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Engineering
Laboratory**

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Department
of Energy*

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July 1992
Revision 0

HEALTH AND SAFETY PLAN FOR DECONTAMINATION AND
DECOMMISSIONING THE CENTRAL FACILITIES AREA - 669
(CFA-669) HOT LAUNDRY

D. R. Lipp



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Health and Safety Plan
for
Decontamination and Decommissioning the
Central Facilities Area - 669 (CFA-669) Hot Laundry

D. R. Lipp

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EG&G Idaho, Inc.
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ABSTRACT

This health and safety plan was written to cover the decontamination and decommissioning work to be performed on the old Central Facilities Area Laundry Facility (CFA-669) located at the INEL. The plan covers two phases of work, the first being the removal of radiologically clean asbestos and mercury contamination from the facilities isolated boiler room. Phase two will cover the radiological decontamination of the facility, including the removal and disposal of all remaining laundry equipment, heating and ventilation duct work, and spot removal or decontamination of the concrete floor. A top to bottom radiological contamination survey shall be performed. When the entire building is within radiologically clean release limits, the building will be demolished and the foundation removed. The site will be graded and seeded before released.

Health and Safety Plan
For
Decontamination and Decommissioning the
Central Facilities Area - 669 (CFA-669) Hot Laundry

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"The information in this document contains all of the elements required by the Generic H&S Plan Addendum and therefore replaces the Addendum."

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ACRONYMS

ALARA	as low as reasonably achievable
ARDC	Administrative Records and Document Control
CAM	constant air monitor
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
EE	environmental engineer
EPA	Environmental Protection Agency
ERD	Environmental Restoration Department
FTL	Field team leader
GBF	general body field
HEPA	high-efficiency particulate air
HPT	health physics technician
H&S	health and safety
HSO	health and safety officer
HSO/SE	health and safety officer/safety engineer
H&SP	health and safety plan
HV	heating, ventilation
HWSF	Hazardous Waste Storage Facility
IH	industrial hygienist
INEL	Idaho National Engineering Laboratory
MWSF	Mixed Waste Storage Facility
OMP	Occupational Medical Program
OSHA	Occupational Safety and Health Administration
PD	program directive
PM	project manager
PM/FTL	project manager/field team leader
PPE	personal protective equipment
QAPjP	quality assurance project plan
QE	quality engineer
QPP	quality program plan
RE	radiological engineer
RWMC	Radioactive Waste Management Complex
SAP	sampling and analysis plan
SE	safety engineer
TRU	transuranic
WERF	Waste Experimental Reduction Facility

Health and Safety Plan for Decontamination and Decommissioning the Central Facilities Area - 669 (CFA-669) Hot Laundry

1. INTRODUCTION

This Health and Safety Plan (H&SP) establishes the procedures and requirements to minimize health and safety risks to persons working at the old Hot Laundry facility (CFA-669) Decontamination and Demolition (D&D) site. This H&SP was prepared to meet the requirements of the Occupational Safety and Health Administration (OSHA) standard, 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response." It has been prepared in recognition of and is consistent with the NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985 (NIOSH 10/85); the EG&G Idaho Company Procedures Manual; the EG&G Idaho Safety Manual; the EG&G Idaho Industrial Hygiene Manual; and the EG&G Idaho Radiological Controls Manual.

This H&SP will govern all work at the CFA-669 D&D site that is performed by employees of EG&G Idaho, subcontractors to EG&G Idaho, and employees of other companies and/or U.S. Department of Energy (DOE) Laboratories. Persons who meet the definition of "occasional site worker" per OSHA 29 CFR 1910.120, such as representatives of DOE, the State of Idaho, OSHA, and the Environmental Protection Agency (EPA), are also subject to the requirements of this H&SP.

The Health and Safety Officer/Safety Engineer (HSO/SE), in conjunction with the Project Manager/Field team leader (PM/FTL) and other health and safety professionals, will periodically review and revise this H&SP to ensure its effectiveness and suitability for protection of personnel working at the CFA-669 D&D site.

2. SITE DESCRIPTION

The Idaho National Engineering Laboratory (INEL) encompasses 890 square miles and is located approximately 20 miles west of Idaho Falls, Idaho (Figure 1). The site was established in 1949 to build and test a variety of nuclear facilities, and has also been a storage facility of transuranic (TRU) radionuclides and low-level radioactive wastes since 1952. At present, the INEL supports engineering and operations efforts of DOE and other federal agencies in areas of nuclear safety research, reactor development, reactor operations and training, nuclear defense materials production, waste management technology development, and energy technology/conservation programs. The U.S. Department of Energy Idaho Operations Office (DOE-ID) has responsibility for the INEL, and delegates authority to operate the INEL to the contractors. The primary contractor at INEL is EG&G Idaho, Inc. They manage and operate services to the majority of INEL facilities. Other contractors who operate facilities at the INEL include Westinghouse Idaho Nuclear Company, Argonne National Engineering Laboratory, Westinghouse Electric Corporation, and Babcock & Wilcox.

2.1 CFA-669 D&D Site

In 1950, the old Hot Laundry Facility (CFA-669) was constructed to serve as the "hot" and "cold" laundry for INEL site contractors. In the mid-1970s, a new laundry facility (CFA-617) was proposed to comply with the DOE standards and criteria pertaining to radiological material handling, contamination levels and exposure limits. To upgrade the old facility was an unsatisfactory alternative because the building was small and the equipment was inefficient and obsolete. The use of the old Hot Laundry Facility was discontinued in 1981 after the boiler exploded.

The location of CFA-669 is shown in Figure 2. The building still houses the original (and un-repaired) equipment in the boiler room, washer and dryers in the main room, and sinks and plumbing in the restrooms.

ARA = Auxiliary Reactor Area
 CFA = Central Facility Area
 EBR 1 = Experimental Breeder Reactor 1
 (Historical Monument)
 ICPP = Idaho Chemical Processing Plant
 IET = Initial Engineering Test
 LOFT = Loss-of-Fluid Test
 NRF = Naval Reactor Facility
 PBF/SPERT = Power Burst Facility/Special Power
 Excursion Reactor Test
 RWMC = Radioactive Waste Management Complex
 SMC = Special Manufacturing Capability
 STF = Safety Training Facility
 TRA = Test Reactor Area
 TSF = Technical Support Facility
 WRRTF = Water Reactor Research Test Facility

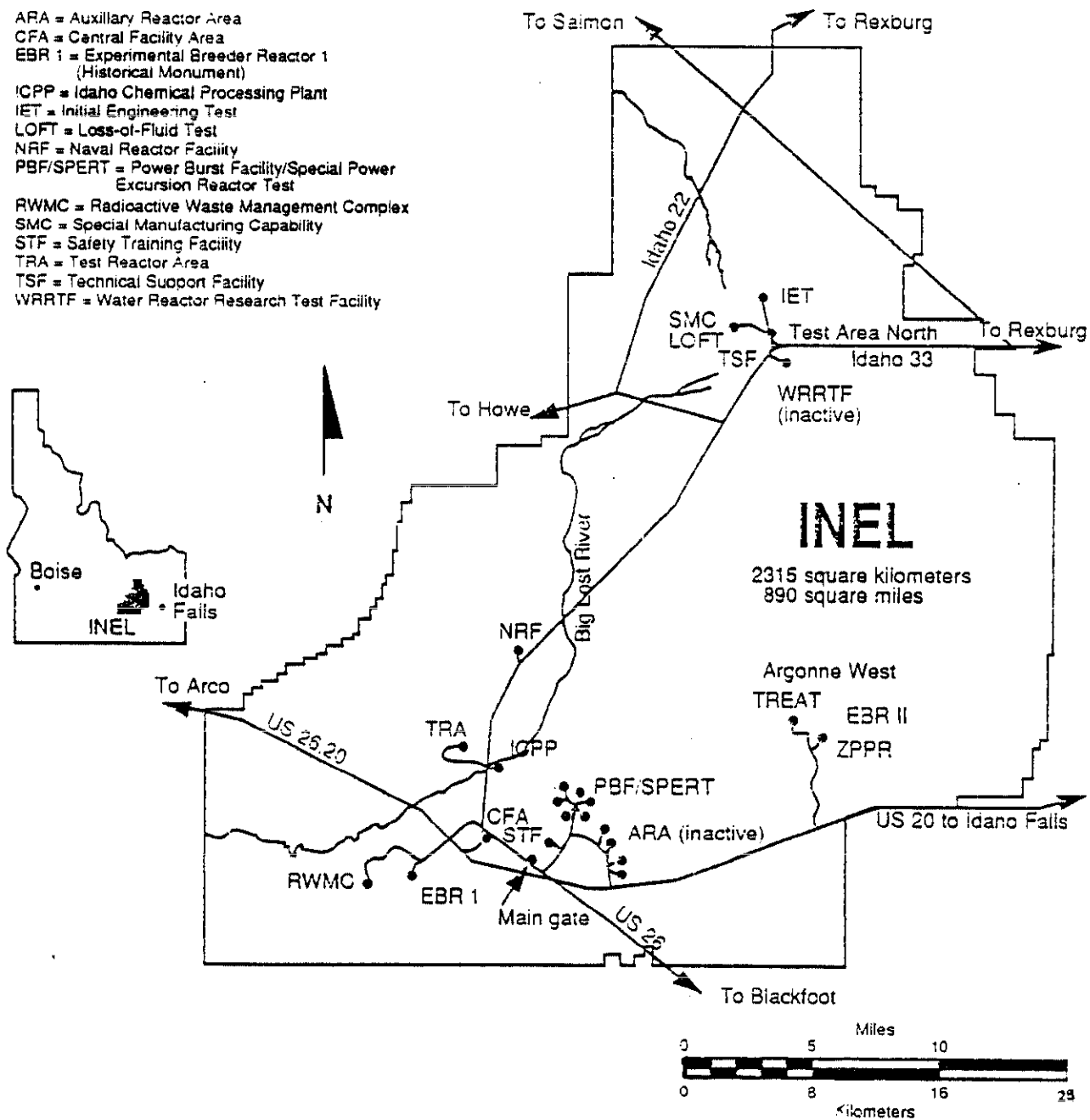


Figure 1. Map of INEL showing location of the major facilities.

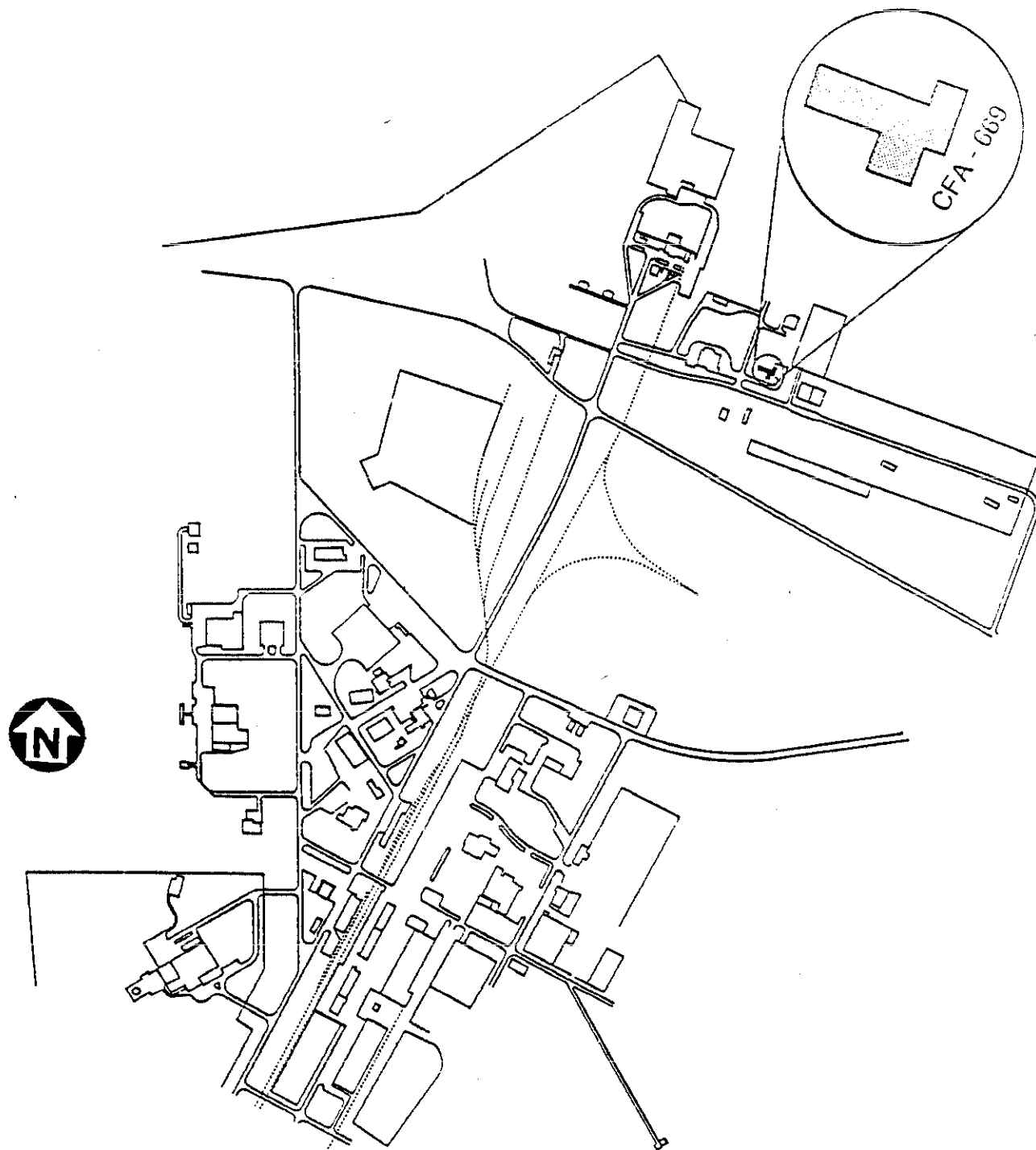


Figure 2. Map of Central Facilities Area showing location of the CFA-669 D&D site.

2.1.1 Facility Exterior

CFA-669 is a single-story structure. The high-efficiency particulate air (HEPA) filter system and the heating and ventilation (HV) system are located on the roof of the building. There are four runoff drain pipes. Three of the drain pipes are located on the north side of the building and the fourth pipe is located on the east side. A 15,000-gallon fuel oil tank that was originally buried underground north west of the boiler room was removed on October 22, 1990, under the direction of the EG&G Idaho Tank Management Program. The surrounding soil was analyzed and determined not to be contaminated from the contents (#2 diesel fuel) of the tank. All utilities are disconnected.

2.1.2 Facility Interior

CFA-669 has nearly 4500 ft² of floor space. The floor plan is shown in Figure 3.

Room 101 was used as a lunch area. Room 102 was the main entry to the laundry room from the outside. Room 103 contains a hot water heater. These rooms have no traps, floor drains, or pipe clean-outs.

Rooms 104 and 105 were used as the men's and women's restrooms, respectively. Each room housed showers and contains floor and shower drains and sink traps.

Room 106 was a storage area and contains no traps, clean-outs, or drains. There are some wood shelves in the room.

Room 107 was the shipping and receiving area and has no traps, clean-outs, or drains. The room opens into a hallway where a recessed scale in the floor was used to weigh laundry bundles.

Room 108 was the main laundry area. The room houses five dryers, two washers and an extractor. The extractor was used to remove excess water from laundry using centrifugal force. The main HV system is suspended from the ceiling. A drain trench is located near the washers. The drain pipes that lead from the building are beneath the floor.

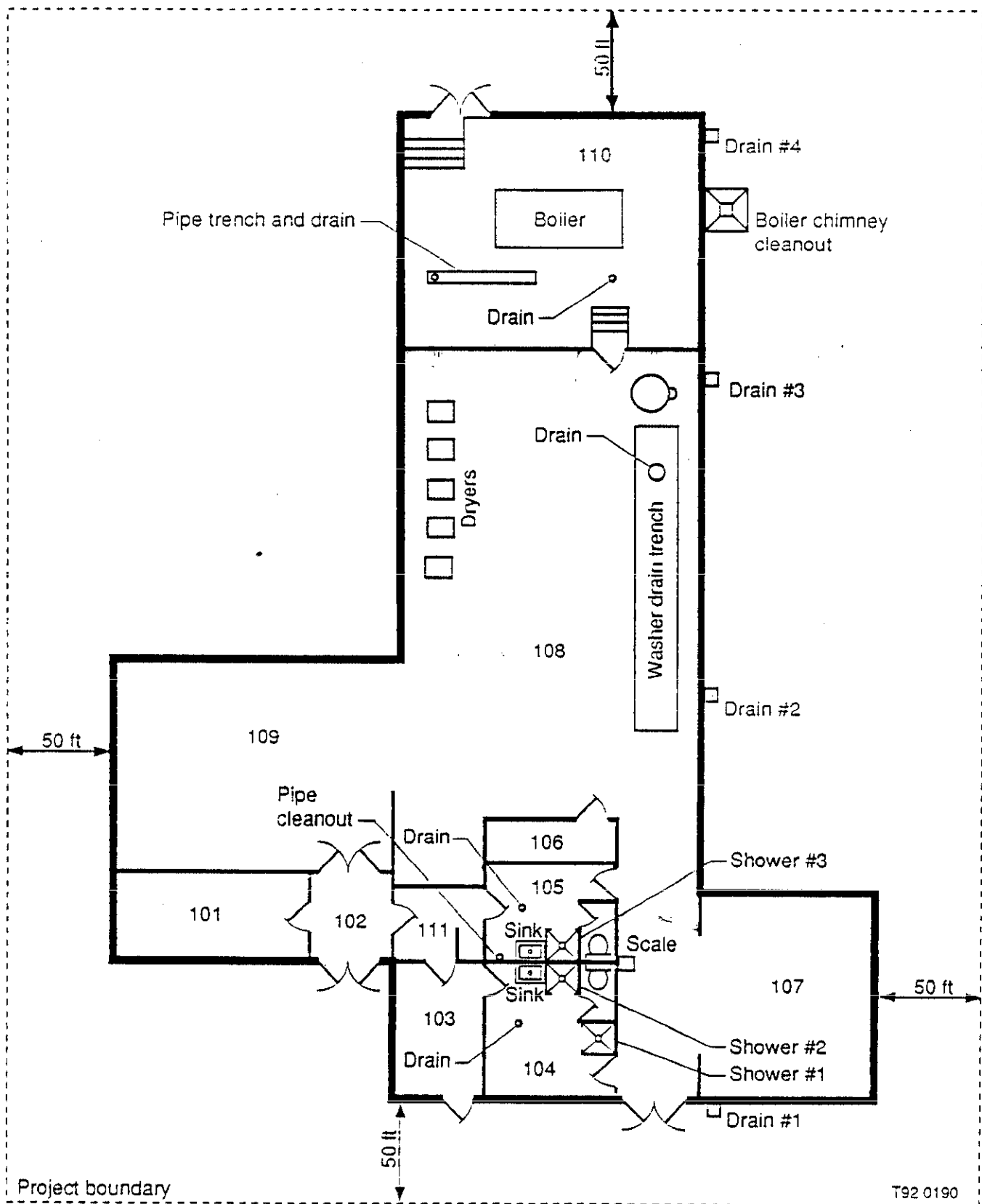


Figure 3. Floor plan of CFA-669.

Room 109 was used as a sorting and folding area. There are no drains, traps, or clean-outs in this area.

Room 110 was the boiler room. The boiler and assorted piping remain in the room. The boiler is damaged from an earlier explosion. A pipe trench and drain are located in the room. A chimney clean-out is located on the outside of the north wall.

Room 111 is a small room that contains a drinking fountain and a clean-out drain next to the fountain.

2.2 Scope of Work

The D&D activities at CFA-669 are planned to begin in the spring of 1993 and will extend for an approximate 30 week period. Specific D&D activities include:

- Verifying that CFA-669 all utilities have been disconnected and that the facility is isolated by cutting and capping sanitary drain line outside the building. Locating, cutting, bleeding, and capping gas line, if still present.
- Sealing HV registers
- Removing and disposing of mercury in Room 110 (boiler rooms) drains
- Removing and disposing asbestos in Room 110
- Vacuuming building entire interior including trenches, drains, washers, dryers, and extractor
- Removing and disposing of washers, dryers, and extractor in Room 108
- Removing and disposing HV ducting

- Removing and disposing uncontaminated equipment and components in building interior
- Scabbling contaminated concrete
- Vacuuming building interior
- Removing HEPA filter system and other radiologically contaminated equipment and material from roof
- Performing a radiation survey of building interior and roof
- Demolishing and disposing of building
- Excavating and disposing the foundation and floor
- Excavating and disposing the underground piping
- Capping and marking the location of sewer drain.
- Performing post D&D activities survey of site
- Backfilling and grading site, and planting grass

The first step of the task is to verify that all utilities at CFA-669 were disconnected. Locate the sanitary sewer drain line to the building; cut and cap the line outside of the building. Locate the gas line going to the building and verify that it is disconnected. If it is still connected, carefully cut, bleed, and cap.

The next step is to seal all inside HV registers which are the building's major source of loose contamination.

The second step of the task is to create an exclusion zone in Room 110 and remove the mercury

and asbestos contamination caused by the explosion of the boiler. The mercury in the floor drains will be removed as specified in the integrated planning sheets and recycled, if possible, or disposed of as hazardous waste. The asbestos in Room 110 will be removed and disposed of in accordance with approved EG&G company procedures. Both of these tasks will be performed under the supervision of an IH. The mercury and asbestos in Room 110 are not expected to be radiologically contaminated because no radioactivity was detected in Room 110. However, it will have to be surveyed to verify it is not radioactive. If the mercury is radiologically contaminated, it will have to be stored in the Mixed Waste Storage Facility (MWSF). If the asbestos is radiologically contaminated, it will be disposed at the RWMC.

The room and all pipe and drain trenches will then be vacuumed using a HEPA vacuum cleaner. After the mercury/asbestos removal and vacuuming, the room should be clean of any contamination. The exclusion zone and contamination control zone will then be dismantled.

The next phase of the task is the radiological portion, which will begin with designating the entire building as a radiological contamination zone III and creating designated step-off pads. The first step of phase two is to remove the washers, dryers, and extractor, and any other equipment in the building determined to be contaminated above releasable limits, as defined in the EG&G Idaho Radiological Controls Manual, shall be sent to WERF or RWMC if it cannot be decontaminated. Decontamination shall be limited to sectioning or disassembling the equipment.

The buildings sealed HV system will be removed next. Extreme care will be taken when removing the system to avoid damaging duct joints and releasing radioactive contamination in the building.

After the major source of contamination and exposure are removed, material, equipment, fixtures, and inside building components determined to meet the release limits defined in the EG&G Idaho Radiological Controls Manual, will be removed and disposed of in the CFA landfill or recycled by hauling the items to the CFA excess yard.

When all items, fixtures, etc., are removed from CFA-669, the concrete will be scabbled to remove any fixed contamination and debris disposed of at the RWMC. Before scabbling, a portable

containment shall be constructed to control the spread of contamination. In addition, the scabbling machine shall be equipped with skirts and a HEPA vacuum attached to reduce the generation of dust. A constant air monitor (CAM) shall be utilized to monitor any potential release of contamination during the scabbling operation. The entire empty building will then be vacuumed with a HEPA vacuum cleaner, leaving the inside of the building free of contamination.

The last source of contamination is the HEPA filter system on the roof. After being removed and packaged, the system will be shipped to WERF for volume reduction. An attempt shall be made to isolate localized contamination by sectioning the HEPA filter system to minimize the volume removed along with all other identified sources of contamination.

Following removal and disposal of all radioactive contamination, all interior surfaces remaining in CFA-669 and the roof surface after decommissioning is completed shall be surveyed for fixed and removable alpha and beta-gamma residual contamination. The purpose of the survey is to verify that the building contains no contamination above releasable levels as defined in the EG&G Idaho Radiological Controls Manual so that the excavated site can be backfilled, graded, and seeded. Following release of the building for unrestricted use, the following tasks will be performed:

The building will be demolished and disposed of in the CFA landfill. The demolition will be specified in the SWR/integrated planning sheets (procedures), but it will probably consist of bulldozing the structure and loading the rubble into dump trucks using a front-end loader.

The concrete floor and foundation will be removed and disposed of using a backhoe, bulldozer, front-end loader, and dump truck. During the removal of the concrete floor sections containing floor drains and trenches, radiological surveys shall be performed to verify the bottom side of the concrete is not contaminated. If any contamination above releasable levels is detected in the concrete, the contaminated concrete will be chipped away and disposed of at the RWMC. All uncontaminated concrete will be disposed of at the CFA landfill.

The sewer pipe will be excavated, sectioned into 3 ft lengths and appropriately disposed. The pipe shall be removed up to the location where the pipe was previously cut and capped.

During excavation, the removed soil will be monitored for radioactivity. If radioactivity above background is detected, the soil will be analyzed for hazardous constituents in accordance with the integrated planning sheets. If analyses show the soil to be mixed waste, the contaminated soil will be placed in containers and stored at the MWSF. If the soil is only radioactively contaminated, it will be shipped to the RWMC.

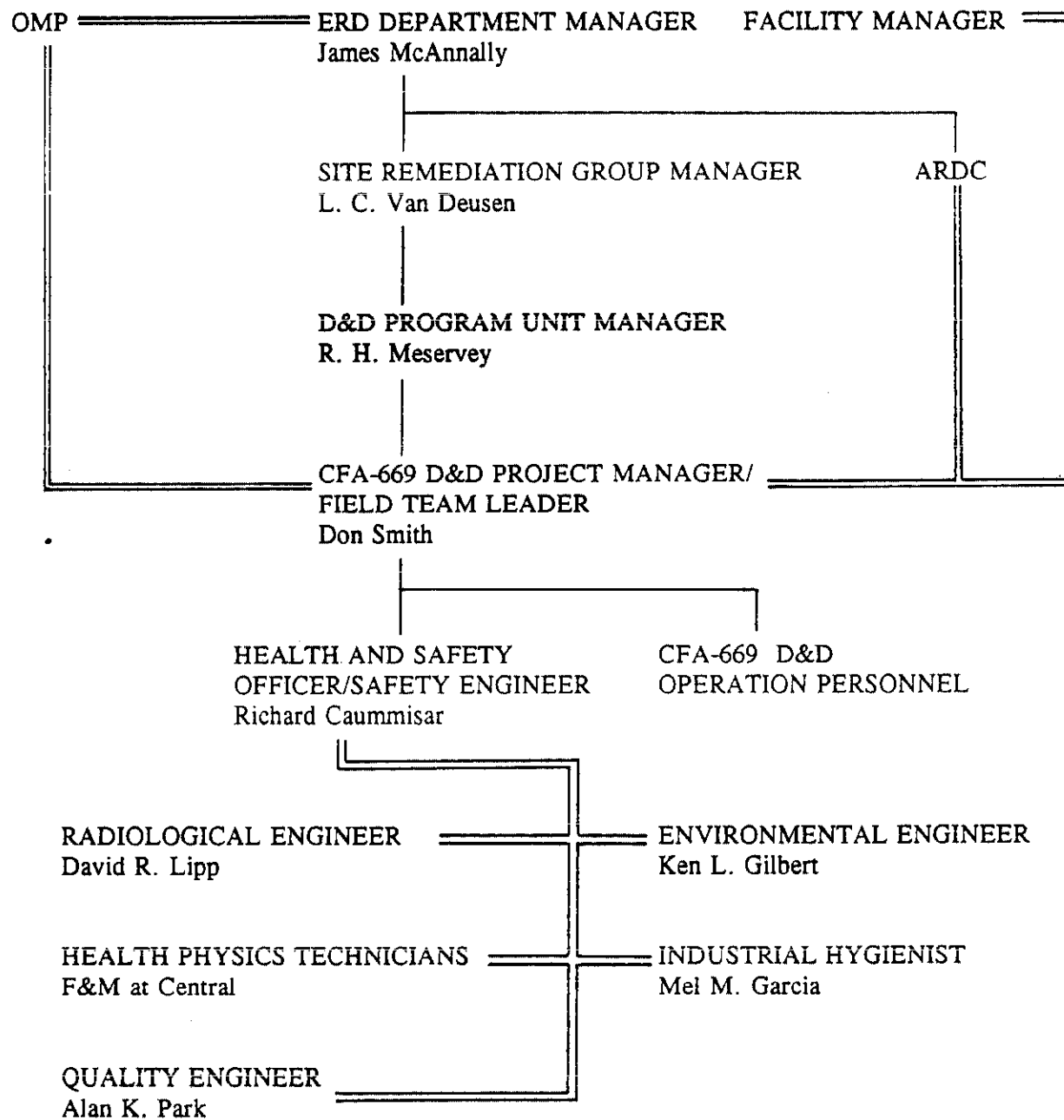
Radioactively contaminated metal will be sent to the Waste Experimental Reduction Facility (WERF) for sizing or compaction prior to being sent to the Radioactive Waste Management Complex (RWMC) for burial. All non-contaminated asbestos will be sent to the CFA landfill, if it meets acceptance criteria. The hazardous waste collected will be sent to the Hazardous Waste Storage Facility (HWSF) for disposal. Any mixed-waste will be sent to the Mixed Waste Storage Facility (MWSF).

3. TASK SITE RESPONSIBILITIES

Key personnel and lines of responsibility/communication are shown in Figure 4. The following sections outline responsibilities of key personnel.

3.1 ERD Department Manager

The Environmental Restoration Department (ERD) department manager is responsible for investigation and remediation activities performed by ERD. This manager provides technical coordination and interfaces with the DOE-ID Environmental Support Office. The ERD department manager ensures that all activities are conducted in accordance with DOE, EPA, and State of Idaho requirements and agreements; monitors and approves program budgets and schedules; ensures the availability of necessary personnel, equipment, subcontractors, and services; and provides direction for developing of tasks, evaluating findings, developing conclusions and recommendations, and producing reports. The ERD department manager has primary responsibility for the technical quality of all projects and the safety of personnel.



LINES OF RESPONSIBILITY _____
 LINES OF COMMUNICATION _____

Figure 4. Organizational chart for the CFA-669 D&D.

3.2 Project Manager/Field Team Leader (PM/FTL)

The project manager (PM)/FTL has the responsibility for ensuring that all tasks conducted during the project are in compliance with the Management Plan for the EG&G Idaho Environmental Restoration Program and all applicable OSHA, EPA, DOE, U.S. Department of Transportation (DOT), and State of Idaho requirements. The PM/FTL is responsible for ensuring tasks comply with the ERD Quality Program Plan (QPP) (QPP-149), quality assurance project plan (QAPjP), health and safety (H&S) Plan, program directives (PDs), and Sampling and Analysis Plans (SAPs) of ERD. The PM/FTL coordinates all field, laboratory, and modeling activities.

As the FTL, the PM/FTL is the individual with the ultimate responsibility for the safe and successful completion of activities at the task site. The PM/FTL manages field operations, executes the work plan and schedule, enforces site control, and documents task site activities. Health and safety issues at the task site may be directed to the PM/FTL.

If the PM/FTL leaves the task site, an alternate individual is appointed to act as FTL. Persons acting as FTL on the task site must meet all training requirements for the FTL, as outlined in Section 5. The identity of the acting FTL is recorded in the FTL logbook and communicated to the facility representative, when appropriate.

3.3 Health and Safety Officer/Safety Engineer (HSO/SE)

The HSO/SE serves as the primary contact for health and safety issues at the task site. The HSO/SE advises the PM/FTL on all aspects of health and safety, and is authorized to stop work at the site if any operation threatens worker or public health or safety. The HSO/SE has other specific responsibilities as stated in other sections of this H&S plan. The HSO/SE is supported by other health and safety personnel at the task site (Industrial hygienist (IH), health physics technician (HPT), radiological engineer (RE), and facility representative as necessary).

As the SE, the HSO/SE answers all safety issues arising at the task site, observes site activity, and determines required safety equipment and solutions to safety issues that arise at the task site.

3.4 Task Site Personnel

All task site personnel, including EG&G and subcontractor personnel, are responsible for understanding and complying with requirements of this H&S Plan. Task site personnel will be briefed by the PM/FTL at the start of each shift, before starting activities. They should identify potentially unsafe situations or conditions to the PM/FTL or HSO/SE for corrective action. If unsafe conditions develop, task site personnel are authorized to stop work and notify the PM/FTL or HSO/SE of the unsafe condition.

3.5 Occasional Site Workers

The definition of an occasional site worker per the OSHA standard is:

Workers on site only occasionally for a specific limited task (such as, but not limited to, groundwater monitoring, land surveying, or geo-physical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Individuals meeting the definition above, such as representatives of DOE or State/Federal regulatory agencies, may not proceed beyond the support zone without receiving a safety briefing and wearing the appropriate protective equipment, and providing proof of meeting the training requirements outlined in Section 5 of this H&S plan.

3.6 Industrial Hygienist (IH)

The IH performs monitoring to determine worker exposures to hazardous agents in accordance with company procedures and the Industrial Hygiene Manual. Job hazard analyses are completed by the IH per Company Procedure 11.9. The IH recommends appropriate hazard controls for protection of task site personnel based on the completed job hazard analysis (JHA)s. The IH reviews the effectiveness of monitoring and personal protective equipment (PPE) required in the H&S plan, and recommends changes as appropriate. Following an evacuation, the IH assists in determining whether

conditions at the task site are safe for reentry. Employees showing health effects resulting from possible exposure to hazardous agents are referred to the Occupational Medical Program (OMP) by the IH.

3.7 Radiological Engineer (RE)

The RE is a primary source of information and guidance for radiological controls imposed on a task. The RE makes recommendations to minimize radiological hazards that are present, or are suspected to be present, at the task site. The RE will be requested to perform an as low as reasonably achievable (ALARA) review of the proposed task per EG&G Radiological Controls Manual, Chapter 2, if significant radiological hazards are anticipated at the task site.

3.8 Health Physics Technician (HPT)

The HPT is the primary source of information and guidance with regards to radiological hazards at the task site. The HPT is present at the task site before operations begin and during task operations that may pose a radiological hazard to task site personnel. The HPT must immediately notify the PM/FTL of any radiological occurrence that must be reported as directed by the EG&G Idaho Safety Manual, Section 3, Appendix II. The HPT may accompany victims to the nearest INEL medical facility for evaluation, if significant radiological contamination to personnel occurs.

3.9 Quality Engineer (QE)

The quality engineer (QE) provides guidance on task site quality issues. The QE observes task site activities and verifies that task operations comply with quality requirements pertaining to these activities. The QE identifies activities that do not or have the potential for not complying with quality requirements and suggests corrective actions for such activities.

3.10 Environmental Engineer (EE)

The environmental engineer (EE) oversees, monitors, and advises EG&G Idaho organizations performing field activities at the INEL. Responsibilities include ensuring compliance with DOE orders, EPA regulations, and other regulations concerning effects of activities on the environment. Additional responsibilities of the EE may include acting as advisor for environmental concerns associated with the task activities, and maintaining a library of applicable environmental information.

3.11 Occupational Medical Program (OMP)

The INEL OMP supports ERD activities covered by the OSHA hazardous waste standard through the medical surveillance program for workers who are identified as hazardous waste site workers. The OMP provides diagnosis and treatment for employees with occupational illnesses or injuries; assists in the documentation and investigation of work-related illnesses/injuries; provide emergency medical care in support of individuals and area emergency actions. The OMP also maintains a radiation and chemical decontamination facility at CFA.

3.12 Facility Manager/Representative

The facility manager is responsible for managing all aspects of their assigned area, and must be aware of the work being conducted in the area.

The facility representative serves as the area landlord representative and is responsible for the safety of personnel and safe completion of all project activities conducted within the area. Therefore, the facility representative will be kept informed of all activities performed in the area. Where applicable, the facility representative and PM/FTL shall agree a schedule for reporting task progress and plans for work. The facility representative may serve as advisor to task operations personnel with regard to the area operations.

4. RECORD KEEPING REQUIREMENTS

4.1 Administrative Record and Document Control Office

The Administrative Record and Document Control Office (ARDC) is responsible for organizing and maintaining data and reports generated by ERD investigations. ARDC maintains a supply of all controlled documents and provides a documented checkout system for release of controlled documents, reports, and records. Copies of the Management Plan for the Environmental Restoration Program, H&S plan, QPP, QAPjP, and work plan for the CFA-669 D&D are maintained in the project file by the ARDC. Documents and records will be maintained in accordance with the Records Management Plan (EGG-WM-9742) and ERD PD 1.9.

All project records and logbooks, except IH data sheets and HPT logbooks, are forwarded to ARDC within 30 days after completion of the task.

The IH records instrument calibration, air monitoring, and personal sampling data on Form EGG-737; this data is treated as limited access information and maintained per Company Procedure 11.4, "Management of Industrial Hygiene Records."

The HPT keeps a logbook of all radiological monitoring, daily operational activities, and instrument calibrations.

5. TRAINING

All task site personnel shall receive training as specified by OSHA 29 CFR 1910.120 and the EG&G Idaho Safety Manual, Section 8. Table 1 summarizes training requirements for task site personnel. Specific training requirements for each worker will vary depending on the hazards associated with the job assignment.

Proof of completion of all required training courses (including refresher training) must be maintained on the site at all times. A completed Form EGG-2580, Health and Safety Permit Card, carried by task site personnel, is acceptable proof of training. A copy of certificate(s) of completion for required training classes may be carried by task site personnel in lieu of a Form EGG-2580.

Site orientation training will be conducted by the PM/FTL prior to beginning work at the task site. The orientation will include a review of this H&S plan and other task site information that is required to meet area/facility requirements.

The PM/FTL will conduct daily briefings at the start of the shift. The purpose of the briefings is to inform task personnel about new hazards at the site, changes to the H&S plan, changes in procedures, and a review of PPE associated with the task.

The task site orientation and daily briefings will be documented on Form EGG-0138, Safety Meeting Summary. Copies of the completed forms will be retained in the project file.

TABLE 1. Required training for task site personnel.

Task/position	PM/FTL	D&D team	IH/HPT/SE/ QE/RE/EE	Asbestos Workers	Visitors
Topic	Required	Required	Required	Required	Required
Task site orientation	X	X	X	X	X
Decontamination ^a	X	X	X	X	X ^c
Hazard communication ^a	X	X	X	X	X
Signs, tags, warning devices ^a	X	X	X	X	X
Emergency action plan for task site ^a	X	X	X	X	X
Hazardous Waste Operator	X	X	X	X	
Hazardous waste operator-24 hrs. field experience	X	X	X	X	
Hazardous waste Site Supervisor	X				
Hearing conservation	X	X	X	X	X ^d
Radiation worker qualification	X	X		X	X ^d
Medic 1st ^e	X	X	X	X	
Respirator qualification and fit test	X	X	X	X	X ^f
Hazardous waste operator - Occasional Worker ^b					X
Professional Equipment Operator ^d		X		X	
Asbestos Training	X	X	X	X	X

a. Will be included in task site orientation.

b. Includes 24 hours classroom instruction and 8 hours on-the-job training.

c. If entering contaminated areas.

d. As appropriate.

e. At least two persons on site must be current in Medic First training.

f. If entering areas requiring respirator use.

6. OCCUPATIONAL MEDICINE PROGRAM & MEDICAL SURVEILLANCE

Task site personnel shall participate in the INEL OMP per the requirements of 29 CFR 1910.120, which requires medical surveillance for hazardous waste site workers. This includes employees who are or may be exposed to hazardous substances at or above established permissible exposure limits, without regard to respirator use, for 30 or more days per year, as well as those who wear a respirator for 30 or more days per year. Employees who must use a respirator in their job or are required to take training to use a respirator to perform their duties under this plan must be medically evaluated for respirator use at least annually.

The OMP is responsible for evaluating the physical ability of a worker to perform the task assigned. The OMP provides medical clearance to the worker for the work to be performed. The OMP may impose restrictions on the employee by limiting the amount or type of work performed. Form EGG-679, "Employee Job Task Analysis" must be supplied to the OMP at the time of initial certification of a hazardous material worker and when a change in job category occurs. Job-related information must be provided to the OMP for each hazardous material worker via completion of Form EGG-735, "Industrial Hygiene Identification of an Employee for a Medical Surveillance Program to OMP."

Areas addressed by OMP for hazardous waste site workers include:

- Current comprehensive medical examinations for full-time employees in an INEL medical facility
- Records and reports from employees' private physicians, as required by the Site Occupational Medical Director
- Medical evaluation by OMP on return to work following an absence in excess of one work week (40 consecutive work hours) resulting from illness or injury
- Medical evaluation in the event a supervisor questions the physical condition of an employee

- Medical evaluation in the event the employee questions his/her physical condition.

The information provided by the forms and the employee examinations is used to determine the following for each employee:

- Ability to perform relevant occupational tasks
- Ability to work in protective equipment and/or heat stress environments
- Use of respiratory protection
- Need to be entered into additional specific medical surveillance examination programs.

If the OMP does not have sufficient information at the time of request for clearance for respirator training, the employee's supervisor will be notified and clearance will be withheld until the needed information is provided and any necessary additional examination or testing is completed.

Results of the following tests shall be made available to the OMP when any abnormal radiological exposure is noted or a radiological contamination incident occurs:

- Whole body count (baseline, annual, and on actual or suspected radiological contamination incident)
- Bioassay (baseline, as required to assess internal radiation dose, and on actual or suspected radiological contamination incident).

Medical data from the workers private physician, collected pursuant to hazardous material worker qualification of a subcontractor worker shall be made available to the OMP. This will assist the OMP in assessing the medical ability of the subcontractor worker to work should doubt arise during the task operations. Subcontractor past radiation exposure history shall be submitted to the Operational Dosimetry Unit of EGG Idaho (Section 3.5 of Chapter 2 in the EG&G Idaho Radiological Controls Manual).

It is the policy of the OMP to examine all workers, including subcontractors, when they are injured on the job, if they are experiencing symptoms consistent with exposure to a hazardous material, or there is reason to believe that they have been exposed to toxic substances or physical agents in excess of allowable limits.

Before initiation of any task where a chemical/radiological hazard exists, the appropriate medical facility will be notified of the start of the task, anticipated schedules, and task site locations constituents located at the task sites.

In the event of a known or suspected injury or illness due to exposure to a hazardous substance or physical agent, the worker(s) shall be transported to the nearest medical facility for evaluation, with as much information as possible regarding the suspected cause of injury/illness. As much of the following information as is available at the time shall accompany the individual to the medical facility:

- Name, job title, work location, supervisor's name, and phone number
- Substances/physical agents (known and/or suspected); Material Safety Data Sheet
- Date of employee's first exposure to the substance/physical agent
- Locations, dates, and results of exposure monitoring
- PPE in use during this task (e.g., respirator type)
- Number of days per month PPE has been in use
- Anticipated future exposure to the substance/agent.

Further medical evaluation will be in accordance with the symptoms, specific hazard involved, exposure level, and specific medical surveillance requirements.

7. HAZARD EVALUATION

Personnel may be exposed to a variety of substances and physical agents while working at the CFA-669 D&D site. Exposures may be a result of contacting materials as they are stored, handled, or disposed; equipment being used; weather conditions or time of day; environmental surroundings; and other working conditions. Table 2 contains information about the hazardous materials that are expected to be encountered on the task site.

7.1 Routes of Exposure to Chemical Agents

Exposure to chemical agents may result when personnel come in contact with gaseous, liquid, or solid materials encountered at the CFA-669 D&D site. Personnel will make every effort to avoid direct contact with hazardous materials. Personnel may be exposed to contaminants through inhalation, ingestion, absorption (through the skin or eyes), and injection (e.g., a puncture wound).

Inhalation of hazardous materials can occur when there are undetected airborne contaminants present, or may be due to the use of ill-fitting respiratory protection equipment or contaminants being present at concentrations that exceed the protection factor of the respirator in use.

Ingestion of hazardous substances is likely when workers do not practice good personal hygiene habits. It is important to wash hands, face, and other exposed skin thoroughly after completion of work and before smoking, eating, drinking, and chewing gum or tobacco. **NO SMOKING, CHEWING, EATING, DRINKING, OR APPLICATION OF COSMETICS IS ALLOWED AT THE TASK SITE!**

Solid, liquid, or gaseous substances may be absorbed through the eyes, the skin, and cuts or abrasions. Absorption may occur when a worker does not wear proper protective clothing or when protective clothing is damaged or degraded.

Table 2. Hazardous materials present at the CFA-669 D&D site.

Hazardous material name & CAS number	Exposure limit (PEL/TLV/REL)	Routes of exposure ^a	Symptoms of overexposure ^b	Target organs/ systems	Carcinogen? (source) ^c	Expected levels ug/L
Arsenic, 7440-38-2	0.2 mg/m ³	Ih, Ig, S	EYES, RESP, CNS	Liver, kidneys, skin, lungs, lymphatic sys	YES, NIOSH	27.5
Barium, 7440-39-3	0.5 mg/m ³	Ih, Ig, S	RESP, DERM, EYES	Heart, CNS, Skin, Eyes, Resp sys	NO	3660
Cadmium, 7440-43-9	0.05 mg/m ³	Ih, Ig	RESP, CNS	Resp sys, Kidneys, Prostrate, Blood	YES, NIOSH	4040
Chromium, 7440-47-3	0.5 mg/m ³	Ih, Ig	RESP	Resp sys	YES ACGIH A1	1830
Mercury, 7439-97-6	0.1 mg/m ³	Ih, S	RESP, CNS, EYES, DERM	Skin, Resp sys, CNS, Kidneys, Eyes	NO	953
Selenium, 7782-49-2	0.2 mg/m ³	Ih, Ig, S	EYES, RESP, DERM	Upper resp sys, eyes, skin, liver, kidneys, blood	NO	62.2
Silver, 7440-22-4	0.1 mg/m ³	Ih, Ig, S	EYES, RESP, DERM	Nasal septum, skin, eyes	NO	280
Methylene Chloride, 75-09-2	50 ppm	Ih, Ig, S	CNS, EYES, RESP,	Eyes, Resp sys, CNS	YES, NIOSH	2100
Acetone, 67-64-1	750 ppm	Ih, Ig, S	EYES, RESP, CNS, DERM	Resp sys, Skin	NO	900
Phenol, 108-95-2	5 ppm	Ih, S, Ig	EYES, RESP, DERM, CNS	Liver, Kidneys, Skin	NO	35
Lead, 7439-92-1	0.15 mg/m ³	Ih, Ig, S	EYES, CNS,	GI tract, CNS, Kidneys, Blood, Gingival tissue	NO	20600
Chloroform, 67-66-3	10 ppm	Ih, Ig, S	CNS, EYES, DERM	Liver, Kidneys, Heart, Eyes, Skin	YES, NIOSH	9
Asbestos 1332-21-4	0.2 fiber/cc	Inh, Ing	Dysp, interstitial fib, restricted pulm function, finger clubbing	Lung	Yes, NIOSH	Unknown

a. (Ih)Inhalation; (Ig)Ingestion; (S)Skin absorption

b. (CNS)dizziness/nausea/lightheaded; (DERM)rashes/itching/redness; (RESP)respiratory effects; (EYES)tearing/irritation ;(O)other symptoms - MUST be specified

c. If yes, identify agency (ACGIH A1 or A2; NIOSH; OSHA; NTP)

Because of the expected constant change in the levels of the chemical contaminants depending on the task being performed, the IH shall monitor frequently the contaminant levels and make adjustments to the level of PPE that is required. Mercury, the contaminant that will pose the highest risk, will be monitored closely until post removal surveys indicate that levels requiring respiratory protection are monitored. The IH shall also brief the task site workers on the specific hazards associated with levels of contaminants measured.

Eye irritation may result after exposure to solid, liquid, or gaseous contaminants. This usually occurs when a worker does not wear proper eye protection, if PPE fails, or when unwashed hands come in contact with the eyes.

Hazardous substances may also be introduced directly into the body through puncture wounds caused by contaminated equipment.

7.2 Temperature Extremes

7.2.1 Heat Stress

Workers will be required to work outdoors during CFA-669 D&D activities. During the summer months, personnel are susceptible to heat stress. Also, working in PPE may prevent the body from cooling. High body temperatures can result in heat fatigue, physical discomfort, and death. Personnel must inform the PM/FTL or HSO/SE if they experience any of the signs and symptoms of heat stress or observe that their work buddy is experiencing these symptoms. EG&G Idaho Company Procedure 11.10 and Section 20 of the EG&G Idaho Industrial Hygiene manual discuss the hazards of heat stress.

7.2.2 Cold Stress

Exposure to low temperature may be a factor if work is done in the evening hours, if winds are high, if unpredictable weather moves in, and in the winter months (e.g., at 50°F, with a 25 mph wind, the equivalent chill temperature is 32°F). EG&G Idaho Company Procedure 11.10 discusses

the hazards of cold stress. The IH will monitor cold stress conditions in accordance with the Company Procedure and the Industrial Hygiene Manual, Section 20.

7.3 Noise

Heavy equipment used during demolition and to scabble contaminated concrete is expected to be loud as well (> 85 dB). Hearing protection will be provided and worn to prevent task site personnel from being exposed at or above the current ACGIH TLV-TWA of 85 db(A). Noise levels during these operations will be monitored by the IH to determine when and if the hearing protection is no longer required.

7.4 Biological Hazards

Wastes from research facilities, garbage, and animal wastes may contain disease-causing organisms. If these are present, they could infect task operations personnel and be dispersed in the environment by water and wind. It is recommended (not required) that operations personnel be immunized against tetanus bacteria, which live in the soil, to minimize the effects of possible exposure.

Encounters with wildlife may be possible at the task site. Snakes, insects, and other animals can and will bite if disturbed; avoidance is the best solution. Prompt first aid should be performed if this type of injury occurs.

7.5 Confined Spaces

Work in confined spaces may subject workers to risks involving oxygen deficiency and toxic or explosive atmospheres. Trenching and shoring will be present at the task site. The IH or HSO/SE will evaluate the trench and develop confined spaces site specific procedures per EG&G Idaho Company Procedure 11.3.

7.6 Fire and Explosion

Explosion and fire hazards at the site will exist if the gas line is present and must be isolated and capped.

7.7 Industrial Safety Hazards

7.7.1 Elevated Work Areas

During the course of task activities, personnel may be required to work on elevated equipment. When such work must be performed, the provisions stated in Section 16 of the EG&G Idaho Safety Manual will be followed. In addition, personnel required to work under these conditions will be trained on the use of elevated equipment.

7.7.2 Handling Heavy Objects

Operations personnel may risk injury by lifting heavy objects. All operations personnel should be trained in the proper method of lifting heavy equipment and cautioned against lifting objects that are too heavy. Mechanical and hydraulic assists will be used whenever possible to minimize lifting dangers.

7.7.3 Moving Machinery and Falling Objects

Task site personnel may be subject to cuts and bruises during the removal and disposal of the washers, dryers, extractor, and HV ducting.

7.7.4 Personal Protection Equipment

Wearing PPE may reduce a worker's ability to move freely, see clearly, and hear directions and noise that might indicate a hazard. Also, PPE can increase the risk of heat stress. Personnel must adjust their work activities to accommodate limitations.

7.7.5 Excavation, Trenching, and Shoring

Work at the CFA-669 D&D site will involve excavations for purposes of disconnecting utilities and sewer drains, and excavating the foundation, floor, and underground pipes. Work in or near any excavation presents serious potential hazards to personnel; personnel protective systems, barricades, signs, and daily inspections are some of the safeguards required for excavation work. For more detail, see the OSHA requirements outlined in 29 CFR 1926, Subpart P - Excavations. In addition, EG&G Idaho Safety Manual Section 20, Appendix B, contains additional requirements that may be more restrictive than those of the OSHA standard.

CFA-669 D&D personnel should look for potential hazards and immediately inform the PM/FTL or HSO/SE of the hazards so that action can be taken to correct the condition.

7.8 Radiological Hazards

7.8.1 Gross Alpha and Gross Beta Contamination

The biological hazards of alpha and beta radiation differ depending on whether the contamination is internal or external. Normally, beta radiation presents little hazard outside of the body. Because of the limited distance that a beta particle can travel in air, maintaining a specified distance from the source of contamination will eliminate most of the dose. Skin contamination also presents a limited hazard and will irradiate only superficial tissue due to the low tissue penetration capability of beta particles. Internal contamination presents the greatest beta contamination hazard. Isotopes can be taken up by the body and incorporated in important biochemical compounds. These compounds then sustain damage caused by the radiation in the form of ionizations or mutations.

External alpha contamination poses no radiation hazard because of the inability to penetrate the outer dead layer of skin. Internally, alpha particles possess the ability to cause a great amount of radiation damage in a small area. Additionally, many naturally occurring alpha emitters are bone seekers and will remain in the body for extremely long periods.

During the D&D project, possible airborne contamination will present a potential inhalation problem and lead to an internal dose. However, respiratory protection and adequate monitoring of airborne activity should prevent any intake at the task site.

Twenty nine grab samples were analyzed for gross alpha and gross beta contamination. Gross alpha measurements ranged from 6 to 310 pCi/g. Gross beta measurements ranged from 6 to 15,000 pCi/g. The highest concentrations were measured in samples taken from Room 108 where gross alpha measurements ranged from 13 to 310 pCi/g and gross beta measurements ranged from 310 to 15,000 pCi/g.

7.8.2 Gamma Contamination

Gamma radiation can occur at the same time as either beta or alpha contamination. Gammas are photons and release their energy as they pass through tissue. They are very penetrating, can irradiate the entire body and produce some deep tissue dose.

Radionuclides identified in grab samples include:

- Co-60,
- Cs-137,
- Sb-125,
- Eu-152,
- Eu-154,
- Nb-94

The highest radionuclide activity was measured in samples from Room 108.

Samples from the extractor drain pipe measured:

- Co-60 activity of 10,200 pCi/g,
- Cs-137 activity of 420 pCi/g
- Nb-94 activity of 301 pCi/g.

Samples from the dryer clean-outs measured:

- Co-60 activity of 8000 pCi/g

Cs-137 activity of 398 pCi/g

Smears, wipes and direct scans were performed to further characterize the level of removable and fixed radioactive contamination in CFA-669.

7.8.3 Building Roof General Body Fields

The general body field (GBF) and areas of radioactive contamination on the roof of CFA-669 are limited to the HEPA filter system at the west end of the building.

7.8.4 Building Interior General Body Fields

General body fields were measured in all rooms and in several different areas of large rooms. Table 3 provides the results.

Contamination measurements, made at contact, of the floor surface in Room 107 and Room 108 revealed localized areas of beta-gamma contamination ranging from 1,000 to 46,000 counts per minute (cpm) above beta-gamma background. No radiological contamination was found in Room 110.

Table 3. General Body Field Exposures

AREA	GBF (beta-gamma)
Room 101	< 0.1 mrem/hr
Room 102	< 0.1 mrem/hr
Room 103	< 0.1 mrem/hr
Room 104	< 0.1 mrem/hr
Room 105	< 0.1 mrem/hr
Room 106	< 0.1 mrem/hr
Room 107	< 0.1 mrem/hr
Room 108	
Trench - southeast end	10 mrem/hr at contact 5 mrem/hr at 3 ft
Trench - northwest end	100 mrem/hr at contact 10 mrem/hr at 3 ft
Drain - north corner of room	3 mrem/hr at bottom of hole < 0.5 mrem/hr at 3 ft
Inside dryer 5 -	< 0.1 mrem/hr at contact < 0.1 mrem/hr at 3 ft
Inside dryer 4 -	0.2 mrem/hr at contact < 0.1 mrem/hr at 3 ft
Inside dryer 3 -	< 0.1 mrem/hr at contact < 0.1 mrem/hr at 3 ft
Inside dryer 2 -	5 mrem/hr at contact < 0.1 mrem/hr at 3 ft
Inside dryer 1 -	4 mrem/hr at contact < 0.1 mrem/hr at 3 ft
Wall behind washers -	approximately 5 mrem/hr
Wall behind dryers -	< 0.5 mrem/hr
In middle of room -	< 0.5 mrem/hr
Room 109	< 0.1 mrem/hr
Room 110	< 0.1 mrem/hr
Room 111	< 0.1 mrem/hr

8. MONITORING

8.1 Biological Monitoring

All asbestos workers will be monitored as part of the OMPs asbestos worker surveillance program. Also, because of elevated lead levels detected in some drains, lead monitoring procedures outlined in EG&G Idaho Industrial Hygiene Manual, Sections 15, 3, will be implemented per the IH's direction.

8.2 Personnel Monitoring

Personnel assigned certain duties at the task site may be exposed to hazardous materials. The jobs and potential exposures that will be monitored by the IH are as follows:

<u>Assignment</u>	<u>Contaminant/agent to be monitored</u>
Asbestos Removal	Asbestos/Mercury
Mercury Removal	Asbestos/Mercury

The following equipment may be used by the IH on the task site to monitor exposures to chemical and physical agents:

<u>Equipment</u>	<u>Agent to be monitored</u>
Personal sampling pumps	Asbestos, Non-radiological particulate
SLM/noise meter	Noise
WBGT	Heat stress conditions
Photoionization detector	Volatile Organics
Mercury Detector	Mercury

All industrial hygiene equipment will be maintained by the IH per the manufacturer's recommendations. Instruments will be calibrated before and after use, or according to the schedule

outlined in the EG&G Idaho Company Procedure 11.4, "Calibration of Industrial Hygiene Instruments."

Air sampling will be conducted according to EG&G Idaho Company Procedure 11.5, "Industrial Hygiene Air contaminant sampling procedure," using NIOSH methods. Samples will be personal samples whenever possible; the number and frequency of sampling will depend on the results of the JHA (i.e., Form EGG-1565), which must be completed by the IH to determine the potential exposures and risk assessment for task site personnel, per EG&G Company Procedure 11.9, "Industrial Hygiene/workplace surveys." Results from direct-reading instruments and field observations will be recorded on Form EGG-737, Industrial Hygiene Monitoring Form. Each day the PM/FTL will record the four-digit data sheet number that corresponds to the day's industrial hygiene monitoring.

8.3 Heat Stress Monitoring

Monitoring for heat stress conditions will be performed by the IH according to Company Procedure 11.10. Depending on the ambient weather conditions or work conditions and physical response of task operations personnel, the IH will inform the PM/FTL of necessary adjustments to the work/rest cycle. A supply of drinking water will be provided at the task site and consumed only in the designated and approved eating/drinking area.

Workers may be interviewed by the IH and/or HSO/SE periodically to ensure that the controls are effective and excessive heat exposure is not occurring. Workers will be encouraged to monitor their body signs and take a break if the following symptoms of heat stress occur.

- CONFUSION
- FAINTING
- SLURRED
- STOP SWEATING
- Clammy skin
- Dizziness or nausea

- Fatigue
- Profuse sweating
- Skin color change
- Vision problems

CFA-669 D&D personnel who exhibit any of these symptoms will be immediately removed from the task site. An individual who shows any of the symptoms that are capitalized and underlined, or any other evidence of change in level of consciousness, will be transported immediately to an OMP facility for medical evaluation. Individuals showing any of the remaining symptoms listed will be provided cool drinking water, moved to a shaded area, and monitored by a Medic First-qualified person. If personnel exhibiting symptoms of heat stress do not show signs of immediate recovery when removed to the rest area, they will be sent to the dispensary for medical attention.

8.4 Cold Stress Monitoring

Monitoring for cold stress conditions will be performed by the IH according to Company Procedure 11.10. Adequate protective clothing, as required by IH should be worn to protect against the cold. Extra care must be exercised while working in this environment. Workers should observe each others facial extremities (ears and nose) for signs of frostbite (whitening of the skin surface). Decreased mental coherence and body movements are signs of hypothermia. Individuals with suspected hypothermia or other significant cold injury (e.g., frostbite) will be taken to an OMP medical facility.

8.5 Noise-Level Monitoring

Noise levels > 85 dB will be encountered by operations personnel at the task site and worker exposure will be assessed by the IH. A hearing conservation program addressing noise level monitoring, PPE requirements, and audiometric tests will be developed by the IH when the sound levels exceed an 8-hour time weighted average of 85 dB(A). Hearing protection shall be worn unless noise level monitoring by the IH shall indicate otherwise. Requirements will be imposed by the PM based on the advice of the IH and the requirements stated in the Company Procedure 11.7 and the

8.6 Radiological Monitoring

The following equipment (or equivalent) may be used by the HP on site:

<u>Equipment</u>	<u>Monitoring use</u>
Ludlum 2A (or equivalent)	Beta/Gamma Contamination Surveys
Ludlum 61 (or equivalent)	Alpha Contamination Surveys
Eberline RO-2A (or equivalent)	Radiation Exposure Surveys
Lapel Breathing Air Samplers	Radioactive Particulate in Breathing Zone Monitoring
Constant Air Monitors	Airborne Radioactive Particulate Release Monitoring

The HPT will be responsible for radiological monitoring in accordance with the EG&G Idaho Radiological Controls Manual, Chapters 2 and 4; and Section 10 of the EG&G Idaho Company Procedures Manual. All health physics equipment will be source checked weekly and calibrated every six months. The equipment will be maintained by the HPT according to the manufacturer's instructions. Survey equipment will be used to verify boundaries and work zones, survey personnel and equipment before leaving the task site, and to confirm that waste items are sent to the appropriate disposal facility.

8.7 External Radiation Exposure Control

Personnel exposures are monitored by thermoluminescent dosimeters (TLD)s and direct read dosimeters (DRD)s. Personnel are responsible for properly wearing the specified dosimetry while in radiologically controlled area. If the TLD (or other dosimetry) is lost, task operations personnel will immediately notify the PM/FTL and HPT. TLDs are supplied and processed by the Operational Dosimetry Unit (ODU).

Radiation surveys will be performed by the HPT to determine the extent and magnitude of

radiation levels and to enable posting of radiation areas. Surveys will be performed in accordance with the EG&G Idaho Radiological Controls Manual, Chapter 2, Section 3.8.

8.8 Radioactive Contamination Control

All surfaces or areas with contamination levels in excess of those levels stated in Section 4.0 of the EG&G Idaho Radiological Controls Manual, will be monitored and controlled to prevent the spread of contamination. Contamination surveys will be performed by the HPT in accordance with the EG&G Idaho Radiological Controls Manual, Chapter 4, Section 3.3.

All personnel will obtain a whole body survey after exiting a contamination zone; the whole body survey must be done for two or three minutes using a Ludlum 2A, or equivalent, with a pancake type probe for beta-gamma contamination and a Ludlum 61, or equivalent, for alpha contamination.

8.9 As Low As Reasonably Achievable Goals

ALARA is an approach to radiation protection to control or manage exposures as low as social, technical, economic, practical, and public policy consideration permit. As used by the DOE, ALARA is not a dose limit but a process, which has the objective of dose levels as far below applicable limits of the DOE order 5480.11 as reasonable achievable.

Personnel working at the task site must strive to keep radiation exposure ALARA through the following practices:

- Adhere to all written radiological requirements and verbal guidance
- Be aware of personal radiation exposure history
- Be aware of personal ALARA exposure goals
- Work within ALARA guidelines and make suggestions as needed
- Minimize personal radiation exposure by these basic protection techniques:

- Time-exposure is minimized as time is minimized

- Distance-maintain a maximum distance from radiation source
 - Shielding-use any solid material (e.g., lead, steel, concrete) as a shield (Exposure amounts will vary depending on thickness and type of material.)
 - Limits - radiation exposure limits are contained in the EG&G Idaho Radiological Controls Manual, Chapter 2, Section 3.2
- Adhere to general safe work practices discussed in Section 10 of this plan.

9. PERSONAL PROTECTIVE EQUIPMENT

The two phases of the task will necessitate two separate PPE requirements. Phase one of the project involves an asbestos and chemical hazard (mercury) in a radiologically clean area and phase two is a radiological contamination (zone III) problem.

For Phase 1, required PPE shall consist of:

- SCBA (because of the difficult nature of mercury-asbestos)
- Disposable coveralls with hood
- Safety shoes
- One pair plastic booties
- One pair shoe covers
- Hard hat
- One pair cotton gloves liners
- One pair latex gloves
- (any changes dictated by the IH).

For Phase 2, required PPE shall consist of:

- Two pair plastic booties
- One pair cotton glove liners

- One pair yellow cloth anti-C coveralls
- One pair shoe covers
- Two pair latex gloves
- One full face respirator with HEPA particulate filter
- One yellow cloth hood
- One pair disposable coveralls with hood
- Safety shoes
- Hard hat.

<u>Task/assignment</u>	<u>Level of PPE</u>	<u>Modifications to PPE</u>
Asbestos removal	Phase 1 PPE (above)	As directed by IH
Mercury removal	Phase 1 PPE	As directed by IH
Radiological Decon of CFA-669	Phase 2	As directed by RE

10. SAFE WORK PRACTICES

10.1 General Safe Work Practices

The following general safe work practices will be followed at the task site:

- Contact lenses shall not be worn in designated eye-hazard areas unless they are essential to correct a vision defect not correctable by prescription safety glasses. Additional restrictions apply per the EG&G Idaho Safety Manual, Section 16, paragraph 3.7.
- Eating, drinking, chewing gum or tobacco, smoking, and any other practice that increases the probability of hand-to-mouth transfer and ingestion of material are prohibited within the work/radiation zones. Eating will be in approved eating areas as established or designated at the particular INEL facility.
- Broken skin or other wounds will restrict personnel from entering areas where contamination

is present.

- Avoid direct contact with potentially contaminated substances. Do not walk through spills or other areas of contamination. Avoid kneeling, leaning, or sitting on equipment or ground that may be contaminated.
- Watch for dangerous situations; strong, irritating, and/or nauseating odors; airborne dusts or vapors; and broken containers. Report all potentially dangerous situations to the PM/FTL or HSO/SE.
- Prevent releases of oil or hazardous materials used in task operations. If spillage occurs, contain it; report it to the facility representative, where applicable; and immediately clean it up in accordance with the Emergency Preparedness Procedures for the area. Refer to guidelines in Appendix III of Company Procedure 11.6 for spill cleanup.
- Avoid splashing of contaminated materials during decontamination.
- Keep all ignition sources at least 50 ft from an explosive or flammable environment and use non-sparking, explosion-proof equipment where appropriate.
- Be familiar with the physical characteristics of the task site (including but not limited to):
 - Wind direction
 - Accessibility of fellow workers, equipment, and vehicles
 - Communications at and near the task site
 - Exclusion zones (areas of known or suspected contamination)
 - Site access (both area and task)
 - Nearest water sources
 - Warning devices
 - Nearest emergency assistance.
- Workers in the exclusion zone will be in line-of-sight contact and within shouting distance of

their buddy at all times.

- Proceed directly to a survey station when leaving a radiological contamination zone. Care should be taken not to touch the face, mouth, and eyes before a survey has been performed.
- Only qualified personnel will operate heavy equipment at the CFA-669 D&D site.
- Only qualified, trained workers participating in the medical surveillance program for asbestos workers will be allowed to work in the asbestos areas.

10.2 The Buddy System

The buddy system will be used at the CFA-669 D&D site to ensure each worker's mental and physical well being is monitored during the course of a work day. By using the buddy system, task operations personnel can reduce the chance of being injured or overcome by a hazardous material when they are alone and in need of immediate assistance. Task site personnel will be assigned a buddy by the PM/FTL to work with and regularly check on during the day. Each person should be on the alert for signs and symptoms of illness and injury in their buddy.

10.3 Physical Hazard Control and Monitoring

The PM/FTL and HSO/SE will conduct periodic inspections of the task site to ensure that barriers and signs are being maintained, unsafe conditions are corrected, and debris is not accumulating on the site. Health and safety professionals present at the task site may, at any time, recommend changes in work habits to the PM/FTL.

Individuals working at the CFA-669 D&D site are responsible to use safe work techniques, report unsafe working conditions, and exercise good personal hygiene and housekeeping habits throughout the course of their job.

11. SITE CONTROL AND SECURITY

Two work zones will be established at the task site. The first work zone (Figure 5) will be for the removal of asbestos and mercury from Room 110. The second work zone (Figure 6) will be a radiological contamination zone III for the removal of radiologically contaminated equipment and components and the general radiological decontamination of the task site.

11.1 Exclusion Zone

The exclusion zone includes the immediate work area around the contamination area. The minimum number of personnel required to safely perform the required operations will be allowed into the exclusion zone.

Exclusion Zone 1 will be a non-radiological zone and will consist of Room 110 (the boiler room) during the removal of the asbestos and mercury. The entrance and egression for Exclusion Zone 1 (Room 110) will be the outside door on the west wall of the boiler room. This will prevent cross contamination of the two zones and facilitate a quicker egression during an emergency.

Exclusion Zone 2 will be a radiological contamination zone III. While the radiological surveys indicated no removable contamination from the smear tests, grab samples and anticipated potentially contaminated dust created by the removal of components and scabbling of concrete will dictate respiratory protection. The zone shall include the entire building after the asbestos and mercury are removed and Exclusion Zone 1 is removed. Entrance and egression shall be through the north-east double doors. A second entrance and egression point will be the west boiler room doors. These doors will be used for work in the boiler room and removal of boiler room equipment. The zone will be posted as an airborne radioactivity area and will be monitored by CAMs.

11.2 Contamination Reduction Zone

The contamination reduction zone is a transition area that surrounds the exclusion zone, and is

located between the exclusion zone and the support zone. A designated portion of this zone, called a decontamination corridor, will serve as a decontamination area for equipment and a PPE removal area for task operations personnel. The contamination reduction zone may serve as a staging area for equipment and a temporary rest area for workers. Due to the potential for contamination, PPE and sample packaging and preparation equipment should not be stored in this area.

The contamination reduction zone for Exclusion Zone 1 (mercury and asbestos in Room 110) will be constructed in accordance with procedures outlined in the EG&G Idaho Industrial Hygiene Manual, Section 13, Number 6. This zone will be monitored by the IH for possible contamination by asbestos and mercury and also be equipped with radiation contamination survey equipment to check for possible radiological contamination.

Exclusion Zone 2 (radiological contamination zone III) will have a contamination reduction zone or step-off pad set up in accordance with the EG&G Idaho Radiological Controls Manual, Chapter 4, Section 3.2.

11.3 Support Zone

The support zone is the area outside the contamination reduction zone. It may contain the equipment trailer, command post, vehicle parking, additional equipment staging, or any support activity related to the task at hand.

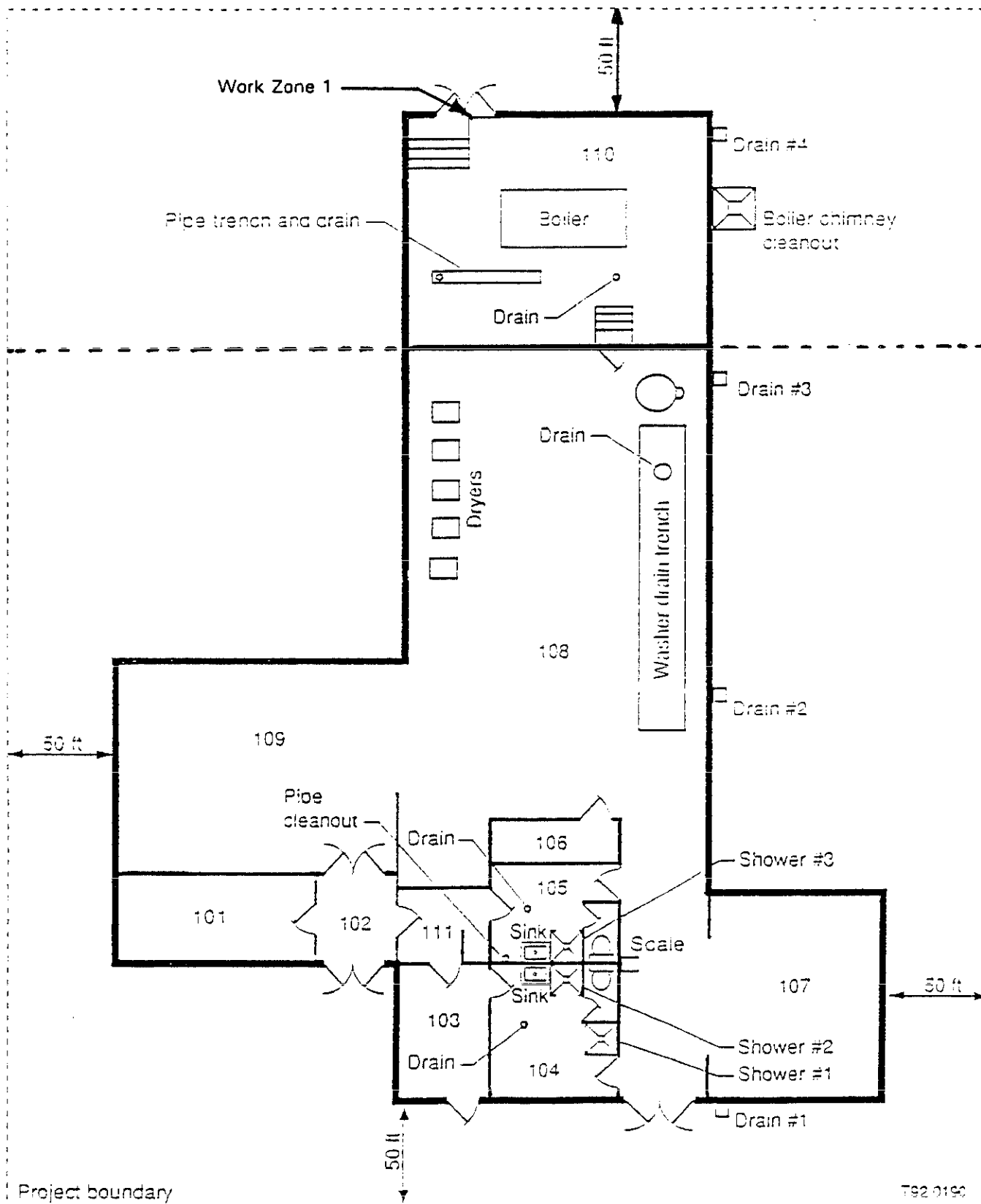


Figure 5. Location of Work Zone 1 (Asbestos and Mercury Removal in Room 110)

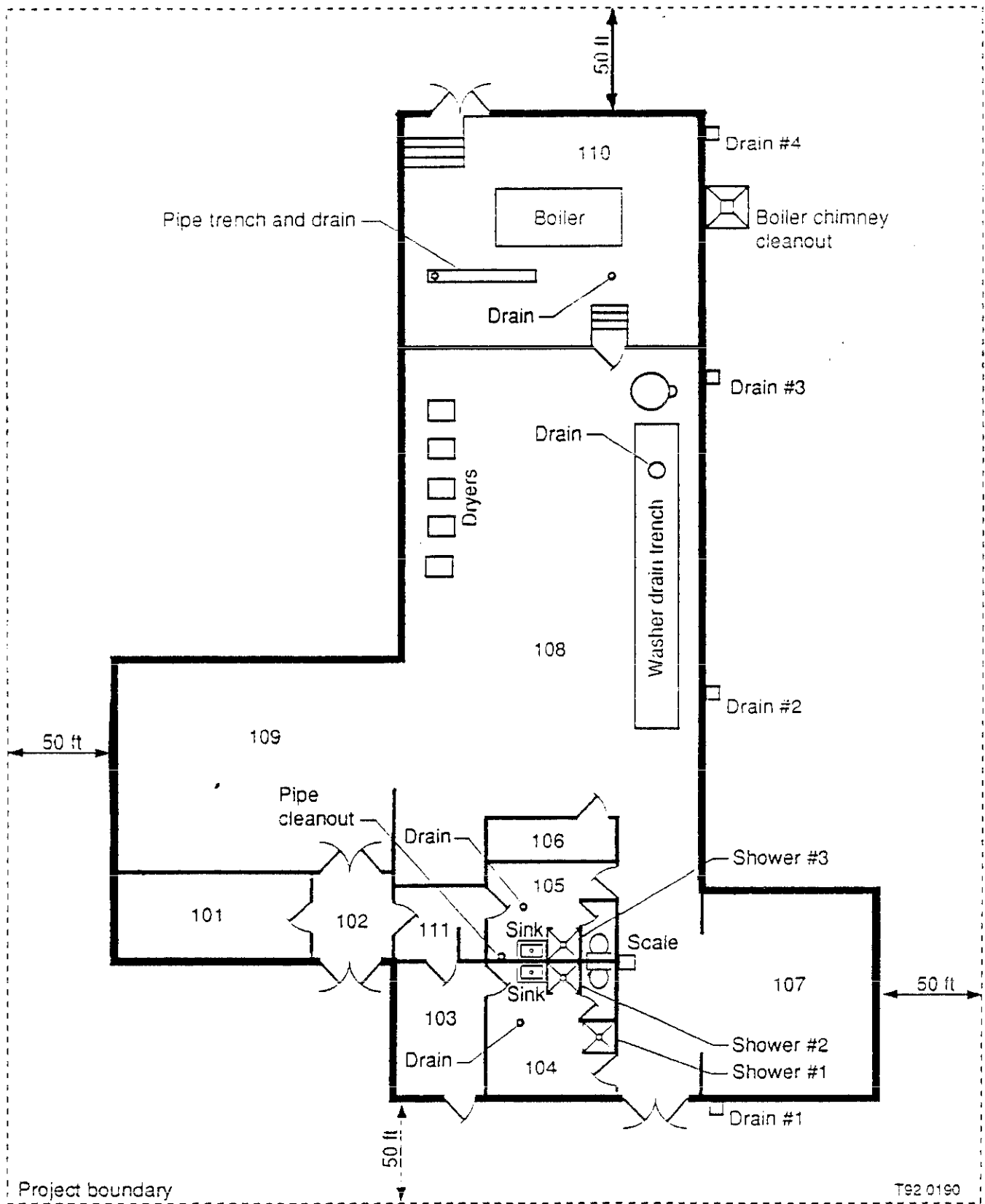


Figure 6. Location of Work Zone 2 (Radiological Contamination Zone III)

12. DECONTAMINATION PROCEDURES

Radiological decontamination is to be accomplished by removal of contaminated components as a whole, removal of contaminated concrete sections, and the use of HEPA vacuums to remove loose particulate contamination. Decontamination of personnel and tools shall be performed under the guidance of the HPT in accordance with the EG&G Idaho Radiological Controls Manual, Section 4. Removal of anti-C clothing when leaving contamination control zones will be in the order that follows:

- Outer pair shoe covers
- One pair latex gloves
- Disposable coveralls with hood
- One pair of plastic booties
- Yellow cloth hood
- Full-face respirator
- Inner pair latex gloves
- Yellow cloth anti-C coveralls
- One pair plastic booties
- Cotton glove liners

12.1 Decontamination During Medical Emergencies

If a person is injured or becomes ill, the situation will be evaluated by first aid personnel on the task site. Emergency care will be initiated and the emergency preparedness procedure for the facility at which the task is being performed will be activated. Medical care for serious injury/illness will NOT be delayed for decontamination. In such cases, contamination may be removed by removal of the injured person's outer protective gear (if possible). Additional decontamination may be performed at the medical facility. The IH and/or HPT may accompany the employee to the medical facility to provide information and decontamination assistance to medical personnel.

Showers shall be provided for asbestos workers as part of their egress procedures from the contamination reduction zone in accordance with EG&G Idaho Industrial Hygiene Manual, Section 13.

13. EMERGENCY RESPONSE PLAN FOR TASK SITE

Before initiating work at the CFA-669 D&D site, the medical facility at CFA-603 will be notified by the project manager. Information to be included in this notification includes the location of the task site, nature of the activity/activities involved, number of persons at the site, and a list of known hazardous materials present at the task site.

The signal to stop work and evacuate the site will be repeated blasts on an air horn. Task site personnel should evacuate to the vehicle parking area. An alternate area will be designated by the HSO/SE or PM/FTL on days when the wind direction is such that the vehicle area is downwind. F-net radios will be carried by the PM/FTL and HPT; emergency aid such as security, ambulances, and fire departments will be summoned via radio.

General alarm signals from CFA will be observed and the appropriate actions taken. The "take shelter" location at the CFA-669 D&D site will be the project trailer. In the event of a signal to evacuate the INEL, personnel shall assemble at evacuation route site number 2, the corner of Raleigh Ave. and Main St. at CFA as located in Figure 7.

Responsibilities at the task site during an emergency:

<u>Responsible Person</u>	<u>Action assigned</u>
PM/FTL (or previously designated alternate)	Signal Evacuation
PM/FTL (or previously designated alternate)	Call WCC
Medic First Qualified Personnel	First Aid to Victims
PM/FTL (or previously designated alternate)	Contact Area EAD
PM/FTL (or previously designated alternate)	Contact OMP

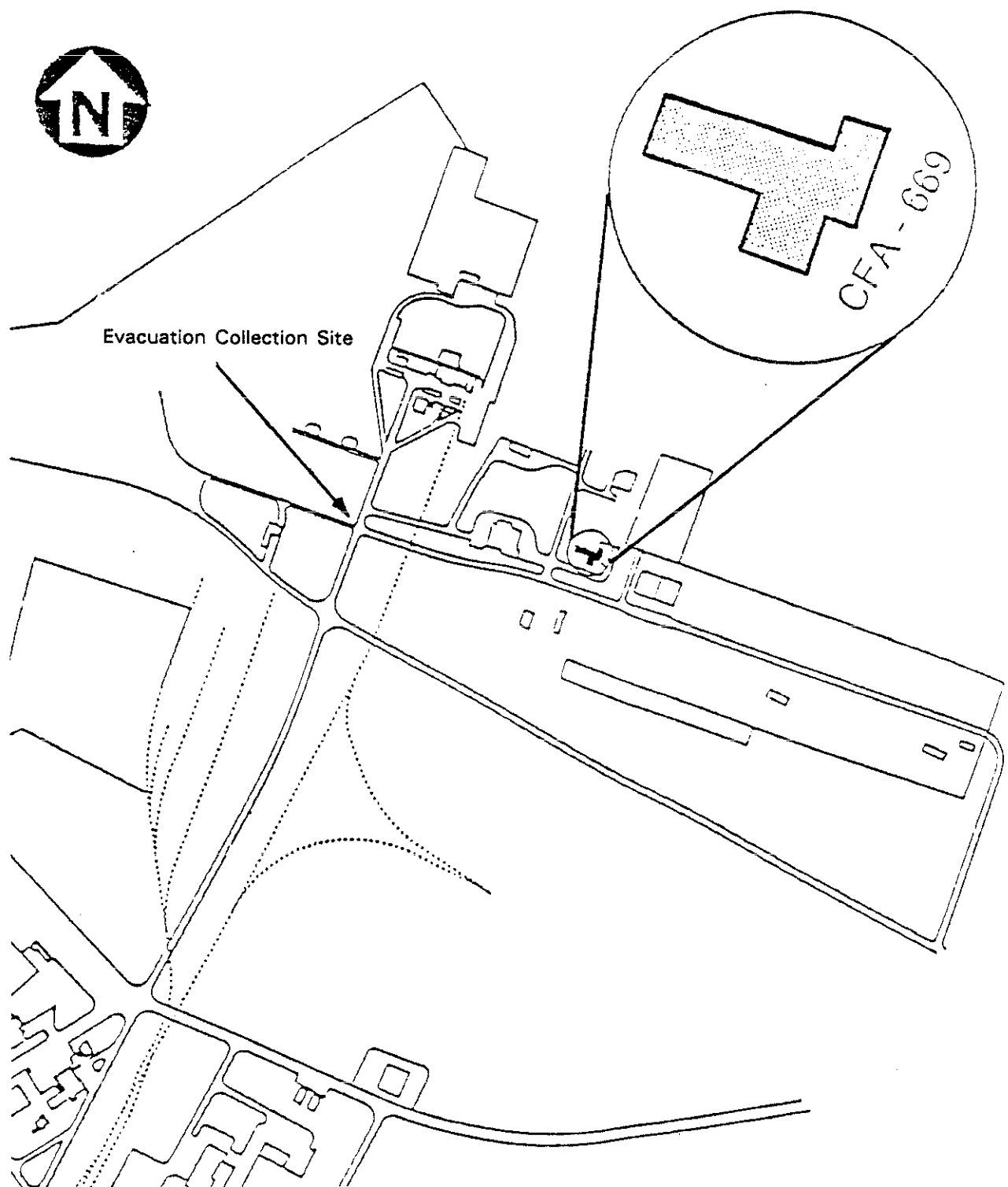


Figure 7. Evacuation route for CFA-669

In the event that a building fixture, ventilation shaft, or other radioactively contaminated object that has been sealed is damaged and radioactive material is released, task operations personnel will initiate the SWIMS approach:

- Stop the release or spill
- Warn area personnel and notify HPT or RE
- Isolate the area
- Minimize exposure to the spill
- Secure any ventilation paths and HPT surveys the extent of the spill.

The following emergency response equipment shall be placed, inspected, and maintained by the HSO/SE at the site:

- Fire Extinguisher
- First Aid Kits
- Hazardous Material Spill kit
- Radiological Spill Kit (in accordance with Section 4 of the EG&G Radiological Controls Manual)
- Eye Wash Stations
- 2 Self Contained Breathing Apparatus

At least two emergency drills will be performed with one at the beginning of the task. Additional drills will be performed if the tasks exceeds 30 weeks.

The PM/FTL will perform a follow-up critique after any site evacuations or emergencies have occurred.

13.1 Emergency Reference List for CFA-669 D&D

This list will be posted at CFA-669 D&D.

• Warning Communications Center (WCC)	777
• Area Emergency Action Director - Changes Weekly	526-2226
• First Aid - CFA Dispensary	526-2356
• Occupational Medical Program (WCB Dispensary)	526-1596
• Fire	777
• Security	777
• Explosives expert - Richard Green	526-2702
• HAZMAT Team - CFA Fire Department	526-2212 or 777
• Industrial Hygienist - Mel M. Garcia	526-8072
• Health Physics - CFA-629	526-2284
• Health and Safety Officer/Safety Engineer - Richard Caummisar	526-4381
• Quality Engineer - Alan K. Park	526-8651
• Radiological Engineer - David R. Lipp	526-6159
• Environmental Engineer - Ken L. Gilbert	526-8039
• ERD Department Manager - James L. McAnnally	526-2835
• Site Remediation Group Manager - L.C. Van Deusen	526-6383
• D&D Unit Manager - R.H. Meservy	525-5884
• Project Manager/Field Team Leader - Don Smith	525-5902

HEALTH AND SAFETY CERTIFICATION FORM

Project Title: CFA-669 Hot Laundry D&D

Environmental Restoration Department

D&D Unit Manager: R.H. Meservy

Project Manager: Don Smith

Industrial Hygienist: Mel Garcia

I certify that I have been given a copy of the Health and Safety Plan for the CFA-669 Laundry D&D project, and agree to comply with the procedures described therein. I further certify that I understand the potential health and safety hazards of the program (as outlined in the HS plan) and have been trained in the use of the personal protection equipment selected for this project.

Signature on this page implies employees' safety training has been completed and is current as required to perform work on this site.

Employee: _____
(Print) (Signature) (Date)

Company of Employment: _____