RWMC shift supervisor cannot be reached) to summon emergency services.

Medical care for serious injury or illness will not be delayed for decontamination. In such cases, gross decontamination may be conducted by removing the injured person's outer protective clothing (if possible) and other contaminated areas with a bag or glove. If contaminated PPE cannot be removed without causing further injury (except for the respirator, which must be removed), potentially contaminated areas of the individual will be wrapped in plastic, blankets, or available material to help prevent contaminating the inside of the ambulance, medical equipment, and medical personnel.

The IH or RCT (depending on the type of contamination) shall accompany the employee to the medical facility to provide information and decontamination assistance to medical personnel. Contaminated PPE then will be removed at the Central Facilities Area medical facility (CFA-1612) and carefully handled to prevent the spread of contamination. Information on proper handling of radionuclide-contaminated wounds is contained in "Personnel Decontamination" (MCP-148).

11.3 Doffing Personal Protective Equipment and Decontamination

Personnel decontamination will likely be limited to doffing of PPE. However, some preliminary surface decontamination of protective clothing may be required if it is grossly contaminated and the potential for the generation of airborne radioactivity or organic vapor emissions exists. This will involve assistance from other personnel inside the contamination area and at the doffing location as described below. The ultimate goal of all decontamination methods is to effectively and efficiently isolate the source of contamination through removal of protective clothing and confinement of the contamination in a sealed bag or waste container.

If contamination is detected on outer PPE layers, careful removal of these outer PPE layers will generally isolate over 99% of surface contamination, and this will serve as the primary decontamination method if protective clothing is contaminated. Removal of contaminated protective clothing using standard radiological doffing techniques (i.e., rolling outer surfaces inward and from top to bottom while being removed) provides the most effective method for containing and isolating the contaminants and greatly reduces the potential for exposure to other personnel who would be put at risk of cross-contamination from other decontamination methods (e.g., washing and brushing).

Where protective clothing also is worn as an anticontamination layer, tape, gloves, booties, and any required dosimetry will be removed following the posted doffing sequence. All PPE will be placed in the appropriately labeled waste containers. Doffing and any required decontamination will take place at the designated contamination area boundary or step-off pad. If exiting a radiological contamination area, personnel will conduct the proper personal survey with hand-held detectors followed by an automated whole-body survey in a PCM (or equivalent), as stated in the RWP.

A general approach for doffing modified Level-D, Level-C, or Level-B PPE is described in Sections 11.3.1–11.3.3. However, no single doffing strategy works for all circumstances. Modifications to this approach are appropriate if operational conditions change or at the discretion of the RCT in consultation with the IH. Both radiological and nonradiological hazards will be evaluated, as applicable.

11.3.1 Modified Level D Personal Protective Equipment Doffing and Decontamination

Modified Level D protective clothing (e.g., Tyvek coveralls and booties) will be doffed following standard radiological removal techniques (as posted) and will constitute the initial decontamination step. If the protective clothing also is being worn as an anticontamination layer, then tape, gloves, booties, and any required dosimetry will be removed following the posted doffing sequence. All PPE will be placed in the appropriately labeled waste container(s) for disposal. Doffing and any required decontamination will take place at the boundary between the contaminated area and the step-off pad. Doffing will be followed by conducting a personal contamination survey, as stated in the RWP.

Note: Under some radiological conditions, two sets of anticontamination clothing may be worn. When required, the posted instructions will address the proper doffing sequence for both sets.

11.3.2 Level C Personal Protective Equipment Doffing and Decontamination

Where respiratory protection is worn in conjunction with protective clothing (Level C PPE), the modified Level D sequence will be followed with one additional step. Following protective-clothing doffing, respirators will be removed and placed in a separate container. A survey of the face and sealing surfaces of the respirator then will be performed by the RCT or as part of the posted survey instructions by the respirator wearer. Doffing and any required decontamination will take place at the designated RadCon boundary as described above. If exiting a radiological contamination area, personnel will conduct the proper personal survey, as stated in the RWP.

11.3.3 Level B Personal Protective Equipment Doffing and Decontamination

The distinction between Level C and B PPE will be the addition of supplied air respiratory protection. Respiratory protection may be in the form of a bubble hood or airline respirator (with escape canister or cartridge where required). The doffing sequence when using a supplied airline is slightly more complicated than Level C respiratory protection, and all operations personnel who will enter an area with Level B PPE must have a clear understanding of the doffing sequence before entering the area. It will be necessary to disconnect and tape over the supplied airline before exiting the contamination area. The RCT will assist personnel exiting these areas and doffing instructions will be posted and must be followed. Doffing and any required decontamination will take place at the designated radiological control boundary as described above. If exiting a radiological contamination area, personnel will conduct the proper personal survey, as stated in the RWP.

11.4 Personnel Radiological Contamination Monitoring

Radiological surveys (with hand-held detectors and an automated whole-body PCM) will be required before personnel exit project operational areas as stated on the RWP. The purpose of this hand-held instrument survey is to detect surface contamination. If survey instruments or the PCM alarms indicate elevated contamination levels are present, personnel should remain in the area and contact RadCon (or have someone in a nonradiologically controlled area contact RadCon). When exiting a contamination area or contamination radiological buffer area, an automated whole-body survey using a PCM station (or equivalent) must be conducted before using designated eating or smoking areas.

11.5 Storage and Disposal of Operational Waste Materials

Waste generated from decontamination and other project operational activities will be properly characterized, stored, and disposed of in accordance with the following documents:

- *Waste Management* (Manual 17)
- Established project procedures
- Waste disposal and disposition forms.

11.6 Project Sanitation and Waste Minimization

Project personnel will use washroom and restroom facilities located within the project operational areas and the RWMC area. Potable water and soap are available within the project operations areas for personnel to wash their hands and faces.

Industrial waste materials will not be allowed to accumulate at the project operational areas. Appropriate containers for industrial waste will be maintained within the project operational areas. Personnel should make every attempt to minimize waste through judicious use of consumable materials. All project operations personnel are expected to make good housekeeping a priority.

12. RECORDKEEPING REQUIREMENTS

12.1 Industrial Hygiene and Radiological Monitoring Records

The IH assigned to the Accelerated Retrieval Project will record airborne monitoring and sampling data (both area and personal) collected for project operational exposure assessments in the INEEL Hazards Assessment and Sampling System Database. All monitoring and sampling equipment will be maintained and calibrated in accordance with INEEL procedures and the manufacturer specifications. Industrial Hygiene airborne monitoring and sampling exposure assessment data are treated as limited access information and maintained by the IH in accordance with INEEL safety and health manual procedures (Manual 14A; Manual 14B).

The assigned RCTs will maintain a logbook of radiological monitoring, daily project operational activities, and instrument calibrations where instruments were used to document detection levels or conduct field screening of samples. Radiological monitoring records will be maintained in accordance with *Radiation Protection Procedures* (Manual 15B), “Radiological Control Manual” (PRD-183), and “Maintaining the Radiological Control Logbook” (MCP-9).

All other health, safety, and radiological records, including inspections, will be maintained in accordance with appropriate and applicable requirements identified in *Safety and Health—Occupational Safety and Fire Protection* (Manual 14A), “Radiological Control Manual” (PRD-183), *Radiation Protection Procedures* (Manual 15B), *Radiological Control Procedures* (Manual 15C), and applicable RWMC and project supplements.

12.2 Records Management

The Idaho Completion Project Administrative Record and Document Control office organizes and maintains data and reports generated by field activities. The Administrative Record and Document Control office maintains a supply of all controlled documents and provides a documented system for the control and release of controlled documents, reports, and records. Copies of project plans; this HASP; the quality program plan; the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites* (DOE-ID 2000); and other documents pertaining to these operations are maintained in the project file by the Idaho Completion Project Administrative Record and Document Control office. Controlled procedures for the RWMC and Accelerated Retrieval Project will be issued, controlled, and maintained in accordance with “Creating, Modifying, and Canceling Procedures and Other DMCS-Controlled Documents” (MCP-135) and applicable RWMC or project supplemental MCPs.

All additional project records will be maintained in accordance with applicable federal and state procedures, companywide manuals, and project-specific supplemental procedures.

13. REFERENCES

- 10 CFR 835, 2002, "Occupational Radiation Protection," *Code of Federal Regulations*, Office of the Federal Register.
- 29 CFR 1910, 2004, "Occupational Safety and Health Standards," *Code of Federal Regulations*, Office of the Federal Register.
- 29 CFR 1926, 2002, "Safety and Health Regulations for Construction," *Code of Federal Regulations*, Office of the Federal Register.
- 54 FR 29820, 1989, "National Priorities List for Uncontrolled Hazardous Waste Sites: Update #9, Federal Facilities Sites," FRL-3615-2, *Federal Register*, U.S. Environmental Protection Agency,
- 54 FR 48184, 1989, "National Priorities List of Uncontrolled Hazardous Waste Sites; Final Rule," *Federal Register*, U.S. Environmental Protection Agency.
- 42 USC § 6901 et seq., 1976, "Resource Conservation and Recovery Act (Solid Waste Disposal Act)," *United States Code*.
- 42 USC § 9601 et seq., 1980, "Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA/Superfund)," *United States Code*.
- ACGIH, 2002, *Threshold Limit Values Booklet*, American Conference of Government Industrial Hygienists.
- ANSI Z41.1-1967, 1967, "Men's Safety-Toe Footwear," American National Standards Institute.
- ANSI Z87.1-1968, 1968, "Practice for Occupational and Educational Eye and Face Protection," American National Standards Institute.
- ANSI Z89.1-1969, 1969, "Safety Requirements for Industrial Head Protection," American National Standards Institute.
- ANSI Z358.1-1998, 1998, "Emergency Eyewash and Shower Equipment," American National Standards Institute.
- DOE G 440.1-4, 1997, "Contractor Occupational Medical Program Guide for Use with DOE Order 440.1," U.S. Department of Energy.
- DOE O 151.1B, 2003, "Comprehensive Emergency Management System," U.S. Department of Energy.
- DOE O 232.1A, 1997, "Occurrence Reporting and Processing of Operations Information," U.S. Department of Energy.
- DOE O 440.1A, 1998, "Worker Protection Management for DOE Federal and Contractor Employees," U.S. Department of Energy.
- DOE-ID, 1987, *Consent Order and Compliance Agreement*, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; and the U.S. Geological Survey.

DOE-ID, 1991, *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; and the State of Idaho Department of Health and Welfare.

DOE-ID, 2000, *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites*, DOE/ID-10587, Rev. 6, U.S. Department of Energy Idaho Operations Office.

DOE-ID, 2002, “DOE-ID Architectural Engineering Standards,” Rev. 29, U.S. Department of Energy Idaho Operations Office, URL: <http://www.inel.gov/publicdocuments/doe/archeng-standards>.

DOE-STD-1090-01, 2001, “Hoisting and Rigging,” U.S. Department of Energy.

EDF-2337, 2003, “Process Component Compatibility Tests in Carbon Tetrachloride for the OU 7-10 Glovebox Excavator Method Project,” Rev. 2, Idaho National Engineering and Environmental Laboratory.

EDF-3543, 2003, “SDA Inventory Evaluation for ISG, ISV, and ISTD PDSA Source Terms,” Rev. 0, Idaho National Engineering and Environmental Laboratory.

EDF-INEL-003, 1996, “Established Levels of Radionuclide Intakes for Consideration of Medical Intervention,” Idaho National Engineering and Environmental Laboratory.

Einerson, J. J. and R. W. Thomas, 1999, *Pit 9 Estimated Inventory of Radiological and Nonradiological Constituents*, INEEL/EXT-99-00602, Idaho National Engineering and Environmental Laboratory.

Form 361.25, 1999, “Group Read and Sign Training Roster,” Rev. 1, Idaho National Engineering and Environmental Laboratory.

Form 361.47, 2001, “Hazardous Waste Operations (HazWoper) Supervised Field Experience Verification 29 CFR 1910.120,” Rev. 5, Idaho National Engineering and Environmental Laboratory.

Form 540.10, 2003, “Subcontractor Requirements Manual (SRM) Applicability,” Rev. 14, Idaho National Engineering and Environmental Laboratory.

GDE-6212, 2003, “Hazard Mitigation Guide for Integrated Work Control Process,” Rev. 2, *Manual 6—Maintenance*, Idaho National Engineering and Environmental Laboratory.

GDE-7063, 2002, “Idaho National Engineering and Environmental Laboratory Wildland Fire Management Guide,” Rev. 1, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

HAD-266, 2004, “Preliminary Fire Hazards Analysis for the Accelerated Retrieval Project at Area G of Pit 4 within the Radioactive Waste Management Complex,” Rev. 0, Idaho National Engineering and Environmental Laboratory.

Idaho Code § 39-4401 et seq., 1983, “Hazardous Waste Management Act of 1983,” State of Idaho.

Manual 12, 2003, *Training and Qualification*, TOC-11, Rev. 56, Idaho National Engineering and Environmental Laboratory.

Manual 14A, 2004, *Safety and Health—Occupational Safety and Fire Protection*, TOC-48, Rev. 137, Idaho National Engineering and Environmental Laboratory.

Manual 14B, 2004, *Safety and Health—Occupational Medical and Industrial Hygiene*, TOC-49, Rev. 76, Idaho National Engineering and Environmental Laboratory.

Manual 15B, 2004, *Radiation Protection Procedures*, TOC-5, Rev. 116, Idaho National Engineering and Environmental Laboratory.

Manual 15C, 2004, *Radiological Control Procedures*, TOC-76, Rev. 53, Idaho National Engineering and Environmental Laboratory.

Manual 17, 2004, *Waste Management*, TOC-80, Rev. 65, Idaho National Engineering and Environmental Laboratory.

MCP-7, 2003, “Radiological Work Permit,” Rev. 18, *Manual 15B—Radiation Protection Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-8, 2003, “Performing Management Assessments and Management Reviews,” Rev. 7, *Manual 13B—Quality and Requirements Management Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-9, 2001, “Maintaining the Radiological Control Logbook,” Rev. 7, *Manual 15C—Radiological Control Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-61, 1999, “Conduct and Evaluation of On-the-Job Training,” Rev. 2, *Manual 12—Training and Qualification*, Idaho National Engineering and Environmental Laboratory.

MCP-93, 1999, “Health Physics Instrumentation,” Rev. 12, *Manual 15B—Radiation Protection Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-135, 2003, “Creating, Modifying, and Canceling Procedures and Other DMCS-Controlled Documents,” Rev. 14, *Manual 1—General Administration and Information*, Idaho National Engineering and Environmental Laboratory.

MCP-137, 2002, “Radioactive Source Accountability and Control,” Rev. 7, *Manual 15B—Radiation Protection Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-148, 2000, “Personnel Decontamination,” Rev. 4, *Manual 15C—Radiological Control Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-153, 2002, “Industrial Hygiene Exposure Assessment,” Rev. 6, *Manual 14B—Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-187, 2002, “Posting Radiological Control Areas,” Rev. 9, *Manual 15B—Radiation Protection Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-188, 2002, “Issuing TLDs and Obtaining Personnel Dose History,” Rev. 4, *Manual 15B—Radiation Protection Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-190, 2003, “Event Investigation and Occurrence Reporting,” Rev. 10, *Manual 9—Operations*, Idaho National Engineering and Environmental Laboratory.

MCP-432, 2000, "Radiological Personal Protective Equipment," Rev. 8, *Manual 15B—Radiation Protection Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-553, 2003, "Stop Work Authority," Rev. 7, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

MCP-2381, 2003, "Personnel Exposure Questionnaire," Rev. 4, *Manual 15C—Radiological Control Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-2391, 2002, "Control of Measuring and Test Equipment," Rev. 5, *Manual 13B—Quality and Requirements Management Procedures*, Idaho National Engineering and Environmental Laboratory.

MCP-2692, 2002, "Ergonomics Program," Rev. 3, *Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-2703, 2000, "Carcinogens," Rev. 1, *Manual 14B—Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-2704, 2004, "Heat and Cold Stress," Rev. 3, Idaho National Engineering and Environmental Laboratory.

MCP-2715, 2003, "Hazard Communication," Rev. 3, *Manual 14B—Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-2719, 2002, "Controlling and Monitoring Exposure to Noise," Rev. 2, *Manual 14B—Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-2726, 2003, "Respiratory Protection," Rev. 9, *Manual 14B—Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-2745, 2001, "Heavy Industrial Vehicles," Rev. 1, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

MCP-2749, 2002, "Confined Spaces," Rev. 5, *Manual 14B—Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-2750, 2002, "Preventing Hantavirus Infection," Rev. 3, *Manual 14B—Safety and Health—Occupational Medical and Industrial Hygiene*, Idaho National Engineering and Environmental Laboratory.

MCP-2783, 2003, "Startup and Restart of Nuclear Facilities," Rev. 5, *Manual 9—Operations*, Idaho National Engineering and Environmental Laboratory.

MCP-3003, 2003, "Performing Pre-Job Briefings and Documenting Feedback," Rev. 11, *Manual 9—Operations*, Idaho National Engineering and Environmental Laboratory.

MCP-3449, 2003, "Safety and Health Inspections," Rev. 3, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

MCP-3562, 2003, "Hazard Identification, Analysis and Control of Operational Activities," Rev. 8, *Manual 9—Operations*, Idaho National Engineering and Environmental Laboratory.

MCP-3650, 2003, "Chapter IX Level I Lockouts and Tagouts," Rev. 3, *Manual 9—Operations*, Idaho National Engineering and Environmental Laboratory.

MCP-3651, 2003, "Chapter IX Level II Lockouts and Tagouts," Rev. 4, *Manual 9—Operations*, Idaho National Engineering and Environmental Laboratory.

MCP-6501, 2003, "Hoisting and Rigging Operations," Rev. 2, *Manual 6—Maintenance*, Idaho National Engineering and Environmental Laboratory.

MCP-6502, 2002, "Hoisting and Rigging Maintenance," Rev. 1, *Manual 6—Maintenance*, Idaho National Engineering and Environmental Laboratory.

MCP-6503, 2003, "Inspection and Testing of Hoisting and Rigging Equipment," Rev. 3, *Manual 6—Maintenance*, Idaho National Engineering and Environmental Laboratory.

MCP-6504, 2002, "Hoisting and Rigging Lift Determination and Lift Plan Preparation," Rev. 1, *Manual 6—Maintenance*, Idaho National Engineering and Environmental Laboratory.

MCP-6505, 2003, "Hoisting and Rigging Training," Rev. 2, *Manual 6—Maintenance*, Idaho National Engineering and Environmental Laboratory.

NFPA 54, 2002, "National Fuel Gas Code," National Fire Protection Association.

NFPA 101, 2000, "Life Safety Code," National Fire Protection Association.

NFPA 701, 1999, "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films," National Fire Protection Association.

NFPA 801, 1998, "Standard for Fire Protection for Facilities Handling Radioactive Materials," National Fire Protection Association.

PDD-61, 2001, "Occupational Health Program," Rev. 2, *Occupational Health Directorate Manual*, Idaho National Engineering and Environmental Laboratory.

PLN-114, 2003, "INEEL Emergency Plan Resource Conservation and Recovery Act (RCRA) Contingency Plan," Rev. 20, Idaho National Engineering and Environmental Laboratory.

PLN-114-3, 2004, "Emergency Management Addendum 3—RWMC," Rev. 59, Idaho National Engineering and Environmental Laboratory.

PRD-5, 2002, "Boilers and Unfired Pressure Vessels," Rev. 5, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-22, 2003, "Excavation and Surface Penetration," Rev. 3, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-25, 2003, "Activity Level Hazard Identification, Analysis, and Control," Rev. 3, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-183, 2004, "Radiological Control Manual," Rev. 7, *Manual 15A—Radiation Protection—INEEL Radiological Control*, Idaho National Engineering and Environmental Laboratory.

PRD-308, 2003, "Handling and Use of Flammable and Combustible Liquids," Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-1004, 1997, "Stop Work Authority," Rev. 0, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2001, 2001, "Personal Protective Equipment," Rev. 3, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2002, 2001, "Fall Protection," Rev. 3, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2003, 1997, "Ladders," Rev. 0, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2004, 2001, "Scaffolding," Rev. 2, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2005, 2001, "Walking and Working Surfaces," Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2006, 2001, "Aerial Lifts and Elevating Work Platforms," Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2007, 2003, "Hoisting and Rigging," Rev. 2, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2009, 1997, "Compressed Gases," Rev. 0, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2010, 2001, "Welding, Cutting, and Other Hot Work," Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2011, 2000, "Electrical Safety," Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2012, 2002, "Lockouts and Tagouts," Rev. 4, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2014, 2001, "Excavations and Surface Penetrations," Rev. 6, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2015, 2003, "Hand and Portable Power Tools," Rev. 5, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2016, 2003, “Material Handling, Storage, and Disposal,” Rev. 3, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2019, 1998, “Motor Vehicle Safety,” Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2020, 2001, “Heavy Industrial Vehicles,” Rev. 2, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2022, 1998, “Safety Signs, Color Codes, and Barriers,” Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2101, 1998, “Hazard Communication,” Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2102, 2003, “Disease Control,” Rev. 2, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2107, 2003, “Heat and Cold Stress,” Rev. 3, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2108, 2001, “Hearing Conservation,” Rev. 1, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2109, 2003, “Respiratory Protection,” Rev. 3, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2110, 2003, “Confined Spaces,” Rev. 2, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-2201, 2003, “Flammable and Combustible Liquid Storage,” Rev. 3, *Subcontractor Requirements Manual*, Idaho National Engineering and Environmental Laboratory.

PRD-5038, 2003, “Cryogenic Liquids,” Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-5040, 2003, “Handling and Use of Compressed Gases,” Rev. 3, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-5051, 2003, Chapter IX-Lockout and Tagout, “Rev. 4, *Manual 9—Operations*, Idaho National Engineering and Environmental Laboratory.

PRD-5067, 2004, “Ladders,” Rev. 4, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-5096, 2003, “Fall Protection,” Rev. 1, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

PRD-5098, 2004, “Scaffolding,” Rev. 3, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.

- PRD-5099, 2002, “Electrical Safety,” Rev. 3, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- PRD-5101, 2001, “Portable Equipment and Handheld Power Tools,” Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- PRD-5103, 2001, “Walking and Working Surfaces,” Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- PRD-5107, 2004, “Aerial Lifts and Elevating Work Platforms,” Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- PRD-5110, 2001, “Welding, Cutting, and Other Hot Work,” Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- PRD-5117, 2001, “Accident Prevention Signs, Tags, Barriers, and Color Codes,” Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- PRD-5121, 2004, “Personal Protective Equipment,” Rev. 4, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- PRD-5123, 2002, “Motor Vehicle Safety,” Rev. 0, *Manual 14A—Safety and Health—Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory.
- Public Law 99-499, 1986, “Superfund Amendments and Reauthorization Act of 1986,” United States Government.
- STD-101, 2003, “Integrated Work Control Process,” Rev. 15, *Manual 6—Maintenance*, Idaho National Engineering and Environmental Laboratory.
- TOC-59, 2003, *Subcontractor Requirements Manual*, Rev. 33, Idaho National Engineering and Environmental Laboratory.