



PLAN

# HLMI-PLN-FP-51082

## Fire Protection Program

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## **Change Summary**

### **Description of Change**

Addressed comment concerning an incorrect phone number for the FP Engineer referenced in Section 3.1. Updated organization names, procedure numbers, and document format.

Fire Protection Program



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## 1.0 INTRODUCTION

This plan implements contractual requirements for a Fire Protection Program as delineated in U.S. Department of Energy (DOE) O 420.1C, *Facility Safety*, to ensure Hanford Laboratory Management and Integration, LLC (HLMI) personnel, facilities, and the environment are adequately protected from the effects of fire and explosion.

The HLMI Fire Protection Program is administered through the HLMI Safety & Health organization and applies to all HLMI employees, subcontractors, and managed facilities, programs, projects, and activities. The purpose of the program is to ensure that HLMI's commitment to uncompromising integrity and adherence to the highest safety standards is met in the area of fire protection by providing employees with the information necessary to ensure related safety requirements are met.

HLMI Fire Protection Program shall implement, apply, and enforce DOE O 420.1C. Implementation requires application of guidance found in the codes and standards of the National Fire Protection Association (NFPA). The International Building Code (IBC) shall be applied as called out DOE O 420.1C.

The Hanford Fire Department is responsible for the permitting process; fire suppression; fire system inspection, testing, maintenance, and repair activities (except those activities listed in ~~Appendix A~~ [Appendix A](#) of this plan, which are performed by HLMI personnel); Hanford site-specific fire system design criteria; hazardous material (HAZMAT) response; emergency rescue; and medical response.

The Hanford Fire Department requirements are outside the scope of the HLMI Fire Protection Program, but the services they provide are maintained in HLMI-STD-FP-50570, *Hanford Fire Department Services*. The HLMI Safety & Health Fire Protection organization's fire protection engineer(s) are deputies of the Hanford Fire Marshal's Office and administer the permitting process for HLMI.

This plan requires DOE approval for significant revisions. Revision B-0 of this plan was approved by DOE per letter 17-SHD-0040.

## 2.0 POLICY STATEMENT

HLMI shall:

- Ensure the Fire Protection Program represents DOE's commitment to fire protection and fire suppression capabilities sufficient to minimize losses from fire and related hazards consistent with highly protected risk status in private industry. To this end, the basic minimum objectives shall include:
  - Application of mandatory fire protection criteria in accordance with DOE O 420.1C; 10 CFR 851, "Worker Safety and Health"; and DOE-STD-1066-2012, *Fire Protection*, implementation criteria
  - Where conflicts in the application of required codes and standards arise, the more restrictive requirements apply or an interpretation request may be made to the DOE Office of River Protection (DOE-ORP) Authority Having Jurisdiction
  - A reliable water supply of adequate capacity for fire suppression

- Noncombustible construction
  - Automatic fire extinguishing systems
  - Hazards protection
  - Access to a fully staffed and trained fire protection engineer and maintenance staff
  - Access to a fully staffed, trained, and equipped fire department
  - A means to summon the fire department in the event of a fire
  - A means to notify and evacuate building occupants in the event of a fire.
- Minimize the potential for the occurrence of a fire or related perils.
  - Ensure the fire does not cause an unacceptable on-site or off-site release of hazardous material that will threaten the public health and safety or the environment.
  - Establish requirements consistent with the National Fire Protection Association<sup>®1</sup> (NFPA) 101<sup>®</sup>, *Life Safety Code*<sup>®</sup>, that will provide an acceptable degree of life safety to HLMI.
  - Ensure that vital DOE programs will not suffer unacceptable delays (defined by the program senior official) as a result of fire and related perils.
  - Ensure that property damage from fire and related perils does not exceed DOE established levels.
  - Ensure that process control and safety systems are not damaged by fire or related perils.
  - The tank operations contractors shall have at least one qualified fire protection engineer on staff subject to specific clarifications from DOE O 420.1C. Additional qualified fire protection engineers and fire protection staff shall be provided as necessary to perform the functions and meet DOE-ORP requirements.
  - Establish hazardous material controls with NFPA 1, *Fire Code*, and NFPA 400, *Hazardous Materials Code*, as the applicable NFPA standards for hazardous materials management plans within HLMI. These plans should be supplemented with FM Global Property Loss Prevention Section 7 Data Sheets, as applicable.
  - A combustible control program is a required element for all fire protection programs. Additional features may be required for nuclear, radiological, high-hazard, explosive, and mission-critical facilities.
  - Protect against natural fire hazards such as lightning and wildfires by establishing controls compliant with NFPA 1, NFPA 780, and NFPA 1144, *Standard for Reducing Structure Ignition Hazards from Wildland Fire*. Hanford Mission Integration Solutions, Hanford Fire Department provides emergency

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<sup>1</sup> NFPA, National Fire Protection Association, NFPA 101, and *Life Safety Code* are all registered trademarks of the National Fire Protection Association, Quincy, Massachusetts, 02169.

response to HLMI including natural hazards such as lightning and wildfires. See WRPS-PER-2020-0722.

### 3.0 ROLES AND RESPONSIBILITIES

#### 3.1 All Employees

- Perform their activities safely to prevent the occurrence of a fire.
- Notify their immediate manager or team coordinator of hazardous conditions that could result in a fire.
- Notify the Hanford Fire Department if there is an indication of a fire, hazardous material spill, emergency rescue, or medical need by calling 911 or 509-373-0911 (cell phone) or other effective means.
- Off-site locations (e.g., Stevens Center) shall notify the City of Richland Fire Department by calling 911 or other effective means. The HLMI fire protection engineer shall be informed (509-376-8909) in a timely manner for trending.
- Park all vehicles (private and government) so they do not block fire equipment or delay emergency response vehicles.
- Shall receive basic fire prevention training that includes the following items (as a minimum):
  - Good housekeeping practices
  - Proper response/notification in the event of a fire
  - Instruction on the use of portable fire extinguishers
  - Recognition of potential fire hazards
- Employees who are designated to use a portable fire extinguisher as part of an emergency action plan or as a fire watch (such as for a welding/cutting operation) shall receive hands-on training in accordance with HLMI-PRO-FP-50564, *Controls for Safe Hot Work*. All fire protection training shall be documented in accordance with training administration procedures.

#### 3.2 Facility Management

- Provides and maintains the necessary staff and resources to develop, implement, and maintain the HLMI Fire Protection Program.
- Implements and adheres to the requirements of the HLMI Fire Protection Program for the facilities, programs, and/or operations under their jurisdiction.
- Implements compensatory measures until compliance is achieved or an equivalent level of protection is provided whenever the requirements of the HLMI Fire Protection Program cannot be met.
- Assists Fire Protection personnel with facility assessments, appraisals, investigations, and analyses.
- Develops corrective action plans, provides timely resolution, and provides the necessary support for resolving fire protection deficiencies identified during

appraisals, audits, and assessments and fire protection system restrictions and emergency impairments.

- Ensures serious fire protection deficiencies are funded and corrected with minimum delays.
- Reports fire and property losses in accordance with the requirements of HLMI-PRO-OPS-50674, *Occurrence Reporting*.
- Ensures designs, specifications, modifications, fire system acceptance test procedures, and fire equipment procurement are reviewed and approved by a qualified fire protection engineer.
- Ensures a fire hazards analysis is prepared for all new facilities and existing nuclear facilities in accordance with HLMI-STD-FP-50569, *Fire Hazard Analysis and Fire Protection Assessment Requirements*. Where assumptions are made in the fire hazards analysis regarding the combustible loading of a facility, facility-specific controls shall be developed that will prevent exceeding the limits analyzed.
- Coordinates with the Hanford Fire Department and Fire Systems Maintenance to ensure that fire protection system testing and maintenance are completed within the required frequency.
- Ensures procedures and staffing are in place to complete weekly/monthly facility-required fire protection system inspections are completed.
- ~~Appendix A~~ [Appendix A](#) of this plan specifies which components are the responsibilities of HLMI facility/operation personnel to perform. (If assistance is needed, contact the HLMI fire protection engineer.)
- Ensures documented, monthly facility inspections are performed in accordance with NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*. To this end, documentation shall:
  - Include provisions for remedial actions to correct conditions that increase the hazards
  - Locate and identify unnecessary transient combustibles
  - Identify uncontrolled ignition sources
  - Detect obstructions to the means of egress
- Ensures compliance with 10 CFR 851 implementation for the requirements of 29 CFR 1910.39, "Fire Prevention Plans." ~~Appendix B~~ [Appendix B](#) of this document lists the applicable requirements of 29 CFR 1910.39 and the plans, processes, and/or procedures in place to meet prevention planning requirements.

### 3.3 HLMI Safety & Health, Fire Protection Organization

HLMI Fire Protection Engineering shall perform the duties of the company authority having jurisdiction (AHJ) for all matters of fire protection within HLMI. A qualified HLMI fire protection engineer shall be qualified as evidenced by all of the following:

- Any combination of education, training, and experience that meets the definition of a qualified fire protection engineer:
  - Be an engineer who is a graduate of an accredited university or college with a Bachelor of Science in an engineering or related technical field, and meets the qualifications for Member Grade in the Society of Fire Protection Engineers, or
  - Be an engineer who has a member grade in the Society of Fire Protection Engineers, or
  - Be an engineer who is a Registered Professional Fire Protection Engineer.
- Completion of the HLMI qualification card for Fire Protection Engineer (350883).
- Completion of the Hanford Fire Department Standard Operating Policy 1.E.22, *Deputy Fire Marshal Qualifications*.

Duties of an HLMI fire protection engineer include:

- Provides fire protection engineer technical support to the project organizations and facilities to assist with implementation of the HLMI Fire Protection Program.
- Assists line management with fire investigations, assists in the resolution of fire system discrepancies, and supports the preparation of exemptions/equivalency/deviation requests.
  - HLMI Fire Protection Engineers shall be deputized by the Hanford Fire Marshal as described in the Hanford Fire Marshal's Charter (DOE-RL Letter 12-SED-0080).
  - HLMI Fire Protection Engineers shall support the Hanford Fire Marshal as identified in HNF-58158, *Fire Protection Flow-Down of Roles, Responsibilities, Authorities, and Enforcement*.
  - Where applicable, HLMI Fire Protection Engineers shall apply HNF-36174, *DOE Fire Protection Handbook*, Hanford Chapter.
- Disseminates fire protection information to management to keep them advised of changes, special problem issues, and/or new requirements related to the HLMI Fire Protection Program.
- HLMI deputized fire protection engineers shall operate in the roles of "Building Code Official (BCO)" and "Fire Code Official (FCO)" for HLMI controlled facilities and supporting operations as described in DOE O 420.1C.
  - Establish and interpret fire protection policies, codes, standards (including NFPA 101) and requirements, and maintain program procedures applicable to HLMI operations, activities, projects, and facilities.



- Review fire protection designs, specifications, modifications, fire system acceptance test procedures, and fire equipment procurement to ensure compliance with DOE and statutory fire protection requirements, standards, and recommended practices.
- It is the intent of the DOE-ORP Fire Protection Program to encourage the application of alternative and innovative fire protection methods that will meet the objectives of the Fire Protection Program. Therefore, fire safety exemptions and equivalencies from these requirements are encouraged.
- Ensures a fire hazard analysis is conducted at all nuclear and new facilities by performing or coordinating preparation, reviewing, and approving all HLMI-related fire hazard analyses and assist in acquiring DOE approval, where required.
- Reviews and approves, as appropriate, requests for exemptions, variances, deviations, or equivalency evaluations from fire protection standards and requirements. Ensures a Hanford Fire Marshal review is performed in accordance with the Fire Marshal Charter before being submitted to DOE.
- Establishes and maintains a list of those facilities that require fire protection facility assessments, and ensures new facilities are added to the list for review.
- Performs fire protection facility assessments to determine compliance with applicable DOE Orders (DOE O 420.1C) and prescribed standards per the frequencies and category areas identified in DOE O 420.1C. Ensures any deficiencies are maintained in the deficiency tracking system until corrected.
- Assists with fire protection operational readiness reviews to verify the facility, staff, procedures, and technical safety bases for operation are in place and ready for the defined operation.
- Ensures the working copies of files and records of fire protection activities (e.g., internal procedures, corrective action files, interpretations) are maintained and are accessible.
- Attends training courses to maintain proficiency in the mandatory fire protection standards of the program.
- Prepares and submits the “Annual Fire Protection Summary” (one hard copy and one electronic copy) for the previous calendar year. This shall be submitted to DOE-ORP by February 1 of each year, as required by DOE O 231.1B, *Environment, Safety, and Health Reporting*.
- Provides fire protection overview of subcontractor activities and facilities.
- Provides technical assistance to DOE.
- HLMI Fire Protection staff are encouraged to participate at Hanford Fire Protection Forum meetings.

### 3.4 Engineering

- Designs and construction of new structures and modifications to existing structures shall maintain the importance of fire prevention features, such as noncombustible or fire-resistive construction, unobstructed means of egress, housekeeping, and the control of sources of heat or ignition.
- Design requirements for nuclear facilities' interior finish materials shall be implemented in design procedures. Requirements include:
  - Interior finish materials (decorations, furnishings, and exposed wall or insulating materials) shall have an Underwriters Laboratories (ASTM E84/NFPA 255) flame spread rating of 25 or less, and smoke-developed rating of 50 or less.
  - Except acoustical materials shall have a smoke-developed rating of 100 or less.
  - Floor covering material shall have a minimum average critical radiant flux of 0.45 watts per square centimeter when tested in accordance with ASTM E648/NFPA 253.
- The HLMI fire protection engineer and the Hanford Fire Marshal shall be consulted to ensure fire protection concerns are adequately addressed, that designs and modifications comply with the applicable requirements, and applicable permits are obtained.
- Only fire protection equipment and components that have been approved or listed for application by a nationally recognized testing laboratory shall be specified when available.
- HLMI-STD-FP-50566, *Fire Protection Design Criteria*, shall be referenced in appropriate Engineering procedures.

### 4.0 DEFINITIONS

No terms or phrases unique to this procedure are used.

### 5.0 RECORD IDENTIFICATION

No records are generated during the performance of this procedure.

## 6.0 SOURCES

### 6.1 Requirements

10 CFR 851, "Worker Safety and Health"

29 CFR 1910.39, "Fire Prevention Plans"

DOE O 231.1B, *Environment, Safety, and Health Reporting*

DOE O 420.1C, *Facility Safety*

DOE-RL Letter 12 SED-0080, *Contract No. DE-AC06-09RL14728 – Recommended Revisions to the Charter for the Hanford Fire Marshal and Charter for Hanford Fire Protection Forum*

DOE-STD-1066-2012, *Fire Protection*

HNF-36174, *DOE Fire Protection Handbook*, Hanford Chapter

HNF-58158, *Fire Protection Flow-Down of Roles, Responsibilities, Authorities, and Enforcement*

*International Building Code*

NFPA 1, *Fire Code*

NFPA 101<sup>®</sup>, *Life Safety Code<sup>®</sup>*, current edition

NFPA 400, *Hazardous Materials Code*

NFPA 1144, *Standard for Reducing Structure Ignition Hazards from Wildland Fire*

### 6.2 References

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*

ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*

DE-AC27-ORP14800 – Section J, Modification 198, Interface No. 19 and 20.

Hader, W. E., 2017, Letter 17-SHD-0040, *Contract No. DE-AC27-08RV14800 – Washington River Protection Solutions LLC Revised Fire Protection Program, TFC-PLN-13, Rev. B, Approval*, November 8, 2017, U.S. Department of Energy, Office of River Protection, Richland, Washington, to KA. Downing

Hanford Fire Department Standard Operating Policy 1.E.22, *Deputy Fire Marshal Qualifications*

HLMI-PRO-FP-50564, *Controls for Safe Hot Work*

HLMI-PRO-OPS-50674, *Occurrence Reporting*

HLMI-STD-FP-50565, *Fire Marshal Permits, Combustible Controls, and Construction/Occupancy Requirements*

HLMI-STD-FP-50566, *Fire Protection Design Criteria*

HLMI-STD-FP-50567, *Fire Protection System Inspection, Testing, Maintenance, and Discrepancies Management*

HLMI-STD-FP-50569, *Fire Hazard Analysis and Fire Protection Assessment Requirements*

HLMI-STD-FP-50570, *Hanford Fire Department Services*

HLMI-STD-FP-50571, *Fire Protection Requirements for Hazardous Material and Used Waste Absorbing Material Storage*

HNF-SD-CP-FHA-003, *222-S Laboratory Fire Hazards Analysis Reports*

HNF-SD-WM-FHA-020, *Tank Farm Fire Hazards Analysis*

HNF-SD-WM-FHA-024, *Fire Hazard Analysis for the Evaporator Facility (242-A)*

NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*

**APPENDIX A - APPLICABLE HLMI ADMINISTRATION FIRE PROTECTION PROCEDURES**

The Hanford Fire Department personnel or other organizations using site-wide procedures perform many of the required activities, but the routines listed below are the responsibility of the facility management of the applicable building(s). (For inspection details, see HLMI-STD-FP-50567.)

**1.0 Project Management Team and Team Coordinator Responsibilities:**

1. Riser Pressure Gages Inspections (monthly/5 years)
2. Control Valve Inspections (weekly/monthly) – Includes PIVs, control, backflow, and alarm isolation valves
3. Fire Extinguisher Inspections (monthly)
4. Fire Barrier Inspections (2 years)
5. Fire Damper Operation (2 years)
6. Fire Door Inspection (yearly)
7. Emergency Light Inspection/Test (monthly/yearly)
8. Exit Sign Inspections (monthly/yearly)

**APPENDIX B - 10 CFR 851 IMPLEMENTATION – FIRE PREVENTION PLAN  
REQUIREMENTS**

<b>29 CFR 1910.39</b>	<b>Plan/Procedure/Process Implementation</b>	<b>Description</b>
1910.39(a)	Tank Operations Contract, DE-AC27-OBR14800 – Section J, Modification 198, Interfact No. 19 and 20.  HLMI-PLN-FP-51082, <i>Fire Protection Program</i>	Application – Fire Prevention Plan
1910.39(b)	HLMI-PLN-FP-51082, <i>Fire Protection Program</i>  Access to this document is maintained on the Hanford Procedures Web Site at all times.  HGET (All badged personnel require this training)	Written/oral – Fire Prevention Plan
1910.39(c)	HLMI-PRO-FP-50564, <i>Controls for Safe Hot Work</i>  HLMI-STD-FP-50565, <i>Fire Marshal Permits, Combustible Controls, and Construction/Occupancy Requirements</i>  HNF-SD-WM-FHA-020, <i>Tank Farm Fire Hazards Analysis</i>  Job-specific work place hazard analysis  Job-specific work packages	Minimum elements – Fire Prevention Plan
1910.39(c)(1)	HNF-SD-WM-FHA-020, <i>Tank Farm Fire Hazards Analysis</i>  HNF-SD-WM-FHA-024, <i>Fire Hazard Analysis for the Evaporator Facility (242-A)</i>  HNF-SD-CP-FHA-003, <i>222-S Laboratory Fire Hazards Analysis Reports</i>  HLMI-STD-FP-50565, <i>Fire Marshal Permits, Combustible Controls, and Construction/Occupancy Requirements</i>	List of major hazards
1910.39(c)(2)	HLMI-STD-FP-50565, <i>Fire Marshal Permits, Combustible Controls, and Construction/Occupancy Requirements</i>  HLMI-STD-FP-50571, <i>Fire Protection Requirements for Hazardous Material and Used Waste Absorbing Material Storage</i>	Procedures to control flammables/combustible wastes

29 CFR 1910.39	Plan/Procedure/Process Implementation	Description
1910.39(c)(3)	<p>Heat producing equipment at the Hanford Site is ordinary industrial equipment available on the open market and manufactures' safeguards are utilized.</p> <p>HNF-SD-WM-FHA-020, <i>Tank Farm Fire Hazards Analysis</i></p> <p>HNF-SD-WM-FHA-024, <i>Fire Hazard Analysis for the Evaporator Facility (242-A)</i></p> <p>HNF-SD-CP-FHA-003, <i>222-S Laboratory Fire Hazards Analysis Report</i></p> <p>HLMI-PRO-FP-50564, <i>Controls for Safe Hot Work</i></p> <p>HLMI-STD-FP-50565, <i>Fire Marshal Permits, Combustible Controls, and Construction/Occupancy Requirements</i></p>	Procedures for safeguards on heat producing equipment
1910.39(c)(4)	<p>Tank Operations Contract, DE-AC27-OBR14800 – Section J, Modification 198, Interfact No. 19 and 20.</p> <p>HLMI-STD-FP-50567, <i>Fire Protection System Testing, Inspection, Maintenance, and Discrepancies Management</i></p> <p>HLMI-STD-FP-50570, <i>Hanford Fire Department Services</i></p> <p>HLMI-PLN-FP-51082, <i>Fire Protection Program</i></p> <p>Due to the nature and diversity of the Hanford Site activities and processes, responsibility for maintaining equipment include multiple processes such as the Flammable Equipment Review Board and personnel designated by job in accordance with specific work packages and associated Job Site Hazards Analysis.</p> <p>The responsible building employees' contact information is located on the "Emergency Response Information" board located in every facility having 11 or more employees.</p>	Employee responsibility for maintaining equipment to prevent or control sources of ignition or fires

<b>29 CFR 1910.39</b>	<b>Plan/Procedure/Process Implementation</b>	<b>Description</b>
1910.39(c)(5)	<p>HGET provides information for the typical employee on common industrial hazards and where to get additional information on any products that may be found in the work environment.</p> <p>Fuel source hazards are evaluated and addressed in the DSA, Facility FHAs, Fire Marshal Permits, Work Packages, and Job Site Hazard Analysis.</p> <p>The Shift Manager is responsible for field activities.</p> <p>The responsible building management employees' contact information is located on the "Emergency Response Information" Board located in every facility having 11 or more employees in the facility.</p>	Employee responsibility – Fuel source hazards
1910.39(d)	HGET FEHIC Training – Course #350561	Employee information - Initial assignment