

5. PERSONAL PROTECTIVE EQUIPMENT

Facility designed engineering safety systems and components for the OU 7-10 Glovebox Excavator Method Project will serve as the primary hazard controls during OU 7-10 project operations to confine radiological and chemical waste hazards. Additionally, chemical and physical hazards will be encountered in conjunction with routine 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 OU 7-10 project operational areas must be protected against potential safety, health, and radiological hazards. The PRD-25 (1999) will be used to evaluate all OU 7-10 project activities and define the appropriate PPE for all operational activities and areas in accordance with 29 CFR 1910 (2002) Subpart I hazard assessment requirements. This section provides guidance for the selection and use of PPE to be worn for OU 7-10 project operations and contingencies for upgrading or downgrading PPE. The actual PPE requirement for specific OU 7-10 project operational tasks will be specified in applicable JSAs, technical procedures, work packages, SWP, or RWP.

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 PRD-5121 (2002). Selection of the proper PPE to protect facility personnel is based on the following:

- Specific conditions and nature of the tasks (e.g., overburden excavation, glovebox operations, waste container handling, and decontamination)
- Potential contaminant routes of entry
- Physical form and chemical characteristics of OU 7-10 project chemicals or waste contaminants
- Acute and chronic effects from exposure to OU 7-10 project chemicals or waste contaminants
- Local and systemic toxicity of OU 7-10 project chemicals or waste contaminants
- Potential exposure levels (surface and airborne)
- The hazard analysis (Section 2) evaluation of this HASP.

Radiological contamination anticontamination clothing requirements will be developed in accordance with MCP-432 (2000) 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 operations will be evaluated to determine the most appropriate PPE levels and any modifications required. Potential exposures and hazards associated with OU 7-10 project operations 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 PPE Selection ^a	
Not IDLH or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate, and aerosol chemicals or radionuclides.	Level C—full-facepiece, as determined by the IH or RCT Level B—full-facepiece supplied air respirator with an air-purifying escape cartridge or airhood (bubblehood). HEPA and chemical combination cartridge for concentrations up to the protection factor of an air-purifying full-facepiece respirator and within the assigned DAC ^b value.
IDLH or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate and aerosol chemicals or radionuclides.	Level B—full-facepiece, supplied air respirator with an escape-only SCBA or Level A—SCBA.
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 vapors, gases, aerosols, or dusts that may present an IDLH situation and readily absorbed through the skin. High radionuclide contamination and airborne radioactivity levels. ^c	Level A ^d (not anticipated)
<p>a. A HEPA or multichemical and HEPA combination cartridge may be selected by IH and RadCon personnel based on specific hazards.</p> <p>b. DAC based on specific radionuclides.</p> <p>c. Contamination levels and airborne radioactivity as defined by 10 CFR 835.603d 9 (10 CFR 835, 2002).</p> <p>d. Level A PPE is not anticipated to be required for personnel conducting project operations.</p>	
<p>DAC = derived air concentration HEPA = high-efficiency particulate air IDLH = immediately dangerous to life or health IH = industrial hygienist RCT = radiological control technician SCBA = self-contained breathing apparatus PPE = personal protective equipment</p>	

5.1 Respiratory Protection

The primary objective will be to prevent or significantly reduce levels of atmospheric contamination (i.e., air contaminated with harmful dusts, fumes, mists, gases, smokes, vapors, or airborne radioactivity) to prevent inhalation of potential toxic substances. This will be accomplished as far as feasible through the implementation of existing OU 7-10 project engineering controls (e.g., HEPA-filtered ventilation), confinements, and barriers. When effective engineering controls are not feasible or entry into the contaminated RCS or PGS areas is required, appropriate respirators will be selected and used.

The level and type of respiratory protection for OU 7-10 project operations is operation-specific and relates directly to the airborne hazard for each given operation or activity. Assigned protection factors for respiratory devices are listed in MCP-2726 (2002), "Respiratory Protection," Appendix B, "Protection Factors."

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 MCP-2726 (2002) 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 operational JSAs, RWP, and SWP (when written).

Table 5-2 lists PPE items typically included for the three traditional HAZWOPER levels of PPE. These PPE-level ensemble requirements will be determined by assigned OU 7-10 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.

5.2.1 Level D Personal Protective Equipment

Level D PPE will only be selected for protective clothing and not for OU 7-10 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 OU 7-10 project operational support areas and low hazards areas of the WMF-671 WES.

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.

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 industrial hygiene determination).</p> <p>Hard hat (unless working indoors with no overhead or falling debris hazards) meeting ANSI Z89.1 requirements (ANSI 1969).</p> <p>Eye protection (safety glasses meeting ANSI Z87.1 requirements [ANSI 1968] as a minimum).</p> <p>Hand protection (material based on type of work and hazardous materials being handled).</p> <p>Safety footwear (steel or protective toe and shank) meeting ANSI Z41 [ANSI 1967] requirements or sturdy leather above the ankle for 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>
C	<p>Level D ensemble with the following respiratory and whole-body protection upgrades:^b</p> <ul style="list-style-type: none"> • Full-facepiece air purifying respirator equipped with a NIOSH-approved HEPA filter or chemical and HEPA combination cartridge (IH to specify cartridge type) <p>OR</p> <ul style="list-style-type: none"> • An air hood operating at a minimum pressure of 6 cfm or a full-facepiece supplied air respirator with a 10-minute escape bottle, a SCBA or an escape air-purifying combination HEPA or chemical cartridge (supplied air respirator hose length no more manufacturer's specification and under no circumstances greater than 300 ft) <hr/> <ul style="list-style-type: none"> • Standard Tyvek (or equivalent) coverall <p>OR</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).</p> <p>(Safety glasses not required if wearing a full-face respirator)</p>

Table 5.2. (continued)

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
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>OR for IDLH environment</p> <ul style="list-style-type: none"> • Full-facepiece supplied air respirator^d with a 10-minute escape bottle or an escape air-purifying combination HEPA or chemical cartridge (except for oxygen deficient atmospheres) <p>OR</p> <ul style="list-style-type: none"> • SCBA <hr/> <ul style="list-style-type: none"> • Chemical-resistant coveralls or encapsulating suit (Tyvek QC, Tychem 7500, Saranex 23-C, or equivalent) • 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>
	<p>Note: All seams must be taped and secured to prevent skin contact from hazardous substances in a soil, liquid, mist, and aerosolized form.</p>	
A	<p>Not anticipated for OU 7-10 project operations.</p>	<p>Not anticipated for OU 7-10 project operations.</p>

a. The PPE ensemble may be modified by the IH or RCT to provide protection from skin or other physical hazards.
 b. Upgrades are determined by the IH in conjunction with other environment, safety, and health professionals.
 c. Level B and A work will require approval from the project operations manager and coordination with the INEEL fire department
 d. Supplied air respirator hose length no more manufacturer's specification and under no circumstances greater than 300 ft).

ANSI = American National Standards Institute IH = industrial hygienist HEPA = high-efficiency particulate air
 IDLH = immediately dangerous to life or health INEEL = Idaho National Engineering and Environmental Laboratory
 OU = operable unit RCT = radiological control technician RWP radiological work permit
 SCBA = self-contained breathing apparatus

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. The PPE inspection guidance is provided in Table 5-3.

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 is 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.

5.2.4 Level A Personal Protective Equipment

Level A PPE is not anticipated for OU 7-10 project operations.

5.3 Personal Protective Clothing Upgrading and Downgrading

The OU 7-10 project assigned IH and RadCon personnel will be responsible for determining when to upgrade or downgrade PPE requirements. Upgrading or downgrading of PPE based on changing operational conditions (e.g., equipment, waste types, 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 a SWP. Additional reasons for upgrading or downgrading are listed in the following subsections.

5.3.1 Upgrading Criteria for Personal Protective Equipment

The level of PPE required will be upgraded for the following reasons and work will halt until PPE upgrading has been completed:

- New, unstable, or unpredictable hazards or exposures identified
- Temporary loss or failure of any engineering controls
- Contaminants that present difficulty in monitoring or detecting
- Known or suspected presence of skin absorption hazards
- Newly identified source or potential increasing concentration respiratory hazard(s) anticipated
- Operational activity change that may result in an increased contact with contaminants or triggering any of the criteria listed above.

5.3.2 Downgrading Criteria

The level of PPE will be downgraded under the following conditions:

- Elimination of hazard or completion of operational task(s) requiring specific PPE
- Implementation of new engineering or administrative controls that eliminate or significantly mitigate hazard

- Sampling information or monitoring data that show contaminant levels to be stable and lower than initial or estimated levels
- Elimination of potential skin absorption or contact hazards.

5.4 Inspection of Personal Protective Equipment

All PPE ensemble components must be inspected before use and when in use during OU 7-10 project operations in accordance with PRD-5121 (2002). 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 OU 7-10 project 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 OU 7-10 project 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-facepiece air-purifying and supplied air respirators with escape-only SCBA bottles or escape cartridges)	<p>Before use:</p> <ul style="list-style-type: none"> • Verify that respirator is within three years of shelf life. • Ensure airline matches the airline respirator to be used (black hose). • 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 facepiece, head straps, valves, connecting lines, fittings, and all connections for tightness. • Check cartridge to ensure proper type or combination are 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, 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> <p>Ensure air compressor is providing a minimum of 110 psi when all personnel have airlines hooked up to the compressor manifold.</p>
Air hoods	<p>Before use:</p> <ul style="list-style-type: none"> • Ensure airline matches the air hood to be used (red hose) • 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 a minimum of 110 psi when all personnel have airlines hooked up to the compressor manifold.

Table 5-3. (continued).

Personal Protection Equipment Item	Inspection
Level D, C, and B clothing	<p>Before use:</p> <p>Visually inspect for imperfect seams, nonuniform coatings, and tears.</p> <p>Hold PPE up to the light and inspect for pinholes, deterioration, stiffness, and cracks.</p> <p>While wearing in the work zone:</p> <p>Inspect for evidence of chemical attack such as discoloration, swelling, softening, and material degradation.</p> <p>Inspect for tears, punctures, and zipper or seam damage.</p> <p>Check all taped areas to ensure they are still intact.</p>
Gloves	<p>Before use:</p> <p>Pressurize rubber gloves to check for pinholes: trap air in glove and roll to inflate glove for inspection. No air should escape.</p> <p>Leather gloves:</p> <p>Inspect seams and glove surface for tears and splitting and verify no permeation has taken place.</p>

PPE = personal protective equipment SCBA = self-contained breathing apparatus

6. PERSONNEL TRAINING

Training of OU 7-10 Glovebox Excavator Method Project operations personnel is a key element of the hazard identification and mitigation process. In addition to required operational position-based training, all assigned OU 7-10 project personnel who access the 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 [29 CFR 1910, 2002]), RWMC, DOE, federal, state, and INEEL companywide manuals as applicable.

All OU 7-10 project training will be developed, conducted, and maintained in accordance with *Manual 12—Training and Qualification* (INEEL 2002f) and OU 7-10 project or applicable facility supplemental training procedures. Companywide *Manual 12* 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 OU 7-10 project nuclear facility manager (NFM)/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 OU 7-10 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's 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 OU 7-10 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 OU 7-10 project include excavator operator, glovebox operators, radiological personnel, shift supervisors, and assigned health and safety professionals.

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 OU 7-10 project include shift supervisor and excavator operator. The project training implementation matrix details positions of responsibility and those requiring additional training and certification.

6.4 Implementation of Training

The OU 7-10 project operations manager is responsible for ensuring that crafts and maintenance personnel assigned to work at the OU 7-10 project have the skills necessary for their particular craft. The OU 7-10 project facility manager is responsible for ensuring that crafts and maintenance personnel are qualified to perform assigned work at the facility in accordance with *Manual 12—Training and Qualification* (INEEL 2002f).

Facility prejob briefings and facility-specific CERCLA, hazard communication, and HAZWOPER training courses satisfy requirements of 29 CFR 1910.1200, “Hazard Communication,” and 29 CFR 1910.120, respectively (29 CFR 1910, 2002). Radiological Control personnel assigned to support OU 7-10 project operations will participate in an ongoing training program in accordance with 10 CFR 835 (2002) in addition to OU 7-10 project operations-specific training. Operators and shift supervisors have fissile material handling as a collateral duty and will receive fissile material handling training as part of their certification process.

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 OU 7-10 project operations personnel requiring certifications or qualifications will be performed and a formal continuing training program for OU 7-10 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 OU 7-10 project operations areas. This is not intended to be a complete list of OU 7-10 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 OU 7-10 project operations personnel that specify required qualification and certification requirements. Individual training plans are revised at least annually or as needed.

Personnel requiring OU 7-10 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 MCP-61 (1999), “Conduct and Evaluation of on-the-Job Training.”

Table 6-1. Minimum required training for access to Operable Unit 7-10 project 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 , Operators, and Assigned Environment, Safety, and Health and Radiological Control Personnel	Project Support Areas ^b	General Weather Enclosure Structure Area Access	Transfer Vestibule, Overburden Buffer Area, Drum handling Areas, Drum Preparation and Handling Area Access	Access to Contaminated or Potentially Contaminated Areas and Operations with Potential Significant Safety Hazards (e.g., RCS, PGS, and drum assay station)
Required Training					
40-hour HAZWOPER ^c —operations	Yes			d	NO ACCESS without prior approval from OU 7-10 project operations manager, RadCon, and IH Assigned project operations personnel only
24-hour HAZWOPER ^c —operations			Yes	d	
Project operations HASP training ^e	Yes		Yes	Yes	
Project-site orientation briefing ^f		Yes			
Radiological Worker I or II ^g	RW II	Escort or RW I	Escort or RW I	RW II	
Respiratory protection	Yes				

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

a. Will be trained to the HAZWOPER supervisor level.

b. Project operational support areas located within the RWMC operations area may require additional training requirements such as INEEL access (Blue Card) or RWMC access. Contact the OU 7-10 project shift supervisor for 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. 40-hour or 24-hour HAZWOPER training requirement will be determined by the assigned IH or safety professional based on the nature of the operational tasks and potential for exposure to contaminants or significant safety hazards.

e. Includes project-specific hazards communications (29 CFR 1910.120 [29 CFR 1910, 2002]), site-access and security, decontamination and emergency response actions, as required by 29 CFR 1910.120(e), "Training."

f. Orientation includes briefing of site hazards, designated work areas, emergency response actions, and PPE 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 PRD-183 (2000).

CFR = Code of Federal Regulations HASP = health and safety plan HAZWOPER = Hazardous Waste Operations and Emergency Response
HASP = health and safety plan IH = industrial hygienist OU = operable unit PPE = personal protective equipment
PRD = program requirements document RadCon = Radiological Control RW = radiological worker
RWMC = Radioactive Waste Management Complex

6.5 Training Records

Training records for OU 7-10 project personnel will be kept in accordance MCP-85 (2001), "Training Records Administration," by the project training organization. Documentation of a qualification or certification is placed in an employee's training file and maintained by the appropriate training organization. Employee experience and employment history records are maintained by the Human Resources organization in individual personnel files.

6.6 Project Operations-Specific Training

As part of OU 7-10 project operations, training personnel will receive HASP training. After completing HASP training, project operations personnel will sign Form 361.25, "Group Read and Sign Training Roster," or equivalent, 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. Form 361.25 (or equivalent) training forms are available on the INEEL Intranet under Forms.

A trained HAZWOPER 8-hour supervisor (shift supervisor 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 29 CFR 1920.120(e), "Training." Following the supervised field experience period, the supervisor will complete Form 361.47, "HAZWOPER Supervised Field Experience Verification," 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 they are upgrading from 24- to 40-hour HAZWOPER training. A copy of the training record must be kept at the OU 7-10 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 (Form 361.47, or equivalent) should be submitted to the OU 7-10 project training coordinator for inclusion in the Training Records and Information System.

6.7 Prejob and Post-job Briefings and Safety Meetings

All OU 7-10 project operational activities performed in accordance with companywide requirement documents will require a prejob briefing conducted by a supervisor. During this briefing, tasks associated with OU 7-10 project operations 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 post-job 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 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 OU 7-10 Glovebox Excavator Method Project operational areas will be fenced and controlled to prevent unauthorized entry into operations areas. Entry into and exit out of the OU 7-10 project area will be controlled through the appropriate use of barriers, signs, and other measures in accordance with PRD-5117 (2001), "Accident Prevention Signs, Tags, Barriers, and Color Codes." Radiological controlled areas will be established by RadCon personnel, in accordance with the MCP-187 (2000), "Posting Radiological Control Areas."

Personnel not directly involved with OU 7-10 project operations shall be excluded from entering the OU 7-10 project operations area. The OU 7-10 project operations area in the SDA will be posted and controlled as a CERCLA-regulated area. Visitors, such as inspectors, may be authorized to enter the established OU 7-10 project operations area provided they are conducting official business and have met the minimum OU 7-10 project operational 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 operational areas without processing through the OU 7-10 shift supervisor. All training for access into the requested area will be verified. Non-operational 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 due to operational activities and associated hazards (at the discretion of the shift supervisor).

The general configuration of the OU 7-10 project operations area is illustrated in Figure 1-3. Individual OU 7-10 project building and project complex drawings will be drafted as construction is completed.

7.1 Radiological Confinement Zones

For ventilation design purposes, areas of the WMF-671 WES and associated confinements are classified as Confinement (pressure) Zones of Clean Area, I, II, or III in accordance with criteria in DOE-ID "Architectural Engineering Standards." A Confinement Zone III classification applies to areas where highly radioactive materials are handled. A Confinement Zone II classification applies to areas where high levels of radioactive contamination could be present. A Confinement Zone I classification is assigned to operating areas and maintenance areas that are adjacent to Zone II and III areas, and a classification of Clean Area is assigned to areas that normally are free of contamination. Training requirements for access to these general areas is provided on Table 6-1. The following list describes each of the confinements and their confinement zone classification:

- Packaging glovebox system gloveboxes Zone III
- Retrieval confinement structure Zone III
- Personnel access vestibule Zone I
- Drum loadout enclosures Zone II
- Transfer area Zone I
- Weather enclosure structure Zone I
- Personnel monitoring room Clean Area.

7.2 Radiologically Contaminated Material Release

If project equipment or materials become radiologically contaminated within these radiological confinement zones, they will not be released until required radiological surveys have been completed (e.g., hand-held instruments and swipes) in accordance with MCP-139, “Radiological Surveys,” MCP-425, “Radiological Release Surveys, and the Disposition of Contaminated Materials,” as stated in the RWP, and as directed by RadCon personnel.

7.3 Site Security

The OU 7-10 project is secured and controlled with the existing RWMC and the Lockheed Martin Advanced Environmental Systems fence and through appropriate posting to prevent entry into OU 7-10 project 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 working day following discovery.

7.4 Wash Facilities and Sanitation

Project operations, such as waste handling, storage, PGS operations, and sampling will involve close contact with waste and other potentially contaminated surfaces. 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 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, drinking, or chewing gum or tobacco.

Sanitation and shower facilities will be available for OU 7-10 project operations personnel within RWMC facility areas.

Note: No smoking, chewing, eating, applying lip balm, or drinking is allowed within CERCLA-regulated areas and radiologically controlled areas.

7.5 Designated Eating Areas and Smoking Area

The designated eating areas for operations personnel will be established in the OU 7-10 project operations areas and also will include the RWMC cafeteria (located in WMF-637) and designated eating areas.

Smoking will only be permitted in designated smoking areas outside the OU 7-10 project CERCLA-regulated areas. Personnel will comply with all INEEL smoking policies, including disposal of smoking materials in the proper receptacles. All GDE-7063 (2002), “INEEL Wildland Fire Management Guide,” requirements related to smoking at the INEEL will be practiced.

8. OCCUPATIONAL MEDICAL SURVEILLANCE

The OU 7-10 Glovebox Excavator Method Project operations personnel shall participate in the INEEL Occupational Medical Program (OMP), defined in Program Description Document -61, "Occupational Health Program," to implement the requirements of DOE Order 440.1A (1998), "Worker Protection Management for DOE Federal and Contractor Employees"; DOE Order 440.1-4 (1998), "Contractor Occupational Medical Program"; and 29 CFR 1910.120(f) (29 CFR 1910, 2002). 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 29 CFR 1910.134, "Respiratory Protection," (29 CFR 1910, 2002).

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 MCP-2726 (2002).

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 OU 7-10 project HASP, job hazard analysis 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 OU 7-10 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 one work week (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 MCP-3003 (2001) 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 foreman 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 OU 7-10 project operations or may be exposed to OU 7-10 project operational 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 29 CFR 1910.120(f) (29 CFR 1910, 2002). 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 MCP-188 (2001), "Issuance of Thermoluminescent Dosimeters and Obtaining Employees Dose History," and MCP-2381 (2001), "Employees Exposure Questionnaire," of the *INEEL Radiation Protection Manual*.

8.2 Injuries at the Operable Unit 7-10 Project Site

It is the policy of the INEEL that an INEEL OMP physician examine all 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 will only be trained to the medic first or CPR level and should contact the CFA 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 material safety data sheet, 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 29 CFR 1910.120 (29 CFR 1910, 2002).

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 will then be transported to the subcontractor's treating physician or off-Site medical facility.

The OU 7-10 project shift supervisor will be contacted if any injury or illness occurs to personnel working for the OU 7-10 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 listed in Section 10.

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), and the “Established Levels of Radionuclide Intake for Consideration of Medical Intervention” (INEEL 1991) 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 (RCM)* (PRD-183 2000).

8.3 Substance-Specific Medical Surveillance

Project operations will involve the excavation, handling, sampling, packaging, and storage of OU 7-10 waste contaminated with radiological and chemical constituents (see Tables 2-2 and 2-3). Several of the nonradiological waste constituents have OSHA substance-specific standards that govern the manner that personnel monitoring and medical surveillance is conducted. These substances have exposure action levels (see Table 2-4) that trigger medical surveillance requirements. Based on the facility safety design features and engineering controls (e.g., confinement, barriers, and negatively pressured HEPA-filtered ventilation system) for control of radiological and nonradiological constituents, exposure levels for work inside the WMF-671 WES at the excavator RCS and PGS operator positions are not anticipated to reach these action levels. Additionally, the DSS will be employed to minimize particulate generation in the RCS, thus, further reducing the potential for exposures.

Protective clothing and respiratory protection will be worn for personnel required to enter the RCS or contaminated PGS systems to perform preventive or unscheduled maintenance tasks. These tasks are not anticipated to be routine in nature and if entry into airborne radioactivity areas, supplied air respiratory protection will be worn. Based on the engineering controls, the limited nature of potential exposures, and the level of protective equipment that will be worn, exposures are anticipated to be nominal.

All OU 7-10 project operations will be evaluated to determine the hazards and potential exposures to operations personnel in accordance with PRD-25 (1999), “Activity Level Hazard Identification, Analysis, and Control.” 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. If OU 7-10 project operations involving chemicals listed in 29 CFR 1910.1003, “13 Carcinogens,” (29 CFR 1910, 2002) and MCP-2703 (2000), “Carcinogens,” will be followed.

All exposures to ionizing radiation will be evaluated in accordance with the RCM and, where deemed appropriate, be controlled through the use of an RWP in accordance with MCP-7 (2002), “Radiological Work Permit.”

If new OU 7-10 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 OU 7-10 Glovebox Excavator Method Project 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 OU 7-10 project operational facilities 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 OU 7-10 project NFM and the operations manager will interface to determine the most appropriate use of these resources.

The emergency organization structure with both responsibilities and authorities at RWMC is contained in the *INEEL Emergency Plan/RCRA Contingency Plan*, Addendum 3 (PLN-114-3 2002). The sections below outline the responsibilities of key OU 7-10 project personnel.

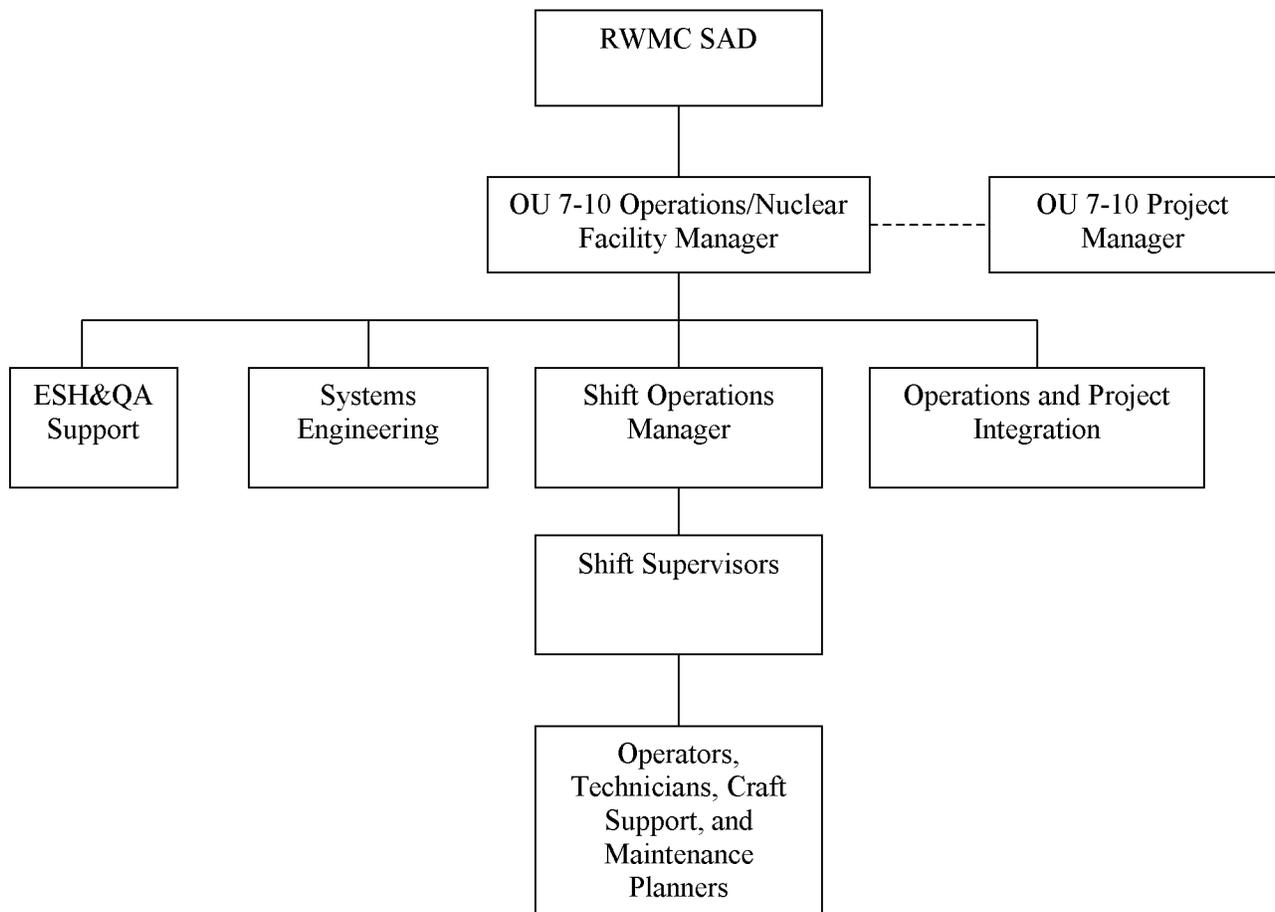


Figure 9-1. Operations organizational interfaces for the OU 7-10 Glovebox Excavator Method Project.

9.1 Project Operations Personnel

9.1.1 Project Operations Management

9.1.1.1 Radioactive Waste Management Complex Site Area Director. Because construction, operations, and D&D&D activities for the OU 7-10 project will occur within the RWMC operations boundary, the RWMC SAD will serve as the SAD for all OU 7-10 project operations. The RWMC SAD will ensure that documents identified within the RWMC authorization basis (i.e., RWMC safety analysis report, technical safety requirement, and permits) remain current and adequately address the scope and hazards encountered for activities within the scope of RWMC operations.

The RWMC SAD will provide infrastructure programs to support facility safety and work processes for personnel assigned to the OU 7-10 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 SAD 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 Project Operations and Nuclear Facility Manager. The OU 7-10 project NFM is responsible to the RWMC SAD for all OU 7-10 area operational activities and supports the project through the project manager as the work package manager for startup, operations, and maintenance activities related to OU 7-10 project scope, schedule, and budget performance. The NFM is responsible for the safe operation of OU 7-10 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 OU 7-10 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 OU 7-10 project operations, and has authority to act for management during normal and abnormal operations. 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 Operators (Retrieval, Soil Handling, and Material Handling). Operators are assigned to each shift to perform retrieval, soil handling, and glovebox operations. Each operator 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.

9.1.2.3 Data Recorder. The data recorder will assist with the identification and characterization of waste in the PGS, records data, enters data into the drum tracking system and, when required, acts as a verifier of waste disposition locations.

9.1.2.4 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 OU 7-10 project-specific safety and health policies.

9.1.2.5 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 structures, systems, and components for which the system engineer is or will be responsible.

9.1.2.6 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 OU 7-10 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

9.1.2.7 Radiological Control Technician Foreman. Specific duties and responsibilities of the RCT foreman include directing and supervising day-to-day activities for RCTs, reviewing radiological work permits, and ensuring that requirements of applicable DOE orders, company programs, and the RCM are properly incorporated into project-specific procedures, practices, and controls

9.1.2.8 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 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.

9.1.3.2 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 OU 7-10 project. The Environmental Engineer identifies environmental and regulatory issues that affect operations and develops solutions in coordination with the OU 7-10 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.

9.1.3.3 Safety Professional. The assigned INEEL safety professional reviews work packages, observes operational activities, assesses compliance with the INEEL 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 MCP-3449 (2001), “Safety and Health Inspections,” and may have other duties at the task site as specified in other sections of this HASP, or in INEEL PRDs or MCPs. Additionally, the safety professional will support OU 7-10 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.

9.1.3.4 Industrial Hygienist. The assigned INEEL IH 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 IH 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).

9.1.3.5 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 OU 7-10 project deliverables that are not created by operations, but impact operation’s 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 10 CFR 830 Subpart B, “Safety Basis Requirements.” Specific duties and responsibilities include acting as the point of contact for safety analysis issues related to the OU 7-10 project, scheduling and tracking of safety analysis work, preparation and maintenance of documented safety analyses and technical safety analysis requirements, and preparation of 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 OU 7-10 project personnel. In addition, these personnel conduct damage assessments in the event of a security incident, coordinate with DOE-ID 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 OU 7-10 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 OU 7-10 project operational areas (including INEEL personnel, representatives of DOE, and state or federal regulatory agencies) may not proceed beyond the project operational support areas without having the appropriate training (see Table 6-1) and as described below:

- Receiving OU 7-10 project operational-specific briefing for the operations area to be accessed
- Signing applicable entry logs and work control documents (for the area to be accessed)
- Wearing the appropriate PPE.

A fully trained OU 7-10 project operations representative (e.g., shift supervisor or operator) will escort visitors entering the project operational areas.

Note 1: Visitors may not be allowed into the WMF-671 WES during certain operations to minimize safety, health and radiological hazards to the visitor(s). The determination as to any visitor's demonstrated need for access into the OU 7-10 project 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 OU 7-10 project operations personnel during an emergency. Such an emergency could be within OU 7-10 project operations area, at the RWMC, or a Site-wide emergency. This section provides emergency plan contingencies at a project level and is a HAZWOPER-mandated supplemental plan to the “INEEL Emergency Plan RCRA Contingency Plan” (PLN-114 2002) information. Plan-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 OU 7-10 operations personnel and their interface with the INEEL ERO by providing guidance for responding to abnormal events during project operational activities.

Plan-114 may be activated in response to events occurring at the RWMC, at the OU 7-10 project complex, or at the discretion of the emergency coordinator. Once the INEEL plan is activated, OU 7-10 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 DOE Orders 151.1A (2000), “Comprehensive Emergency Management System,” and 232.1 (1997), “Occurrence Reporting and Processing of Operations Information.” For this reason, the term event will be used in this section when referring to a project operational HAZWOPER emergencies.

10.1 Pre-Emergency Planning

The INEEL Emergency Plan RCRA Contingency Plan 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 OU 7-10 project operational emergencies will be reported through the RWMC shift supervisor to the ERO for classification in accordance with Section 4 of PLN-114 (2002). If the RWMC ERO is activated, site emergency response will follow PLN-114 (2002), RWMC Addendum 3 (PLN-114-3 2002).

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 OU 7-10 project operational 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 OU 7-10 project operations 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 OU 7-10 project operations area. The RWMC PLN-114 (2002) Addendum 3 (PLN-114-3 2002) lists emergency equipment available at RWMC. This includes the emergency coordinator located in WMF-637 and equipment located in WMF-601 at RWMC. Additional heavy construction and other equipment listed in PLN-114-3 (2002) is available for use during emergencies.

The INEEL fire department maintains an emergency HAZMAT response van that can be used to respond to an event or emergency within the project operations areas. Fire department personnel are also trained to provide immediate hazardous material spills and medical services. 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 OU 7-10 project operations area during active operations.

Table 10-1. Emergency response equipment to be maintained at the Operable Unit 7-10 project site during operations.

Equipment Name and Quantity Required	Location at Operable Unit 7-10 Project	Responsible Person	Frequency of Inspection
Fire extinguishers ^a	Located throughout the operations area, administration buildings, WMF-671 WES, outside RCS and PGS, in each waste storage area, and on each piece of industrial and heavy equipment and in each vehicle	Operations manager	Monthly
First aid supplies	Vehicles, designated administrative trailers, and within the WMF-671 WES	Operations manager	Inspect weekly and sign tag with annual inspection
Eye wash station	At designated operational areas where chemical mixing or use occurs and where there is a significant eye hazard (as determined by the IH and Safety professional)	Operations manager	Monthly or the frequency determined by the manufacturer
Eye wash bottle ^b	At strategic locations throughout WMF-671 WES as determined by the IH and safety professional	Operations manager	Monthly or replace after use
Hazardous materials spill kit	Within the WMF-671 WES and staged absorbent material in the RCS during excavation activities for liquid absorption (RCS absorption of liquids not considered a spill as described in Section 10.5.2.2)	Operations manager	Monthly
Communication equipment available	In all operational areas or in possession of key operations personnel	Operations manager	Availability and daily functional check

a. 10A/60BC extinguishers or as specified by the RWMC fire protection engineer.

b. An eye wash bottle will be used to provide an immediate eye flush if required. Portable eye wash stations that meet the ANSI Z 358.1-1998 (ANSI 1998) requirement are available at the WMF-671 WES and other locations as determined by the IH and safety professional. Employees are instructed to use the bottles and immediately proceed to the decontamination and treatment facility permanent eye wash station. Eye wash stations will be located within 100-ft or 10 seconds from significant eye hazard operations as determined by the IH and safety professional.

IH = industrial hygienist

PGS = Packaging Glovebox System

RCS = Retrieval Confinement Structure

RWMC = Radioactive Waste Management Complex

WES = Weather Enclosure Structure

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 OU 7-10 project operations areas will include a combination of radios, telephones (i.e., mobile, cellular, or hardline), and pagers. The OU 7-10 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 OU 7-10 shift supervisor will be notified of any operational emergency event. The OU 7-10 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., OU 7-10 shift supervisor), 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 numbers of injured, types of injuries, and conditions of the injured personnel
- Emergency response resources required (e.g., fire, hazardous material, and ambulance)
- Additional information as requested.

Note: If the OU 7-10 shift supervisor or RWMC 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 RWMC 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 PLN-114 (2002) 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 OU 7-10 shift supervisor and operations personnel responsibilities are described below. Operations personnel will respond to emergencies only within the limits of their training and designated by their position. All personnel are trained to the OU 7-10 operations and RWMC-specific emergency actions as part of the access training or will be escorted by someone who has been trained. Emergency response actions also will be covered as part of the HASP briefing.

10.5.2.1 Operable Unit 7-10 Shift Supervisor. The OU 7-10 project 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 positive sweeps of all OU 7-10 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 OU 7-10 shift supervisor then will report accountability status to the RWMC shift supervisor, who will in turn, initiate communicate this information to the RWMC emergency coordinator.

Additionally, the OU 7-10 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 OU 7-10 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 Operable Unit 7-10 Project Operations Assigned Personnel. Every person within the project operations area during an operations emergency event or INEEL emergency has a role to play. Personnel must be constantly aware of potential problems or unexpected hazardous situations and immediately report these situations to the OU 7-10 shift supervisor. All personnel are expected to assist with accountability when required, to report near misses and emergency events of concern to the OU 7-10 shift supervisor, and to respond to emergency events, as provided for in this HASP. Specific facility personnel responsibilities are outlined in Table 10-2.

Table 10-2. Responsibilities during an emergency.

Responsible Person	Action Assigned
Any OU 7-10 project worker	Contact the OU 7-10 shift supervisor
Any fire-extinguisher-trained worker	Extinguish fires (incipient fires only) or contain spills (within level of training)
Any medic first aid and CPR-trained personnel	Provide first aid within level of training (on a voluntary basis)
Shift supervisor or designee	Contact the RWMC shift technical lead or emergency coordinator (if emergency coordinator has formed)
Shift supervisor or designee	Contact the INEEL site emergency telephone number or the WCC (if RWMC shift technical lead cannot be contacted)
Shift supervisor or trained designee	Conduct personnel accountability and report information to the RWMC shift technical lead or emergency coordinator
Shift supervisor or designee	Report incipient fires to the INEEL fire department Report spills to the INEEL spill notification team
Shift supervisor	Report occupational injuries or illnesses to the OMP

CPR = cardiopulmonary resuscitation INEEL = Idaho National Engineering and Environmental Laboratory
OMP = Occupational Medical Program OU = operable unit RWMC = Radioactive Waste Management Complex
WCC = Warning Communications Center

10.5.2.3 Personnel Accountability and Area Warden. The OU 7-10 project operations 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 OU 7-10 shift supervisor or trained alternate shall account for the people present within the operations area. The shift supervisor or trained alternate will serve as the area warden for OU 7-10 project operations and complete the personnel accountability (following positive sweeps of OU 7-10 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).

10.5.2.4 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 below) using spill supplies in the project operational area. The spill will be immediately reported to the OU 7-10 shift supervisor or RWMC shift supervisor (if the OU 7-10 shift supervisor cannot be contacted). Reporting requirements will be determined by the RWMC emergency coordinator in accordance with MCP-190 (2000), “Event Investigation and Occurrence Reporting.” If any release of a hazardous material occurs, task site personnel will comply with the following immediate spill response actions.

10.5.2.4.1 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 OU 7-10 shift supervisor.

10.5.2.5 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 OU 7-10 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 OU 7-10 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 OU 7-10 project operational 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.

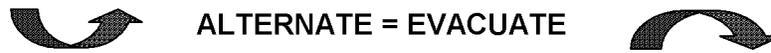
10.6.1.1 Take Cover—Continuous Siren. Radiation or hazardous material releases, adverse weather conditions, or other event or emergency conditions may require that all personnel take cover indoors in the nearest building. A TAKE COVER protective action may be initiated as part of a broader response to 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, OU 7-10 project operations 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.

RadCon 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.

10.3.1.3 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 OU 7-10 project operational areas, but it does not necessarily require the complete evacuation of the entire RWMC. An example would be if a CAM alarmed within the WMF-671 WES. This alarm will serve as the primary emergency evacuation signal for personnel in the WMF-671 WES area. The order to evacuate OU -710 Project operational areas can also be given by word of mouth, radio, or voice paging system. When ordered to evacuate the project operational area, personnel shall place the project operations 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 OU 7-10 shift supervisor. (Emergency evacuation routes for each project building will be developed and posted following construction.) The OU 7-10 shift supervisor 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 operations area. Figure 10-1 shows the RWMC evacuation and assembly areas and Figure 10-2 contains a map showing the location of CFA-1612 medical facility.

In the event that the project operational area is evacuated, personnel shall assemble in the designated assembly area, or as directed by the OU 7-10 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 10-1) 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 OU 7-10 project operational 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.

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.

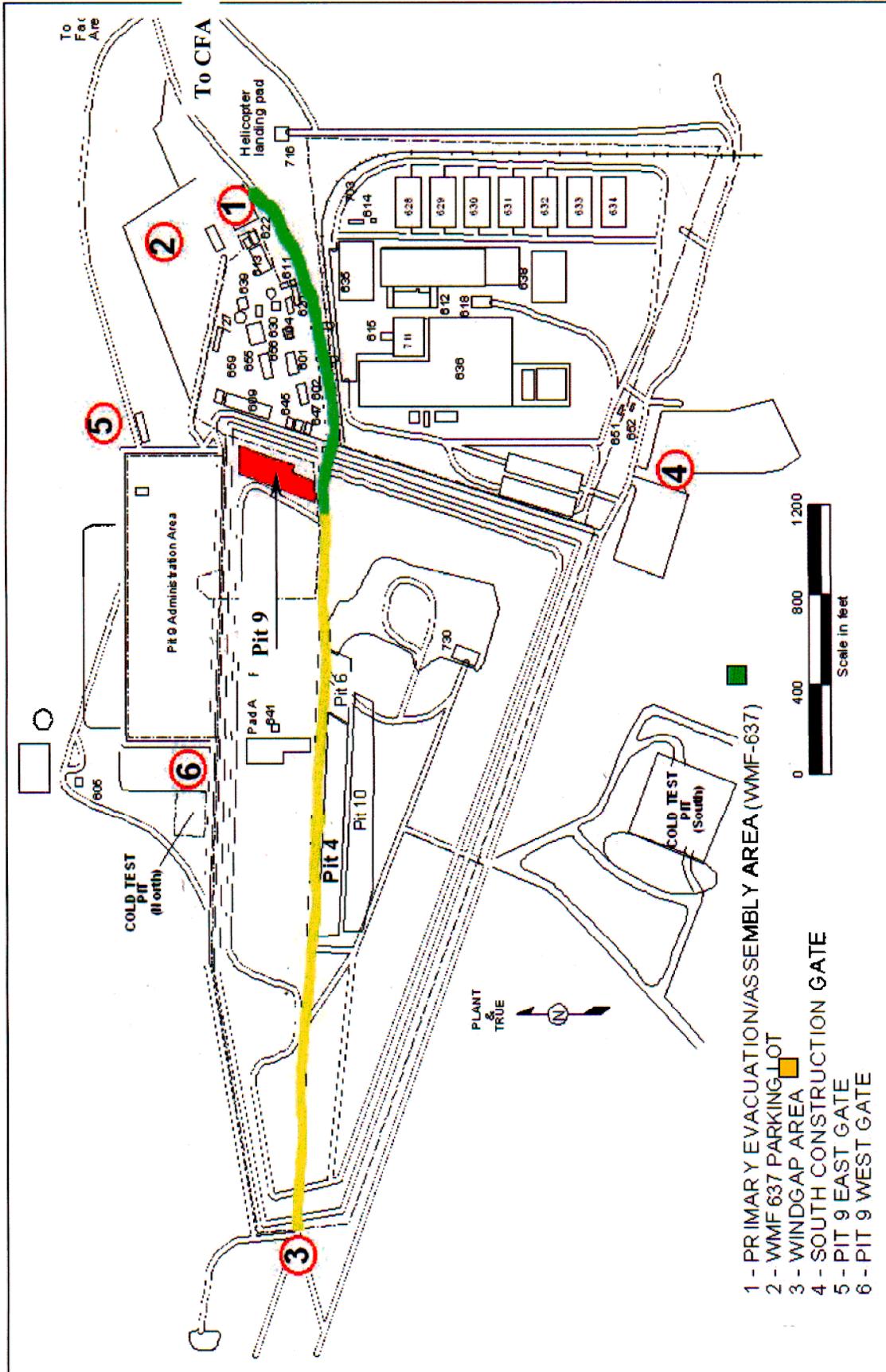
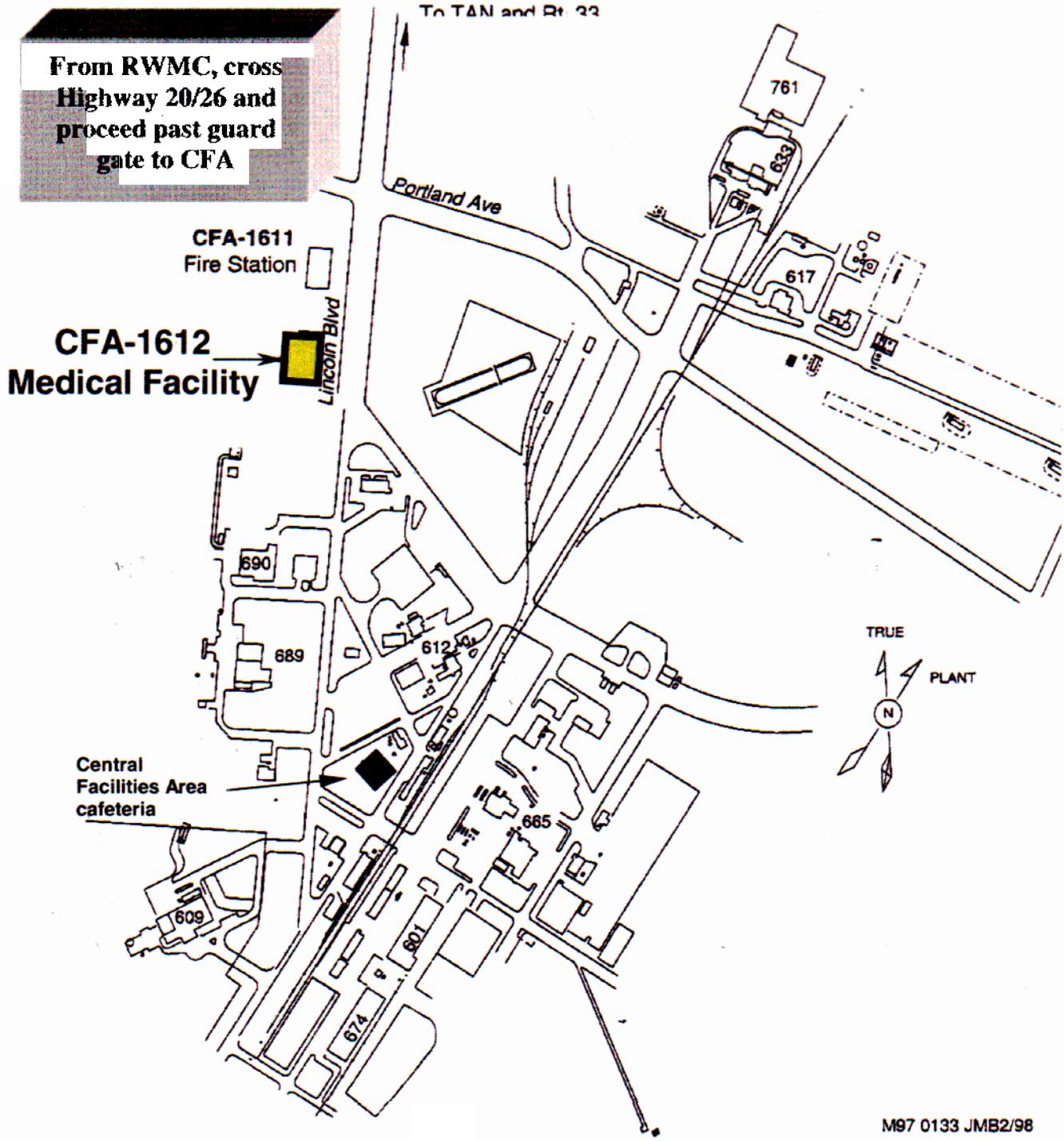


Figure 10-1. Evacuation and assembly areas at the Radioactive Waste Management Complex.



From RWMC, cross Highway 20/26 and proceed past guard gate to CFA

CFA-1611 Fire Station

CFA-1612 Medical Facility

Central Facilities Area cafeteria

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Map is not to scale

Figure 10-2. Map showing the route to the nearest medical facility (Central Facilities Area-1612).

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 post-event and post-emergency conditions, (2) developing a plan for returning to pre-event and pre-emergency 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 SAD are responsible for determining when an emergency situation is sufficiently stable to terminate the emergency and enter the recovery phase. The project NFM, with concurrence from the operations manager and in consultation with the RWMC SAD, will appoint the recovery manager.

Where a restart of OU 7-10 project operations is required following a shutdown, all operational restart requirements of MCP-2783 (2000), "Startup and Restart of Nuclear Facilities," 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 OU 7-10 project NFM or operations manager will lead all critiques of OU 7-10 Project operational events requiring a critique in accordance with PLN-114 (2002).

10.11 Telephone and Radio Contact Reference List

Table 10-3 lists the points of contact for the OU 7-10 project operations. A copy of this list or similar list with key operational contacts will be posted at the OU 7-10 project shift desk at all times. Because personnel listed may change frequently, working copies will be generated as required to note new positions and changes of personnel assigned. This HASP should not be revised with a document action request to note these changes.

Table 10-3. Operable Unit 7-10 project emergency contact list.

Contact Title	Contact Name	Phone Number/ Radio Net	Pager Number
Warning Communications Center, medical, fire, security	N/A	777, 6-1515	N/A
First aid (CFA medical dispensary, CFA-1612)	N/A	6-2356	N/A
Occupational Medical Program	N/A	6-1596	N/A
OU 7-10 project operations manager	M. Dicken	6-1085	5076
OU 7-10 project manager	M. Pratt	6-5565	3237
OU 7-10 project shift operations manager	J. Barker	6-3432	7667
OU 7-10 project shift supervisor	M. Schorzman	6-2236	6153
OU 7-10 project industrial hygienist	B. Perkes	6-9358	6355
OU 7-10 project safety professional	K. Wooley	6-4731	7368
OU 7-10 project radiological engineer	R. Horne	6-5318	5898
RWMC site area director	D. Bright	6-4223	5270
RWMC shift desk	Shift supervisor	6-2767 or RWMC trunked radio	
RWMC nuclear facility manager	A. Millhouse	6-6932	5304
RWMC Radiological Control office	Foreman	6-2710	
Environmental Restoration director	M. Graham	6-2945	1000
OU 7-10 Project DOE-ID representative	J. Snook	6-5920	N/A

CFA = Central Facilities Area DOE-ID = U.S. Department of Energy N/A = not applicable OU = operable unit
RWMC = Radioactive Waste Management Complex

11. DECONTAMINATION PROCEDURES

OU 7-10 Project operations will involve decontamination of the PGS, excavator, equipment, RCS building surfaces, exterior waste containers, other operationally contaminated items requiring decontamination, and potentially some degree of personnel decontamination. Every effort will be made to prevent contamination of OU 7-10 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.

OU 7-10 Project facility engineering design features (confinements) 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. MCP-148 (2000), "Personnel Decontamination," contains information on personnel radionuclide decontamination. Radionuclide decontamination operations required for equipment or areas will be performed in accordance with Chapter 4 of companywide *Manual 15A* (PRD-183 2000), in accordance with the "OU 7-10 Glovebox Excavator Method Project Facility Shutdown Plan and D&D&D Pre-Plan" (PLN-343 2002), and at the direction of RadCon personnel

11.1 Contamination Control and Prevention

Contamination control and prevention procedures will be implemented to minimize OU 7-10 project operations personnel contact with contaminated surfaces that will be encountered during project operations. 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

OU 7-10 Project operational decontamination procedures will be used for routine decontamination of the PGS and other areas where contamination is anticipated (waste handling and packaging areas) to prevent the spread of contamination and to meet OU 7-10 project operational requirements. In addition, decontamination is necessary to control contamination and protect areas outside the RCS and PGS confinements to maintain a clean working area within the WMF-671 WES. Both radiological and nonradiological contamination will be evaluated when decontaminating surfaces.

Radionuclide decontamination operations for equipment or areas will be performed in accordance with Chapter 4 of the RCM 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 OU 7-10 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.

Decontamination of the OU 7-10 Project RCS and PGS will be conducted in accordance with the *OU 7-10 Glovebox Excavator Method Project Facility Shutdown Plan and D&D&D Pre-Plan* (PLN-343 2002).

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 PRD-183 (2000). Before donning PPE, all items will be inspected following the list in Table 9-2. 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 CFA medical facility (CFA-1612) and carefully handled to prevent the spread of contamination. Information on proper handling of radionuclide-contaminated wounds is contained in MCP-148 (2000), "Personnel Decontamination."

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 anti-contamination 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 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, -C or -B PPE is described below. 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 is also 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 radiological control boundary as described above. If exiting a radiological contamination area, personnel will conduct the proper personal survey, as stated in the RWP.

11.3.3 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 bubblehood 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 (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:

- *Manual 17—Waste Management Plan* (INEEL 2002g)
- *Waste Management Plan for the OU 7-10 Glovebox Excavator Method Project* (INEEL 2003)
- 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 OU 7-10 Glovebox Excavator Method 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 (INEEL 2002a; INEEL 2002b).

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 companywide *Manual 15B* (INEEL 2002c); PRD-183 (2000); and MCP-9 (2001), "Maintaining the Radiological Control Logbook."

All other health, safety, and radiological records, including inspections, will be maintained in accordance with appropriate and applicable requirements identified in companywide *Manuals 14A* (INEEL 2002a), *15A* (PRD-183 2000), *15B* (INEEL 2002c), and *15C* (INEEL 2002d), and applicable RWMC and project supplements.

12.2 Records Management

The Environmental Restoration Administrative Record and Document Control (ARDC) office organizes and maintains data and reports generated by field activities. The ARDC 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 (QAPjP) (DOE-ID 2000), and other documents pertaining to these operations are maintained in the project file by the Environmental Restoration ARDC office. Controlled procedures for the RWMC and OU 7-10 project will be issued, controlled, and maintained in accordance with MCP-135 (2002), "Creating, Modifying, and Canceling Procedures and Other DMCS-Controlled Documents," 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, Title 10, "Energy," Part 835, "Occupational Radiation Protection," *Code of Federal Regulations*, Office of the Federal Register.
- 29 CFR 1910, 2002, Title 29, "Labor," Part 1910, "Occupational Safety and Health Administration," *Code of Federal Regulations*, Office of the Federal Register.
- 29 CFR 1926, 2002, Title 29, "Labor," Part 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations*, Office of the Federal Register.
- 54 FR 48184, 1989, "National Priorities List of Uncontrolled Hazardous Waste Sites; Final Rule," *Federal Register*, U.S. Environmental Protection Agency, November 21, 1989.
- 15 USC § 2601 et seq., 1976, "Toxic Substances Control Act," *United States Code*.
- 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 Governmental Industrial Hygienists.
- ANSI, 1967, "Men's Safety-Toe Footwear," Z41.1-1967, American National Standards Institute.
- ANSI, 1968, "Practice for Occupational and Educational Eye and Face Protection, ANSI Z87.1-1968," American National Standards Institute.
- ANSI, 1969, "Safety Requirements for Industrial Head Protection," ANSI Z89.1-1969, American National Standards Institute.
- ANSI, 1991, "Specification for Personal Noise Dosimeters," ANSI S1.25-1991, American National Standards Institute.
- ANSI, 1992, "American National Standard for Respiratory Protection," Z88.2-1992, American National Standards Institute.
- ANSI, 1998, "Emergency Eyewash and Shower Equipment," Z358.1-1998, American National Standards Institute.
- ANSI/HPS, 1999, "Sampling Airborne Radioactive Materials in Nuclear Facilities," ANSI/HPS N13.1-1999, American National Standards Institute and Health Physics Society.
- ASA, 1991, "Specifications for Personal Noise Dosimeters," ASA 98R(1997), ASA S1.25, Acoustical Society of America.
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3. EXPOSURE MONITORING AND SAMPLING

The potential for exposure to chemical, radiological, and physical hazards exists during OU 7-10 Glovebox Excavator Method Project operations and will affect all project operations personnel who are involved with operational waste handling, sorting, storage, transporting, and decontamination activities. Refinement of project operational area access requirements, work control zones (see Section 7), use of engineering and administrative controls, worker training, and wearing PPE provide the mitigation strategy for these hazards. Monitoring and sampling will be used throughout project operations to (1) assess the effectiveness of engineering controls, (2) determine the appropriate PPE requirements for individual tasks, and (3) determine the need for upgrading and downgrading of PPE as described in Section 5. Monitoring with direct-reading, stationary, and mobile instruments will be conducted to provide RadCon and Industrial Hygiene personnel with real-time and trending data to assess the effectiveness of control measures.

Tables provided in this section present the strategy for conducting exposure monitoring and sampling. These include:

- Table 3-1: Tasks and hazards to be monitored and monitoring instrument category
- Table 3-2: Monitoring instrument category and description
- Table 3-3: Action levels and associated responses for specific hazards.

3.1 Airborne Exposure Engineering Controls

Radiological engineering controls and isolation features designed for the WMF-671 WES, RCS, and PGS will serve as the primary defense to control both radiological and nonradiological hazards. Specifically, the ventilation system ensures that confinements are maintained during personnel or equipment accesses to the RCS and during an accidental breach of confinement contingency.

The project ventilation system design is a once-through system that ensures airflow is from the cleanest to the most contaminated confinement zones. The airflow is from the outside environment through the WMF-671 WES; from the WMF-671 WES through the PGS gloveboxes, drum loadout enclosures, and RCS; and then from the RCS through the exhaust filter bank and stack.

A primary fan and a manually activated backup fan are located outside the WMF-671 WES at the exhaust stack. Both fans are capable of drawing air from outside the WMF-671 WES through an inlet filter structure and damper in the ceiling of the WMF-671 WES. Air is then drawn through a series of inlet filters and dampers in the personnel monitoring and access rooms, RCS, PGS, drum loadout enclosures, and through the exhaust filter bank and stack. A fan in the transfer area draws air from outside the WMF-671 WES through a filtered inlet.

The exhausted air is monitored by a shrouded probe that meets ANSI and Health Physics Society standard ANSI/Health Physics Society N13.1-1999, "Sampling Airborne Radioactive Materials in Nuclear Facilities" (ANSI 1999). The probe system consists of (1) lines from the stack for collecting real time and recording samples of conditions in the stack, (2) a climate-controlled cabinet for storing radiological samples, and (3) monitoring instrumentation. Real-time samples are analyzed by the system and returned to the stack. Record samples are retained for analysis.

Table 3-1. Tasks and hazards to be monitored, frequency, and monitoring instrument category.

Tasks	Hazard(s) to be Monitored ^a	Instrument Category to be Used
Excavation Operations (RCS)		
<ul style="list-style-type: none"> • Overburden removal • Waste retrieval • Underburden sampling • Sample handling and transportation 	Ionizing radiation—(alpha, beta, gamma, criticality)	1
	Radionuclide contamination—(alpha, beta, gamma)	2
	Chemical and nonradiological constituents, hazardous atmospheres	3, 4
	Respirable dust—silica and other particulates of concern	3, 5
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
	Heat and cold stress	8
Glovebox Operations (PGS)		
<ul style="list-style-type: none"> • Waste packaging • Waste sorting • Waste handling • Drum preparation • Drum loadout 	Ionizing radiation—(alpha, beta, gamma, fissile material)	1
	Radionuclide contamination—(alpha, beta, gamma)	2
	Chemical and nonradiological constituents, hazardous atmospheres	3, 4
	Respirable dusts and other particulates of concern	3,4,5
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
	General Project Operational Support Tasks	
<ul style="list-style-type: none"> • Drum handling • Forklift operations • Waste transportation and storage • Waste inspections • Drum assay 	Ionizing radiation—(alpha, beta, gamma)	1
	Radionuclide contamination—(alpha, beta, gamma)	2
	Chemical constituents—organic vapors, lead	3, 4
	Respirable dust—silica (area and personal)	3, 5
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
	Heat and cold stress	8

Table 3-1. (continued).

Tasks	Hazard(s) to be Monitored ^a	Instrument Category to be Used
Maintenance of Project Systems		
<ul style="list-style-type: none"> • Electrical 	Ionizing radiation—(alpha, beta, gamma)	1
<ul style="list-style-type: none"> • Piping, valves, fittings, hoses 	Radionuclide contamination—(alpha, beta, gamma)	2
<ul style="list-style-type: none"> • Communication • Heating, ventilating • Mechanical equipment 	Respirable dust—silica (area)	4, 5
Decontamination Tasks		
<ul style="list-style-type: none"> • Operational tools and equipment 	Ionizing radiation—(alpha, beta, gamma)	1
<ul style="list-style-type: none"> • RCS and PGS preliminary decontamination 	Radionuclide contamination—(alpha, beta, gamma)	2
	Respirable dust—silica (area and personal)	4, 5
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
	Heat and cold stress	8
Facility Lay-up		
<ul style="list-style-type: none"> • Backfill excavation 	Radionuclide contamination—(alpha, beta, gamma)	2
<ul style="list-style-type: none"> • Fix removable contamination 	Chemical constituents—organic vapors, lead, cadmium	3, 4
<ul style="list-style-type: none"> • Final decontamination on RCS and PGS 	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
<ul style="list-style-type: none"> • Secure WMF-671 WES 	Heat and cold stress	8

a. Monitoring and sampling will be conducted as deemed appropriate by project Industrial Hygiene and RadCon personnel based on specific tasks and site conditions.

OU = operable unit

PGS = Packaging Glovebox System

RadCon = Radiological Control

RCS = Retrieval Confinement Structure

WES = Weather Enclosure Structure

Table 3-2. Monitoring instrument category and description.

Instrument Category	Instrument Category Number Description ^a
1	<p>Alpha: Count rate—Bicron/NE Electra (DP-6 or AP-5 probe) or equivalent. Stationary—Eberline RM-25 (HP-380AB or HP-380A probe) or equivalent.</p> <p>Beta-gamma: Count rate—Bicron NE/Electra (DP-6, BP-17 probes) or equivalent. Stationary—Eberline RM-25 (HP-360AB probe) or equivalent.</p> <p>Criticality alarm system</p> <p>Fissile material monitor</p>
2	<p>CAM (alpha)—ALPHA 7-A-1 (in-line and radial sample heads, pump, RS-485) or equivalent (as required).</p> <p>CAM (beta)—AMS-4 (in-line and radial head, pump RS-485) or equivalent (as required).</p> <p>Grab sampler—SAIC H-810 or equivalent.</p>
3	<p>Organic vapor: Direct reading instruments (photoionization detector, flame ionization detector, or infrared detector) detector tubes or grab samples.</p> <p>Dust: Direct-reading instrument (miniram).</p>
4	<p>Organic vapors and other airborne constituents, particulate or hazardous atmospheres: Personal sampling pumps with appropriate media for partial and full period sampling using NIOSH or OSHA-validated methods, direct reading instruments, or remote sensing detectors.</p>
5	<p>Silica dust, respirable: NIOSH 7500 or equivalent, personal sampling pump, 10-mm cyclone, full-period sampling.</p>
6	<p>ANSI Type S2A sound level meter or ANSI S1.25-1991 (ANSI 1991) dosimeter (A-weighted scale for time-weighted average dosimetry, C-weighted for impact dominant sound environments).</p>
7	<p>Observation and ergonomic assessment of activities in accordance with MCP-2692 (2002) Ergonomic Program,” and ACGIH TLV.</p>
8	<p>Heat stress: wet-bulb globe temperature, body weight, and fluid intake.</p> <p>Cold stress: ambient air temperature, wind chill charts.</p>

a. Equivalent instrumentation other than those listed may be used.

ACGIH = American Conference of Governmental Industrial Hygienists ANSI = American National Standards Institute
 CAM = constant air monitor MCP = management control procedure
 OSHA = Occupation Safety and Health Administration NIOSH = National Institute for Occupational Safety and Health
 SAIC = Science Applications International Corporation TLV = threshold limit value

Table 3-3. Action levels and associated responses for project operational hazards.

Contaminant or Agent Monitored	Action Level	Response Taken If Action Level is Exceeded
Nonradiological nuisance particulates (not otherwise classified)	<p>>10 mg/m³ (inhalable fraction) >3 mg/m³ (respirable fraction)</p>	<ol style="list-style-type: none"> 1. Substitute equipment or change method to reduce emissions at source 2. Verify engineering control operation (where in place) or institute engineering controls 3. Evaluate air movement (wind) conditions and reschedule tasks or reposition personnel to upwind position of source 4. Move operation to alternant location (with engineering controls if possible) 5. Use wetting or misting methods to minimize dust and particulate matter 6. <u>IF</u> wetting or misting methods prove ineffective, <u>THEN</u> don respiratory protection^a (as directed by IH).
Nonradiological airborne contaminant (chemical, dust fume, fiber or particulate)	<p>Based on individual contaminant exposure limit (ACGIH TLV or OSHA PEL) and 29 CFR 1910 (2002) or 1926 substance-specific requirements.</p> <p>Generally, sustained levels at the TLV or PEL in the worker's breathing zone for two minutes should be used as action limit. Where ceiling values or OSHA substance-specific action limit exists, use these values.</p>	<ol style="list-style-type: none"> 1. Substitute equipment or change method to reduce emissions at source 2. Verify engineering control operation (where in place) or institute engineering controls 3. Evaluate air movement (wind) conditions reschedule tasks or reposition personnel to upwind position of source 4. Move operation to alternant location (with engineering controls if possible) 5. <u>IF</u> engineering and administrative controls do not control contaminant below exposure limit, <u>THEN</u> reevaluate engineering and administrative controls or don respiratory protection^a (as directed by IH) 6. <u>IF</u> OSHA substance-specific standard action limit is exceeded, <u>THEN</u> initiate applicable medical surveillance requirements.