

Administrative Procedure, Level 1 - Company Wide

CPCC-PRO-FP-54134

Fire Protection in D4 Facilities and Facilities Under Construction

Revision 2, Change 1

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Change Summary

Description of Change

Revise procedure for clarity in work control process.

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1.0 INTRODUCTION**1.1 Purpose**

This procedure defines the process for meeting the requirements for facilities undergoing deactivation, decommissioning, decontamination, and demolition (D4) and for facilities under construction. Fire protection requirements in this procedure for construction, occupancy, and demolition activities meet the intent of National Fire Protection Association (NFPA) requirements, DOE O 420.1C, Chg. 3, *Facility Safety*, DOE O 420.1C, Change 3, *Facility Safety, Implementation Direction*, Nuclear Safety Division, and DOE-STD-1066-2016, *Fire Protection*.

This procedure is a consolidation of applicable basic requirements for D4/construction operations common to the Hanford Site and is not intended to fully replicate the requirements of the source documents. The primary requirements are listed in NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*. Additional requirements may be applicable to specific situations.

1.2 Scope

This procedure provides instructions for providing fire protection at D4 and facilities under construction.

This document also provides instructions to meet the Combustible Control Program (CCP) requirements outlined in CPCC-PRO-FP-54133, *Control of Combustible Materials*, for non-nuclear facilities and less than Category 3 nuclear facilities, as well as additional controls for Category 2 and 3 nuclear facilities. In addition, this document provides CCP criteria that must be established in order to achieve program objectives when the CCPs have been elevated to Technical Safety Requirements (TSR) per the facilities' Documented Safety Analyses (DSA).

For the purpose of this document, "temporary" shall mean less than 180 days.

1.3 Applicability

This procedure applies to U.S. Department of Energy (DOE) facilities undergoing D4 and under construction on the Hanford Site that are under the control and management of Central Plateau Cleanup Company (CPCCo), and that experience construction or D4 activities requiring compliance with life safety codes and standards. The procedure applies to personnel performing fire protection activities at D4 and construction facilities.

1.4 Implementation

This procedure becomes effective upon publication. Implementing facility procedures shall be revised within 90 days from this procedure's effective date.

New signage (e.g., smoking area restrictions) will be installed within 90 days of this procedure's effective date.

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2.0 RESPONSIBILITIES**2.1 Responsible Building Manager**

The Responsible Building Manager is designated by the Responsible Manager of the Project Organization

- Ensures the applicable forms are requested at the permitting phase for completion by a Deputy Fire Marshal (DFM)/Fire Protection Engineer (FPE), as required by CPCC-PRO-FP-40422, *Fire Marshal Permit Interfaces*, prior to construction, including:
 - *Hanford Fire Marshal Permit Request Form* ([/firepermit/](#))
 - *HFD Construction/Demolition Fire Safety Inspection Checklist* (Site Form A-6002-692)
- Addresses construction/demolition/maintenance-related administrative controls and precautions at critical stages of the project, developed as part of fire protection analyses by the DFM/FPE in accordance with NFPA 1, *Fire Code*; NFPA 241; and the facility's Life Safety Analysis, performed either independently or as part of the fire hazards analysis (FHA) or facility fire protection assessment (FFPA).
- Maintains a copy of the FHA and or FFPA, *HFD Construction/Demolition Fire Safety Inspection Checklist*, construction/demolition fire safety plan, and associated Hanford Fire Marshal (HFD) Permits within the project files
- Notifies affected planners, Construction/maintenance Field Work Supervisors, and Operations, and personnel requesting access to the subject building of the egress features, access limitations, fire/life safety administrative controls and precautions, and HFD Fire Marshal Permits.
- Ensures the safe working condition of handrails, guard rails, stairs, walking and working surfaces, or approved compensatory measures for the area of work to be performed and along at least the designated egress path are maintained.

2.2 Project Management

Project Management ensures that the cognizant FPE/DFM is notified of the project meetings, wherein project scope and applicability of Hanford Fire Marshal (HFM) Permits, the Life Safety Analysis, and fire prevention programs are discussed especially with regard to NFPA 241 requirements for D4 and construction projects. Additional Project Management responsibilities are identified in the process steps in Section 3.0 as they arise based on the specific issues at hand.

2.3 Project Safety and Health Manager

Coordinates with the cognizant FPE/DFM and provides input for non-fire emergency response interface with HFD, ensures that pre-incident plans fully address precautions or controls, and that these controls are accurately documented in the pre-incident plan.

2.4 Fire Protection

The cognizant FPE/DFM:

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- Engage in planning, scheduling, and development processes to the extent needed to proactively address fire safety concerns.
- Coordinates the physical inspections with the Responsible Building Manager (RBM) for the completion of HFD Construction/Demolition Fire Safety Inspection Checklist, makes recommendations as needed, and assists in the resolution of discrepancies. (Provide a completed copy of the completed checklist to the Responsible Building Manager.)
- Coordinates with the Responsible Building Manager, Safety and Health Manager, Facility Management (as applicable), and the Hanford Fire Department in support of the completion of the Hanford Fire Department Contractor Pre-Incident Plan Request. Additional requests to review and revise the pre-incident plan should be considered significant milestones as changes occur in the project. (Request and distribute a copy of the pre-incident plan to the Responsible Building Manager, Safety and Health Manager, and Facility Manager [as applicable] for factual accuracy review and reference.)
- Completes a life safety analysis in support of the development of construction permits, using a graded approach, based upon the scope and complexity of the project.
- Completes HFM permits, including applicable precautions, limitations, and controls in accordance with CPCC-PRO-FP-40422 and obtains DFM permit approval, if separately qualified.

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3.0 PROCESS**3.1 Life Safety**

The general principles of NFPA 101, *Life Safety Code*, are taken into consideration when determining the adequacy of life safety features (e.g., automatic sprinkler system, fire detection, and alarm system, exit lighting, fire doors) in buildings undergoing construction or demolition (and other D4 related activities). The requirements are established on a case-by-case basis as work is being performed in the facilities. Specific criteria for associated permitting requirements is described in CPCC-PRO-FP-40422, Section 3.0.

The life safety analysis is performed to determine the adequacy of the life safety features of any building prior to undergoing D4 or construction in accordance with CPCC-PRO-FP-40420, *Fire Protection Analysis*. The work area is periodically reviewed by the cognizant FSO/FPE/DFM versus the life safety basis assumptions and controls for corrective action or revisions in controls as needed.

The general principles of NFPA 101 are incorporated into designs and work packages for new construction, modifications, remodeling, and surveillance and maintenance mode conditions as well. The life safety aspects of NFPA 241 are maintained for all areas in which construction, remodeling, modifications, size reduction, removal, and D4 activities are conducted.

If any principle of NFPA 101 or NFPA 241 cannot be met, this is explained, and any compensatory measures are detailed in the applicable HFM Permit.

3.1.1 Life Safety for Cold & Dark, Surveillance & Maintenance, and Deactivation & Demolition

At the Hanford Site, there are facilities in one of the following three modes for preparing the buildings for eventual demolition. These three states are:

- Cold and Dark
- Surveillance and Maintenance (S&M)
- Deactivation and Demolition, Decontamination, and Decommissioning (D4)

The Hanford Site has been in the progressive mode of demolishing structures that were originally constructed for the production of nuclear material for weapons. As each structure has been identified for eventual demolition, they have entered into various states of closure. Some were closed down and prepared for immediate demolition. Some have been closed and are being maintained in a “minimum safe” (or “min-safe”) operating condition to allow for partial use while deactivating and making them safe for demolition. Others are completely closed off and only accessed at odd intervals from annually to once a decade.

In each of the categories of buildings, it has been necessary to deactivate utilities in order to make them safe from ignition sources for fire and remove the necessity of maintaining such systems.

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These buildings, or portions of buildings, are considered “normally unoccupied” from a Life Safety Code standpoint. Such a designation allows life safety systems such as fire sprinklers, fire alarms, and standpipes to be completely deactivated. In other buildings, doors have been sealed, emergency lighting has been disconnected, traditional exit routes are no longer maintained, and other changes to the buildings have been made. Where reduction in fire/life safety systems is needed, a detailed study is made and agreed upon by the various stake holders. The changes are reflected in such documents as Fire Hazards Analyses (FHA), Facility Fire Protection Assessments (FFPA), and design and engineering change reviews, as applicable to the scope and complexity of the facility.

A summary of codes and standards applicable to Cold & Dark, Surveillance & Maintenance, and Deactivation & Demolition facilities is provided in Appendix B.

3.1.2 Performance-Based Approach to Guided Tour Activities for Cold & Dark, or Surveillance & Maintenance Mode Facilities

Often buildings in Cold & Dark or Surveillance & Maintenance mode may be subject to periodic tours. These differ in scope and hazards from typical surveillance and maintenance mode activities in that:

- The tour is arranged along a prescribed path with the ability to avoid high hazard areas of a building.
- Tour participants are restricted to visual observations from the prescribed path, only.
- Access is managed and controlled by designated and trained individuals familiar with the area, its hazards, and controls (establishing heightened situational awareness).
- No actual “work” is performed on the facility features or equipment.

Cold & Dark or Surveillance & Maintenance mode facilities are not open for general occupancy. In fact, these facilities meet the NFPA 101 - 2021, 7.2.1.1.3.1, definition of normally unoccupied and under non-tour periods are staffed by 10 or fewer persons trained in facility safety protocols (see Appendix A for the code section details). Under tour conditions, participants do not have free access to the general premises. Instead, they are confined to a prescribed path and controlled by a knowledgeable set of trained guides. This condition differs from the life safety hazards posed in a facility in which the public is allowed to roam at will within the space.

Based upon these conditions, a guided tour within these facilities is permissible if the following conditions are met:

1. A life safety review is conducted and results documented for the proposed tour route by a qualified Fire Protection Engineer, and it is determined that tour participants are not exposed to any high hazard conditions. This includes, but is not limited to:
 - a. Preparation of general facility arrangement drawings defining the approved tour path, location of general and emergency lighting (if available), and hazard areas to avoid, emergency egress path and doors, emergency assembly points.
 - b. Identification of potentially non-compliant means of egress features and associated compensatory measures.

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2. Tour procedures are developed, documented, and approved by the Qualified Fire Protection Engineer that address tour guide responsibilities for:
 - a. Hazard recognition,
 - b. Safety briefing of tour participants prior to taking the tour
 - c. Adherence to following the prescribed tour path,
 - d. Management of tour participants, including the ratio of tour guides to tour participants
 - e. Distribution of emergency communication devices and flashlights (unless QFPE approved battery-backed lighting is provided for egress)
 - f. Accountability plan and process
 - g. Evacuation procedure in an emergency
3. A formal process is established to ensure that the tour path, means of egress features, and life safety compensatory measures are met, in advance of the tour.
4. The changes are reflected in such documents as FHAs, FFPAs, and design and engineering change reviews, as applicable to the scope and complexity of the facility.
5. The applicable life safety evaluation is reviewed with the DFM for concurrence.
6. A Hanford Fire Marshal's Permit is developed and maintained covering the controls and precautions established as a result of the life safety analysis, specifically for guided tour activities.

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3.2 Combustible Control and Housekeeping

The control of combustible materials should be maintained as low as reasonably achievable (ALARA) and conform to the minimum requirements listed below for nuclear facilities unless the facility FHA specifies other requirements. (Ref. DOE O 420.1C, Chg. 3) Specific criteria for associated permitting requirements is described in CPCC-PRO-FP-40422, Section 3.0. Details on control of combustibles is found in CPCC-PRO-FP-54133, *Control of Combustible Materials*. This procedure applies to formal Combustible Control Programs (CCPs) as well as describing general combustible controls and good practices for all CPCCo facilities.

In addition to the requirements applicable to nuclear facilities listed, the following minimum criteria should be met when the CCPs are elevated to TSR status by the facility DSA. (Ref. DOE-STD-1066-2016, Section 5.1.4.3)

- The combustible control program intent and bases are clearly defined and include the following:
 - The objectives.
 - The key elements of the program such as surveillance requirements, combustible threshold criteria and bases for the criteria, and recovery actions (as necessary) when surveillance requirements are not met.
- If a quantitative combustible loading threshold cannot be determined, then an acceptable qualitative alternative limit(s) is established with a basis to ensure that hazardous conditions are controlled.
- When combustible controls are selected to control potentially hazardous conditions in order to achieve necessary risk reduction, it is verified that the program or project can comply with the proposed controls prior to finalization of acceptable controls.

Actionee	Step	Action
NOTE: <i>Appropriate combustible control methods include:</i>		
	<i>a.</i>	<i>Establishing threshold quantities.</i>
	<i>b.</i>	<i>Establishing combustible material spacing/separation/location requirements.</i>
	<i>c.</i>	<i>Identifying surveillances to demonstrate combustible quantities are below threshold quantities.</i>
	<i>d.</i>	<i>Using alternative storage locations.</i>
	<i>e.</i>	<i>Establishing a means for controlling ignition sources.</i>
	<i>f.</i>	<i>Establishing a qualitative CCP (such as ALARA) when a basis is developed that demonstrates that combustibles can be maintained below derived threshold quantities.</i>

Cognizant FPE/DFM	1.	ENSURE the location and arrangement of flammable and combustible liquids control areas are analyzed, approved, and incorporated into HFM Permits.
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Actionee	Step	Action
Cognizant FPE/DFM	2.	ENSURE the location and arrangement of hazardous materials and hazardous waste use and storage are analyzed, approved, and incorporated into HFM Permits.
	3.	ENSURE the location and arrangement of compressed gas cylinder use and storage are analyzed, approved, and incorporated into HFM Permits.
FPE, Fire Safety Officer (FSO), or trained Responsible Manager's delegate	4.	Weekly REVIEW the work area or as defined by the cognizant FPE. <ol style="list-style-type: none"> a. DOCUMENT non-conformant conditions in accordance with CPCC-PRO-QA-052, <i>Issues Management</i>, using an <i>Initial Construction/Demolition Fire Safety Inspection Checklist</i> (Site Form A 6002-692), or similar pre-printed format, <u>AND DISCUSS</u> with project management prior to issuance.

NOTE: *Combustibles stored in closed metal cabinets are permitted in corridors if the cabinets do not reduce the required exit width of the corridors.*

Responsible or D4 Manager	5.	ENSURE combustible materials are maintained ALARA and conform to the minimum requirements for nuclear facilities unless the facility FHA specifies other requirements.
	6.	In addition to the requirements applicable to nuclear facilities, ENSURE the minimum criteria are being met when the CCPs are elevated to TSR status by the facility DSA.

3.3 Fire Protection

The FHA or FFPA designates where fire-related construction (fire barriers, fire doors, fire and smoke dampers, etc.) are required. The FHA or FFPA incorporates criteria for relaxation of these requirements based on progressive reduction of fire hazards in conjunction with the overall project plan.

Fire barrier requirements include:

NOTE: *Some fire doors are specifically designed to be held open with automatic closing devices such as fusible links or smoke detector hold-open magnets.*

- Fire or smoke dampers are held open only with approved operating devices.
- Fire doors are not chocked or blocked open. Fire doors that are normally in the closed position are not held open unless compensatory measures are in place and approved by the cognizant FPE.
- The locations and boundaries of all fire barriers within a building are identified on drawings. Fire doors and fire and smoke dampers should also be identified in the field to help facilitate testing and maintenance.

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- All fire barrier penetrations are provided with approved, through-penetration fire stops and/or protected by approved operable fire doors, fire dampers, or fire windows having the appropriate fire-resistive ratings.
- Devices that hold the latch in the retracted position are prohibited on fire exit hardware, unless such devices are listed and approved for such a purpose.

Fire extinguisher requirements include:

- For permanent locations:
 - The location and type of portable fire extinguishers are in accordance with the requirements of NFPA 10, *Standard for Portable Fire Extinguishers*.
 - Portable fire extinguishers are mounted on hangers, stored in cabinets, or off the floor in a way that allows for tip-over protection (except for wheeled types). Portable fire extinguishers provided for vehicles are mounted or otherwise safely secured.
 - The location and arrangement of fire extinguishers is in accordance with the review and approval of the cognizant FPE/DFM, per NFPA 241.
- Additional fire extinguishers may be needed where hot work or containment structures are in operation.
- Portable metal carts with “Fire Extinguisher” signs may be used for temporary location of portable fire extinguishers.
- For extinguishers brought into the facility for a specific work evolution and brought back out at the end of the shift are permitted to be placed on the ground in the work area

Actionee	Step	Action
Responsible Building Manager	1.	ENSURE fire barrier requirements are completed, implemented, adhered to, and met.
	2.	DEVELOP, with assistance from the cognizant FPE/DFM, an overall D4 or construction fire safety program in accordance with NFPA 241. This program should be building-specific, utilizing a graded approach to address current D4 and construction activities.
Cognizant FPE/DFM	3.	ASSIST the Responsible or D4 Manager in the development of a construction fire safety program.
	4.	Beginning at the conceptual phase of the project, UPDATE the facility FHA or FFPA to address D4 or construction activities.
	5.	Prior to implementation, SUBMIT the D4 or construction fire safety program for review and concurrence to the Hanford Fire Marshal Office (HFMO).

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<i>Actionee</i>	<i>Step</i>	<i>Action</i>
Responsible Building Manager	6.	COORDINATE updates of pre-fire plans with the HFMO in accordance with NFPA 241 prior to start of actual work and at periodic intervals as agreed upon by the HFM.
	7.	COORDINATE the location and arrangement of fire protection equipment with and subject to the approval of the cognizant FPE/DFM, as part of the construction fire safety program and Hanford Fire Marshal Permit process.
	8.	VISUALLY INSPECT fire protection equipment location and condition daily for compliance with the work package of all active work areas.
FPE/FSO or trained Responsible Manager's delegate	9.	CONDUCT weekly recorded fire prevention and housekeeping inspections with reports reviewed by the Responsible Building Manager.
	10.	MAINTAIN the inventory and location of portable fire extinguishers for reference and future verification inspections. <ul style="list-style-type: none"> ENSURE portable fire extinguishers are removed from the area when D4 or construction tasks are completed.
	11.	Prior to commencing actual work in the affected area, VERIFY portable fire extinguishers for D4 and construction activities are placed in accordance with NFPA 241. <ul style="list-style-type: none"> ENSURE portable fire extinguishers are inspected on a monthly basis by the appropriate building owner, administrator, or their representative.
Cognizant FPE	12.	APPROVE the replacement and relocation of any portable fire extinguisher.
	13.	REVIEW <u>AND</u> APPROVE all portable fire extinguisher purchase orders. <ul style="list-style-type: none"> TRANSMIT information on any new or existing portable fire extinguisher that has changed locations or has been removed from service to the Hanford Fire Department (HFD) via ^HFD Extinguishers (HFDE@[REDACTED]).

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3.4 Construction

Fire protection requirements for construction include:

- A water supply for fire protection is made available as soon as combustible material accumulates. The required water supply is determined by the FHA or FFPA.
- Where underground water mains and hydrants are to be provided, they are installed, completed, and in service prior to commencing work on any structure.
- Protection is provided to separate an occupied portion of the structure from a portion of the structure undergoing alteration, construction, or demolition operations when such operations are considered as having a higher level of hazard than the occupied portion of the building. Fire separation walls s have at least a 1-hour fire resistance rating.
- Where sprinklers are required for safety to life, the building is not occupied until the sprinkler installation has been entirely completed and tested so that the protection is not susceptible to frequent impairment caused by testing and correction.
- Accumulations of combustible forms or form lumber are prohibited, unless a designated location is approved by the cognizant FPE.
- Combustible forms or form lumber are removed from the structure as soon as stripping is complete, unless they are used in a subsequent pour.
- Combustible yard storage is not within 30 ft. of a structure [NFPA 241 - 2022, 7.6.3]

Location of buildings and required exposure separation distances comply with NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures*, and meet the following requirements, unless otherwise analyzed by a QFPE:

- At least 20 ft. from major buildings.
- At least 35 ft. from wildland vegetation.
- At least 25 ft. from designated smoking areas and combustible storage.
- At least 25 ft. from all portable fuel-fired equipment, such as generators, light stands, and compressors.

Vehicle Parking (This section is intended as general guidance and is not intended to supersede review and approval of specific parking locations.)

The requirements for parking apply to all vehicles, including motorcycles, golf carts, etc. This section is not intended to apply to construction or heavy equipment, which are covered under CPCC-PRO-FP-54134, *Fire Protection in D4 Facilities and Facilities Under Construction*.

- Plans for new designated parking areas, vehicle charging stations, and refueling locations require QFPE review and approval.
- Vehicles shall be parked in designated parking areas or loading zones. For locations that do not have designated parking, such as remote sites and S&M facilities, parking is permitted so long as the location is at least 10 ft away and is not uphill from a structure or emergency responder access, including fire lanes, fire hydrants, standalone fire department connections.

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Stairs, platforms, ramps, walking and working surfaces, guard rails, handrails, mid-rails, and toe-boards are constructed:

- In accordance with NFPA 101.
- In accordance with plans reviewed by cognizant FPE and approved by DFM in advance of procurement.
- Of noncombustible construction.
 - Where this requirement cannot be met, the cognizant FPE will determine if a substitute is allowable.
- In accordance with a Hanford Fire Marshal Construction Permit that has been issued in advance of the work.

Plans for all Hot Work, off-road activity, and flammable and combustible liquids and gases or hazardous chemical usage are submitted to the FPE for review per CPCC-STD-FP-54135, *Control of Compressed and Flammable Gases*, and CPCC-STD-FP-554137, *Control of Flammable and Combustible Liquids*.

- Fuel-fired generators and light plants comply with CPCC-PRO-FP-54131, *Fueled Equipment and Heat-Producing Appliances*.
- Construction and other Temporary or Maintenance Lighting
 - Light Emitting Diode (LED) lamps and fixtures are used in lieu of halogen and incandescent lighting to reduce the potential personnel burn and ignition source hazards.
 - Commercial lighting strings are UL listed, consisting of heavy duty construction-rated cord sets, individual bulb guards, connected to GFCI protected power sources.
 - Field spliced or insulation repairs are not permitted unless otherwise approved by a qualified electrical engineer
 - Lighting, associated cords, and power connectors are arranged and supported to minimize interferences with the established means of egress, separation distances to combustible storage or operations, and to prevent physical damage to the lighting or other equipment.
- Cooling equipment is electrically powered and uses non-combustible refrigerant per CPCCo Fire Protection Engineering.
- Fire protection is provided on all construction sites, as required by applicable sections of NFPA 241 and NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas*.

3.5 Mobile Office Trailer Construction and Installation

- Conform to all requirements detailed in the above Construction section.
- Interior materials are NFPA Class A with a flame spread rating of 25 or less, and smoke generated rating of not more than 450.

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- Roof is of UL Class A assembly.
- Interior arrangement of aisles, hallways, and means of egress conform to NFPA 101.
- Plans reviewed by cognizant FPE and approved by DFM in advance of procurement.
- Groupings of structures totaling 5,000 sq. ft. or more require at least two fire hydrants within 300 ft. of the area and automatic sprinkler protection.
- Skirting or non-combustible wire mesh is installed around both the mobile office and stairs or platforms to prevent combustible material accumulations.
- Use of the fully installed mobile office is conditioned upon:
 - Notification of the cognizant FPE to arrangement an occupancy inspection.
 - Completion of the Hanford Occupancy Permit Inspection Checklist.
 - Issuance of an approved Hanford Fire Marshal Occupancy Permit.

Actionee	Step	Action
Responsible Manager/DFM	1.	ENSURE fire protection requirements are completed, implemented, and met.
	2.	OBTAIN a HFM Permit prior to beginning construction or installation, which includes excavation and site preparation work.
	3.	Determine the need for using the Construction/Demolition Fire Safety Inspection Checklist for the initial inspection based on complexity and scope of activity and the potential for fire and life safety concerns
	4.	Prior to the start of work, ENSURE an <i>Initial Construction/Demolition Fire Safety Inspection Checklist</i> (Site Form A-6002-692) is completed, if required.
	5.	ENSURE the following storage actions: <ul style="list-style-type: none"> • Temporary storage of equipment to be installed, combustible construction materials, or combustible packing materials are not permitted in unprotected structures under construction unless authorized by the authority having jurisdiction (AHJ). • Storage is not permitted in protected structures until protection is in service.
	6.	PROVIDE fire protection on all construction sites, as required by applicable sections of NFPA 241 and NFPA 1141.
	7.	Where underground water mains and hydrants are to be provided, ENSURE they be installed, completed, and in service prior to commencing work on any structure.

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Responsible Manager/DFM	8.	<p>PROVIDE <u>AND</u> MAINTAIN fire department vehicle access as follows:</p> <ul style="list-style-type: none"> • The access roads have an unobstructed driving surface width of at least 20 ft. during all weather conditions and be able to withstand the live loads of fire department apparatus. • In addition, all access routes do not have any overhead obstacles lower than 13 ft. 6 in. in height for clearance of fire department apparatus.
Responsible Building Manager	9.	<p>PROVIDE <u>AND</u> MAINTAIN non-emergency tie-ins to fire hydrants as follows:</p> <ul style="list-style-type: none"> • <i>Non-Emergency Hydrant Tie-In Permit</i> (Site Form A-6003-681) must be prepared by the requester with assistance from and approval by the applicable water purveyor. The completed form shall be forwarded to HFD Operations for review and approval. The permit also requires approval by a DFM if it is to be issued for more than 90 days. • Non-emergency tie-ins to fire hydrants located within nuclear facility boundaries require the performance of an unreviewed safety question (USQ) review in accordance with an established process. The USQ number shall be recorded on the <i>Non-Emergency Hydrant Tie-In Permit</i> (Site Form A-6003-681). • The user shall coordinate with Water Utilities the installation of a non-rising-stem gate valve with a 6.4 cm (2.5 in.) National Hose (NH) female inlet and a NH male or female outlet on the hydrant being used and either a 6.4 cm (2.5 in.) or an 11.5 cm (4.5 in.) non-rising stem gate valve with a NH female inlet and a NH male outlet on one of the remaining hydrant outlets. • The user shall provide and use only approved fire hydrant wrenches to open and close a fire hydrant. Pipe wrenches shall not be used to open a hydrant. • The user shall observe all precautions specified on the permit to prevent damage to the fire hydrant and hoses, including freezing weather conditions.
	10.	<p>To protect the site water systems from contaminants backflow, INSTALL prevention devices as required per HMIS-RD-FM-10361, <i>Controlling Cross Connections</i>. The applicable water purveyor shall approve all backflow prevention device installations.</p>

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3.6 Deactivation, Decontamination, Dismantlement and Demolition (D4)

This section is a consolidation of applicable requirements for fire protection during D4 operations and is not intended to fully replicate requirements of source codes and standards. The primary requirements of NFPA 241 are applied on a case-by-case basis as part of the FHA process by the cognizant FPE.

Fire prevention requirements for demolition include the following:

- Flammable and combustible liquids are drained from tanks and machinery reservoirs in a safe manner and removed from the building prior to demolition.
- Smoking is prohibited throughout demolition areas.
- For lighting requirements: see “Construction and other Temporary or Maintenance Lighting” item in section 3.4, *Construction*.
- If demolition includes the use of explosives, see CPCC-STD-FP-54136, *Control of Explosives*.
- Prior to demolition, gas supplies are turned off and capped at a point outside the building, and gas lines inside the building are purged after capping.
- Cooling equipment is electrically powered and uses non-combustible refrigerant per CPCCo Fire Protection Engineering.
- Where a building is equipped with fire protection systems, the deactivation of the systems is in accordance with Section 3.6 of this procedure.
- For donning/doffing stations: All new furniture and shelving obtained after May 2023 shall be noncombustible (wood or fire-retardant wood is not acceptable). Existing wood furniture installed prior to May 2023 shall be of fire-retardant materials or as reviewed and approved by the FPE. It is preferred that donning and doffing stations be located outside of the building (e.g., an approved change-out relocatable structure).
- For plastic sheeting: Plastic sheeting is tested and documented as meeting NFPA 701, *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*, Test 2. Bulk plastic sheeting is maintained either in enclosed metal cabinets or covered with an approved welding blanket.
- For radiological, biological, asbestos, or other containment enclosures constructed 90 days or greater than the date of issuance of this revision: Containment enclosures are subject to the provisions of NFPA 241, CPCC-STD-FP-54133, *Control of Combustible Materials*, and CPCC-STD-FP-54128, *Fire Protection System Design*. All combustible storage and cabinets, flammable/combustible liquids storage and cabinets, hazardous materials waste storage and cabinets, trash receptacles, and temporary electrical distribution units are located at least 10 ft. away from containment enclosures.
- For fixative application areas: The use of fixatives for contamination control shall be subject to the provisions of CPCC-STD-FP-54133, *Control of Combustible Materials*, and CPCC-STD-FP-54137. Where practicable, approved fire resistive thermal barrier materials should be used as fixatives and not contain flammable solvent bases. Where this cannot be achieved, the arrangement of exhaust ventilation and need for hazardous area classified electrical and lighting equipment, shall be evaluated by the cognizant FPE and a qualified

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Industrial Hygienist, as part of the work planning activity. The need for additional fire prevention controls shall be reviewed and identified within the HFD Permit.

Actionee	Step	Action
Responsible Building Manager	1.	ENSURE the fire protection requirements are completed, implemented, and met.
Cognizant FPE	2.	<p>REVIEW <u>AND</u> APPROVE submitted D4 work packages.</p> <ul style="list-style-type: none"> • Work packages for D4 tasks shall address and maintain combustible materials to an ALARA level to the extent practicable. <ul style="list-style-type: none"> ○ Each D4 work package shall address the nature, type, amount, and method of control for all hazardous materials, flammable/combustible liquids, and ordinary combustibles (This is commonly achieved within the JHA and HFM Permit). ○ The general use and arrangement of job boxes, enclosed metal cabinets, and safety cabinets shall be addressed in the prerequisites for each work package as needed.
	3.	<p>EMPLOY noncombustible (e.g., metal, etc.) assemblies.</p> <ul style="list-style-type: none"> • Pallets and scaffold planks shall be noncombustible. • Containment enclosures shall be framed using noncombustible stud and channel materials. <ul style="list-style-type: none"> ▪ If a wood substitute is required, it shall be an approved fire-retardant assembly, subject to prior evaluation and approval by the cognizant FPE.
	4.	REVIEW radiological step-off pad areas and donning/doffing stations.
	5.	PRE-APPROVE use of plastic sheeting.
	6.	Prior to installation, REVIEW <u>AND</u> APPROVE plans for new containment enclosures.
	7.	<p>REVIEW <u>AND</u> APPROVE work packages associated with any containment structure.</p> <ul style="list-style-type: none"> • Work packages shall address combustible controls and fire prevention precautions within and surrounding the containment structure.

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Actionee	Step	Action
Cognizant FPE, FSO, or trained Responsible Manager's Delegate	8.	IF work is being performed inside a containment structure, <u>THEN</u> visually INSPECT at least daily the arrangement and combustible controls for each area.

3.7 Deactivation of Fire Systems – Overview

An HFM Permit is obtained from the DFM prior to the deactivation of any fire protection feature.

The need for fire protection features in facilities undergoing D4 activities is governed by the fire risks to the public, workers, fire fighters, and the potential release of hazardous and radiological materials to the environment. Property protection and program continuity are not normally factors to consider unless the facility possesses a definable value and/or mission as determined by the AHJ, or if a fire would event, including clean-up, is anticipated to exceed the risk threshold of DOE or the Project.

The process for substantiating and documenting proposed fire protection feature deactivation and the level of required documentation to support deactivation is outlined in the flowchart shown in Section 7.0, "Hanford's Path for Deactivation of Fire Systems." It is acceptable to use a "graded" approach in preparing the analysis for justifying fire protection feature deactivation. HFD-PRO-FS-60742, *Deactivation of Facility Fire Protection Features*, details the process for fire protection feature deactivation.

3.7.1 Facilities with a Fire Hazards Analysis (FHA)

The FHA is revised as appropriate to address the proposed fire protection feature deactivation. The revision is performed in accordance with the requirements of CPCC-PRO-FP-40420. Items to consider include but are not limited to the following:

- Maximum Possible Fire Loss (MPFL) Determination
- Exposure Assessment
- Water Supply Assessment
- Life Safety Review
- Firefighter Safety Review

3.7.2 Facilities without a Fire Hazards Analysis (FHA)

A deactivation analysis is completed by the cognizant FPE with assistance from the requesting organization in accordance with HFD-PRO-FS-60742 (formerly SOP 4.10), *Deactivation of Facilities Fire Protection Features*. The deactivation analysis is composed of the following elements:

- Introduction
- Summary
- Facility Description/Construction

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- MPFL Evaluation
- Radiological/Hazardous Material Release Assessment
- Manual Fire Suppression Water Assessment (HFD-PRO-FS-60742)
- Exposure Analysis per NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures* (HFD-PRO-FS-60742)
- Personnel Occupancy/Life Safety Features
- Firefighter Safety Assessment
- Conclusions/Recommendations

3.7.3 Deactivation Request

The facility or project organization requesting the deactivation of a fire protection feature (see section 3.6.10 for the process steps) is responsible for the following the HFM permit request as applicable:

- The acceptability of fire protection feature deactivation per nuclear safety requirements.
- A USQ review in accordance with an established process.
- An approved schedule for demolition.

3.7.4 Deactivation Decision Requirements

Fire protection feature deactivation is not permitted if determined to not be acceptable per nuclear safety requirements (i.e., USQ evaluation).

Fire protection feature deactivation proceeds with no timetable for facility demolition if the following is concluded or completed:

- Analysis confirms that the MPFL does not exceed DOE criteria for requiring a fire protection feature
- Analysis confirms that NFPA and other pertinent codes and standards criteria support fire protection feature deactivation
- Hanford Fire Chief concurs the risk is acceptable

Fire protection feature deactivation may proceed provided facility demolition begins within 30 days following deactivation, and the Hanford Fire Chief concurs the risk is acceptable, even if the following is concluded:

- Analysis confirms that the MPFL exceeds DOE criteria for requiring a fire protection feature
- Analysis confirms that the MPFL does not exceed DOE criteria for requiring a fire protection feature, but the financial and political risks associated with a fire in the facility with the presence of radiological and/or hazardous materials are not acceptable to CPCCo
- Analysis confirms that NFPA and other pertinent codes and standards criteria require the feature to remain in place

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3.7.5 Buildings Consisting of One Fire Area

For buildings consisting of one fire area that contain one or more fire protection features (i.e., one fire area being protected by more than one sprinkler riser), demolition of the entire building commences within 30 days following the deactivation of one or all the fire protection feature(s) unless the FHA or the deactivation analysis justifies an alternate demolition commencement time.

3.7.6 Buildings with Multiple Fire Areas

For buildings having multiple fire areas and a single fire protection feature or multiple fire protection features, deactivation of the fire protection feature, or features is performed on the basis of fire areas in a manner to ensure the fire areas of the building not planned for demolition maintain fire protection. Demolition of the fire areas in which fire protection has been deactivated begins within 30 days following deactivation unless the FHA or the deactivation analysis justifies an alternate demolition commencement time.

3.7.7 Buildings with Redundant Fire Protection Systems

For buildings or portions of buildings having redundant fire protection systems as defined by DOE O 420.1C, Chg. 3, and DOE-STD-1066-2016 (such as both an automatic sprinkler system and a smoke detection system), a graded approach for deactivation of one of the systems may be applied when the need for redundant protection is no longer required by DOE criteria and with concurrence of the HFM.

3.7.8 Fire Protection for a Particular Component

The deactivation of special fire protection features installed solely to protect a particular component in a facility or a unique enclosure or area(s) within a facility such as a dip tank, glovebox, standpipe, respectively, etc., may be justified using a graded approach and may proceed with concurrence of the HFM and the Hanford Fire Chief in accordance with the procedure for preparation of a deactivation analysis and subsequent Deactivation Permit. provided the applicable criteria below are met:

- The hazard that required the fire protection has been removed
- The feature is not required by the FHA or deactivation analysis to mitigate MPFL consequences
- Analysis confirms that NFPA and other pertinent codes and standards support fire protection feature deactivation

3.7.9 Fire Protection Features Deactivation Process

In addition to the above specific requirements for fire system deactivation, the following is required for all proposed fire protection feature deactivations:

- Implement administrative controls as prescribed by the FHA or deactivation analysis
- Complete an HFD response assessment to evaluate safety to HFD personnel and establish proposed tactics in responding to a fire following deactivation
- Revise the pre-incident plan

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- Obtain an HFM Permit

Fire protection feature deactivation is not permitted if determined to not be acceptable per nuclear safety requirements.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
NOTE:		<i>The process for substantiating and documenting proposed fire protection feature deactivation and the level of required documentation to support deactivation is outlined in the flowchart shown in Appendix A.</i>

Cognizant FPE	1.	Prior to the deactivation of any fire protection feature, OBTAIN an HFM Permit from the HFMO.
	2.	For facilities with an FHA, REVISE FHA to address the proposed fire protection feature deactivation.
	3.	For facilities without an FHA, COMPLETE a deactivation analysis with assistance from the requesting organization/facility.
Requesting Organization/ Facility	4.	COMPLETE an HFM permit request as follows: <ul style="list-style-type: none"> a. EVALUATE the acceptability of fire protection feature deactivation per nuclear safety requirements. b. OBTAIN a USQ review in accordance with established process. c. OBTAIN a PAAA review to evaluate potential liabilities with fire protection feature deactivation. d. IF hazardous and/or radioactive materials are present, <u>THEN</u> EVALUATE potential company-level financial and political risks of fire protection feature deactivation. Evaluation shall include the following elements: <ul style="list-style-type: none"> • Environmental evaluation of potential releases • Hazardous material release and cleanup evaluation • Radiological material release and cleanup evaluation • Groundwater evaluation for fire suppression runoff e. PROVIDE a letter to the HFD confirming that potential financial and political risks are acceptable. f. PROVIDE an approved schedule for demolition.

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<i>Actionee</i>	<i>Step</i>	<i>Action</i>
Requesting Organization/ Facility	5.	PROVIDE completed request to the cognizant FPE

NOTE: *Fire protection feature deactivation may proceed provided facility demolition begins within 30 days following deactivation, subject to the provisions of Section 3.6.4.*

Cognizant FPE	6.	<p>DETERMINE permit request adequacy <u>AND</u> OBTAIN DFM approval <u>AND</u> Hanford Fire Chief concurrence to begin deactivation.</p> <p>a. For buildings consisting of one fire area that contain one or more fire protection features, BEGIN demolition within 30 days following the deactivation of one or all the fire protection feature(s) unless the FHA or the deactivation analysis justifies an alternate demolition commencement time, subject to the provisions of Section 3.6. 4..</p> <p>b. For buildings or portions of buildings having redundant fire protection systems, and when the need for redundant protection is no longer required as concurred by the HFM, APPLY a graded approach for deactivation.</p> <p>c. For the deactivation of special fire protection features installed solely to protect a particular component in a facility or a unique enclosure or area(s) within a facility, APPLY a graded approach <u>AND</u> PROCEED with deactivation with concurrence of the HFM and the Hanford Fire Chief.</p>
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3.8 Facility Transition

NOTE: *Occupied is defined as any time a facility is attended by more than 10 persons or any time the facility is open to general occupancy or the public. [NFPA 101 - 2021, 7.2.1.1.3.1]*

Facilities transitioning from unoccupied to occupied status are re-evaluated per DOE-STD-1066-2016, NFPA 241, and NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*, including applicable provisions of the other chapters of these standards in a graded approach to address life safety, fire hazards, and the potential release of hazardous and radiological materials to the environment during occupied activities such as D&D. Facilities transitioning from occupied to unoccupied are also evaluated for appropriate life safety provisions to address infrequent entries and associated activities.

For buildings undergoing varying degrees of alteration, deconstruction, or demolition, construction and demolition are operationally governed by NFPA 241 from a fire prevention and fire protection standpoint and NFPA 101 for safety to life for occupants and the public. It is important to note that Section 4.6.10 of NFPA 101 - 2021, *Construction, Repair, and Improvement Operations*, in subsections 4.6.10.1 and 4.6.10.2, specifically addresses life safety

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provisions for construction and demolition; taking precedent over other sections of the Code. Specifically, buildings and portions of buildings are permitted to be occupied during construction, repair, alterations, additions, or demolition when the occupied portion has a continuously maintained compliant means of egress and required fire protection features.

- For facilities in which Occupancy activities and one or more of the activities of NFPA 241 exist:
 - The occupied portion conforms to the applicable occupancy chapter(s) of NFPA 101 - 2021 and the applicable sections of Chapters 1 through 10 as applied by each applicable occupancy chapter.
 - Separately, the provisions of provisions of NFPA 101, Section 4.6.10 for the construction, alteration, or demolition segment(s) of the building are applied for areas where those activities occur.
 - Where additional requirements for construction, alteration, demolition, or demolition are specifically addressed by an occupancy chapter, they are also applied.
- For buildings or portions of buildings where construction, alteration, addition, or demolition occurs the standard for life safety is that adequate escape facilities be maintained at all times, “in accordance with the general principles of the Code insofar as they can be reasonably applied for buildings under construction.”
- NFPA 101 relies upon NFPA 241 - 2022, Chapter 4, to establish a fire prevention program, as well as a formal pre-fire plan to provide sufficiently robust administrative controls to offset limited physical protection features present during construction or demolition. This ensures controlled access is limited to trained personnel with situational awareness and that there are strict combustible and ignition source controls.

DOE STD-1066-2016 directs the implementation of NFPA 241 for “Transitional Facilities” (i.e., facilities that no longer have an operational mission and for which the eventual end state is demolition). Outside of the DOE, construction, alteration, additions, and demolition are typically completed in 1 or 2 years. However, for radioactively and chemically contaminated facilities, this process can extend over a period of years. As a result, terms such as “Surveillance and Maintenance Mode,” “Min. Safe,” “Cold and Dark,” “pre-demolition decontamination,” and “D&D” have been used. While each of these has a meaning within the context of the nuclear safety arena, there is no direct correlation to these distinctions in NFPA Codes. Therefore, it is important to describe and analyze the scope and fire hazards within an FHA and clearly determine when a facility has entered into the “Transitional” phase. Concepts, such as applying legacy (formerly operational state) occupancy classifications for non-occupied portions for buildings need to be evaluated and the provisions of NFPA 241 and Section 4.6.10 of NFPA 101 - 2021 need to be addressed.

For vacant buildings, NFPA 1 - 2021, Section 10.12.1, requires that ... “every person owning or having charge or control of any vacant building, premises, or portion thereof shall remove all combustible storage, waste, refuse, and vegetation and is required to lock, barricade, or otherwise secure the building or premises to prohibit entry by unauthorized persons.”

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Reducing the fuel load in a vacant building (buildings used on a seasonal basis are exempt) is critical because, in the event of a fire, having little or no combustible contents inhibits/prevents significant fires.

Section 10.12, requires that "... all fire protection systems be maintained in service, unless otherwise approved by the AHJ." The AHJ for this purpose is the Hanford Fire Marshal.

All fire protection systems are maintained in service in seasonal and vacant buildings unless otherwise approved by the AHJ. (With the approval of the AHJ, fire protection and fire alarm systems in these buildings may be removed from service, see NFPA 1 - 2021, Section 10.12.2.1.) All fire protection systems, including fire alarm, sprinkler, and standpipe systems, and all associated water flow and supervisory alarm systems are maintained in a manner acceptable to the AHJ. The maintenance of the associated alarm systems and supervisory systems is important to ensure that they are monitored properly and have the ability to transmit alarms when needed. DOE experience has demonstrated that once fire systems inspection, testing, and maintenance is curtailed, these systems rapidly deteriorate. As a result, merely shutting off a system so that it may be reactivated at some later date is not usually a viable option. Instead, as stated in NFPA 241, fire systems (both passive and active) should be maintained in service as long as possible into the demolition process and only removed when all feasible combustible loads have been removed. Until that time, proper fire safety is:

- Continue with the operation, supervision, and maintenance programs (per CPCC-PRO-FP-40425, *Fire Protection System Inspection, Testing and Maintenance*).
- Lock all fire protection control valves and conduct regular inspections.
- Convert sprinkler systems to dry-pipe systems if building heat is not provided or convert to non-freeze systems for small, unheated areas.
- Automatic sprinkler impairments should be managed using a formal impairment program, per CPCC-PRO-FP-40426, *Fire Protection System Discrepancies*.
- If it is impractical to heat the building, arrange the automatic sprinkler system for cold weather operation in accordance to appropriate codes/standards. Do not drain the system and do not put it out of service.
- Ensure fire protection control valves, fire department connections and hydrants (public or private) are cleared of any vegetation and other unnecessary combustibles or obstructions.
- Remove or minimize combustible storage and maintain good housekeeping in and around the building(s) (e.g. maintain cleanliness, no trash/rubbish, no unnecessary storage, etc.).
- Eliminate fire hazards within buildings by removing as many combustibles as possible.
- Remove any debris or other combustible items within 25 ft. of any building.
- Cut vegetation short, ideally three inches or less or remove to establish at least a 35 ft. clear space to wildland areas.
- Keep brush and weeds cleared from around buildings, yard transformers and other outside service equipment.
- Remove all waste material such as idle pallets, empty cardboard cartons, or any trash
- Turn off electrical equipment.

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- Secure any utilities that are not going to be kept in service.
- Drain flammable liquid tanks and make sure they are secured by removing them or filling them with sand or concrete.
- Shut off unnecessary plumbing lines if they are exposed to extreme cold weather conditions.
- Where vital areas must remain in service (e.g., utility rooms or exhaust fan areas) and involve liquids:
 - Winterize plumbing, heating, and water systems.
 - Wrap outside pipes.
 - Maintain minimum heat of at least 55 degrees F to protect water lines from freezing and 85 degrees F cooling to prevent humidity and mold proliferation.
 - Turn the faucets off and make sure that the flush valves stop flowing water.
- Life safety features to consider should include, but not be limited to:
 - Installed lighting (temporary or permanent) sufficient to light the surveillance areas and egress paths.
 - Natural light alone (if adequate) is satisfactory for egress during the day [NFPA 241 - 2022, 6.1.3.7, 1.]
 - The path or egress remains clear and unobstructed with remote unlocked egress paths.
 - Only authorized personnel may enter the building:
 - No less than teams of two (2) people.
 - Not more than ten (10) people.
 - All personnel attend a pre-job meeting identifying the buildings hazards and functional exits.
 - All personnel have a means of communication and a flashlight (cell phones not allowed as a means of communication or a flashlight).
 - Entry is monitored by a centralized location (Shift Operations Manager).
- No hot work or hazardous operations (including, but not limited to the use and storage of flammable or combustible liquids, compressed or flammable gases, and hazardous chemicals) are permitted without review, approval, and permit of the DFM.
- Conduct fire prevention self-inspections to monitor the work of any employee or outside contractors during machinery and equipment removal.
- Post building as “Vacant – Entry By Authorized Personnel, Only. Contact: _____”
- Inform the fire department of the facility’s idle or vacant situation and provide access, when necessary.
- Notify the Fire Department of the change of condition, invite them for a site visit to update Pre-Fire Plans:
 - Upon the publishing of an FHA or FFPA, it is submitted to the Fire Department for the benefit of their triennial Pre-Incident Planning Document.

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- Fire Department access remains unobstructed.
- Update the current FHA or FFPA as applicable to reflect the idle status and following DOE-STD-1066-2016 guidance for “Transitional Facilities.”

Vacant buildings of totally fire-resistant construction that are void of any combustible contents and that pose no hazard to exposures might be exempt from maintaining fire alarm, sprinkler, and standpipe systems where approved by the AHJ. However, a deactivation analysis must be performed and approved. The AHJ may also require other systems or components pertaining to fire protection to also be maintained. This might include fire doors, fire barriers and other passive or active systems.

Finally, the AHJ has the authority to require an inspection and test of any fire protection system or fire alarm system that has been out of service for 30 days or more before being restored to service. Whenever a fire protection system is shut off for an extended period of time, an inspection and test of the system for system integrity are necessary before the system is put back in service. When any system is out of service, the potential exists for damage or vandalism that might not be detected until the system is tested.

3.9 Initial Fire Prevention Planning for Surveillance and Maintenance, Remediation, and D4 Activities – Work Package Preparation

Surveillance and Maintenance status facilities as well as D4 activities involve potentially compromised life safety or fire protection features both inside and outside of buildings. Work packages are screened by Fire Protection Engineering to determine whether additional review, work package instruction input, and/or HFM Permitting is required. Responsible Building Managers, Planners, and Field Work Supervisors should review permitting criteria in CPCC-PRO-FP-40422 with the cognizant FPE to ensure coordination and resolution to specific work challenges or conflicting safety objectives.

Surveillance and Maintenance activities and D4 Activities will be controlled by at least the precautions and controls outlined in the HFM Occupancy Permit and may be additionally controlled by work package-specific HFM Permits, depending upon the scope and complexity of Operations, Maintenance, or Demolition tasks on a case-by-case basis.

This work is subject to the fire protection requirements of NFPA 241, as well as D&D analyses required by this procedure. This preliminary set of guidelines will assist in a more in-depth review of fire hazards and lead to project-specific controls commensurate with the scope and risks posed. Smaller Surveillance and Maintenance work packages are subject to individual review, approval, and applicable HFM Permits based upon individual scope and complexity.

Actionee	Step	Action
RBM	1.	CONTACT the cognizant FPE in advance for at least initial fire prevention bounding of Surveillance and Maintenance status facilities, remediation activities, and D4 activities.
Cognizant FPE	2.	REVIEW AND UPDATE the HFM Permit as needed to reflect conditions and controls for surveillance and maintenance activities.

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<i>Actionee</i>	<i>Step</i>	<i>Action</i>
Cognizant FPE	3.	PREPARE HFM Permit(s) as needed to cover D4 and/or S&M activities.
	4.	OBTAIN DFM approval of permits.

3.10 Well Drilling Operations and Field Soil and Ground Water Construction Activities**3.10.1 General Fire Safety Precautions**

This section applies to all Soil and Ground Water remote operations conducted in wildland areas. CPCC-PRO-FP-40422 provides additional information for off-road vehicle fire safety precautions for Hanford Site wildland areas.

A key element in preventing fires for well drilling operations and field Soil and Groundwater activities is early preparation and layout of clear space areas. Preliminary plans for new and renovated well drill sites or for field work packages should be submitted to and coordinated with the cognizant FPE/DFM. Adequate space is needed from potential wildland areas, surrounding established building exposures, and other operations exposures, such as motor vehicle parking, well drill rig apparatus, generators, air compressors, staging areas, etc. Simple site plan sketches should be considered for inclusion in the permit in laying out various operations spaces and their required separation distances, as well as proximity to established or needed fire department emergency access.

Once the arrangement has been established, work packages should be arranged to ensure clear spaces are established well before equipment is to be brought into the area. Precautions for controlling ignition sources from mobile equipment to wildland vegetation is developed and incorporated into work packages with the review and approval of the cognizant FPE/DFM. Approved permits are requested by the project management and approved by the cognizant DFM before commencement of the actual work.

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4.0 FORMS

A-6002-692, *Initial Construction/Demolition Fire Safety Inspection Checklist*
A-6003-681, *Nonemergency Hydrant Tie-in Permit*

5.0 RECORD IDENTIFICATION

None

6.0 SOURCES**6.1 Requirements**

10 CFR 830, *Nuclear Safety Management – QA Requirement*
CPCC-PRO-NS-53097, *Determining Applicability of the USQ Process to CPCCo Procedures*
CPCC-PRO-FP-40420, *Fire Protection Analysis*
CPCC-PRO-FP-40422, *Fire Marshal Permit Interfaces*
CPCC-STD-FP-40404, *Fire Protection Program*
DOE O 420.1C, Chg. 3, *Facility Safety*
DOE O 420.1C, Change 3, *Facility Safety, Implementation Direction*, Nuclear Safety Division
DOE-STD-1066-2016, *Fire Protection*

6.2 References

CPCC-MP-PC-40167 *Risk Management Plan*
CPCC-PRO-FP-40421, *Hot Work*
CPCC-PRO-FP-40425, *Fire Protection System Inspection, Testing and Maintenance*
CPCC-PRO-FP-40426, *Fire Protection System Discrepancies*
CPCC-PRO-FP-54131, *Fueled Equipment and Heat-Producing Appliances*
CPCC-PRO-IRM-10588, *Records Management Processes*
CPCC-PRO-QA-052, *Issues Management*
CPCC-STD-FP-54128, *Fire Protection System Design*
CPCC-STD-FP-54133, *Control of Combustible Materials*
CPCC-STD-FP-54136, *Control of Explosives*
HFD-PRO-FS-60742, *Deactivation of Facilities Fire Protection Features*
HMIS-RD-FM-10361, *Controlling Cross Connections*
NFPA 1, *Fire Code*
NFPA 10, *Standard for Portable Fire Extinguishers*
NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
NFPA 55, *Compressed Gases and Cryogenic Fluids Code*
NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures*
NFPA 101, *Life Safety Code*,
NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*,
NFPA 701, *Standard Methods of Fire Tests for Flame-Resistant Textiles and Films*
NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*
NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas*
NFPA 1620, *Standard for Pre-Incident Planning*

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6.3 Bases

CPCC-PRO-EN-20050, *Engineering Configuration Management*
CPCC-PRO-EN-53061, *Redline Change Control Process for Deactivation and Decommissioning*
NFPA 13, *Standard for the Installation of Sprinkler Systems*
NFPA 30, *Flammable and Combustible Liquids Code*
NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*
NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*
NFPA 52, *Vehicular Gaseous Fuel Systems Code*
NFPA 58, *Liquid Petroleum Gas Code*
NFPA 77, *Recommended Practice on Static Electricity*
NFPA 80, *Standard for Fire Doors and Other Opening Protectives*
NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*
NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids*
NFPA 505, *Fire Safety Standard for Powered Industrial Trucks including Type Designations, Areas of Use, Conversions, Maintenance, and Operations*
WAC 246-290-490, *Cross-Connection Control*

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Appendix A - Summary of Code Sections Applicable to Cold and Dark, Surveillance and Maintenance, and Deactivation and Demolition Facilities

The following is a summary NFPA code sections applicable to Cold & Dark, Surveillance & Maintenance, and Deactivation & Demolition facilities:

1.0 FPA 241, SAFEGUARDING CONSTRUCTION AND ALTERATION OPERATIONS, 2022 EDITION**1.1 Fire Prevention Program**

1.1.1 An overall construction or demolition fire prevention program shall be developed.

1.1.2 The following items shall be addressed in the Fire Prevention Program:

1. Development of a pre-incident plan in accordance with NFPA 1620 [*Standard for Pre-Incident Planning*]
2. Emergency contacts
3. Site emergency communication procedures
4. Signage for site address(es) and building identification acceptable to the AHJ
5. Development of a pre-fire plan with the local fire department
6. Site hot work operations
7. Fire protection systems, as follows:
 - a. For construction operations, installation of new fire protection systems as construction progresses
 - b. For alteration operations, preservation of existing fire protection systems during alterations
 - c. For demolition operations, preservation of existing fire protection systems during demolition
 - d. Procedure for FPPM to notify the installing contractor when changes need to be made to previously installed temporary protection
8. Procedures for reporting specific emergency incident location to first responders
9. Emergency evacuation procedures for site personnel
10. Good housekeeping
11. Waste disposal
12. On-site security
13. Consideration of special hazards

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14. Protection of existing structures and equipment from exposure fires
15. Documentation for applicable project fire-related inspections, tests, training, and drills, as required by this standard
16. A life safety plan that emphasizes the need to do all of the following:
 - a. Alert personnel of emergencies
 - b. Provide clear egress paths to safety
 - c. Ensure lighting and markings are provided to enable safe personnel travel
17. Temporary utilities, as follows:
 - a. Safety plan for gas supplies on site in accordance with NFPA 55 [*Compressed Gases and Cryogenic Fluids Code*] and NFPA 58 [*Liquid Petroleum Gas Code*]
 - b. Verification that direct-fired heaters used for drying and temporary heat do not discharge unsafe levels of carbon monoxide
 - c. Periodic leak checks and condition checks for temporary piping and hoses used for distribution of fuels
 - d. Periodic review and verification of temporary bonding and grounding of electrical systems

1.2 Sprinkler Protection

- 1.2.1 If automatic sprinkler protection is to be provided, the system(s) shall be placed temporarily in service in accordance with 4.3.2.2 through 4.3.2.9 (refer to the code for the specified sections).

1.3 Means of Egress

- 1.3.1 The means of egress shall be provided in accordance with 4.6.10 of NFPA 101 [NFPA 101 code section 4.6.10 is shown below where NFPA 101 is discussed].

1.4 Stairs

- 1.4.1 Not less than one half the number of required exit stairs in the constructed areas shall be available for egress and fire department access at all times (this applies during construction and D4).

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Appendix A - (Cont.) Summary of Code Sections Applicable to Cold and Dark, Surveillance and Maintenance, and Deactivation and Demolition Facilities**1.5 Separation of Work – Occupied from Non-Occupied****1.6 Temporary Separation Walls**

- 1.6.1 Protection shall be provided to separate an occupied portion of the structure from a portion of the structure undergoing alteration, construction, or demolition operations when such operations are considered as having a higher level of hazard than the occupied portion of the building.
- 1.6.2 Barriers in buildings protected throughout with approved, automatic sprinkler systems that are not impaired in accordance with NFPA 25 [*Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*] shall be permitted to be noncombustible material, limited-combustible material, or fabric or plastic films meeting the requirements of 4.13.1.
- 1.6.3 In conjunction with the Fire Prevention Program, as an alternative to 4.13.4.1 and 4.13.4.2, a risk assessment shall be permitted to be performed to determine the required protective measures between an occupied portion of the structure and the portion of the structure undergoing alteration, construction, or demolition operations.

1.7 Heating and Cooling Equipment Used During Construction, Alteration, or Demolition

- 1.7.1 Heating and cooling equipment shall be installed in accordance with its listing, including clearance to combustible material, equipment, or construction.
- 1.7.2 **CPCCo-specific:** Fire Protection Engineering requires cooling equipment to be electrically powered and use non-combustible refrigerant.

2.0 CHAPTER 9 SAFEGUARDING DEMOLITION OPERATIONS

General. In addition to the specific requirements of this chapter, the provisions of Chapter 1 and Chapters 3 through 7 shall be followed, as applicable, for all demolition operations.

2.1 Utilities**2.2 Electrical Service**

- 2.2.1 Electrical service shall be reduced to a minimum, and the identity of energized circuits shall be ensured to avoid any uncertainty.

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Appendix A - (Cont.) Summary of Code Sections Applicable to Cold and Dark, Surveillance and Maintenance, and Deactivation and Demolition Facilities**NFPA 101, LIFE SAFETY CODE, 2021 EDITION (THE FOLLOWING CITATIONS HAVE EMPHASIS ADDED FOR CLARITY.)****4.2 Objectives**

4.2.1 Occupant Protection. A structure shall be designed, constructed, and maintained to protect occupants who are not intimate with the initial fire development for the time needed to evacuate, relocate, or defend in place.

4.6.10 Construction, Repair, and Improvement Operations.

4.6.10.1 *Buildings, or portions of buildings, shall be permitted to be occupied during construction, repair, alterations, or additions only where required means of egress and required fire protection features are in place and continuously maintained for the portion occupied ***or where alternative life safety measures acceptable to the authority having jurisdiction are in place.***

4.6.10.2 Where required by Chapters 11 through 43, construction, alteration, and demolition operations shall comply with NFPA 241.

4.6.10.3 *In buildings under construction, adequate escape facilities shall be maintained at all times for the use of construction workers. Escape facilities shall consist of doors, walkways, stairs, ramps, fire escapes, ladders, or other approved means or devices arranged in accordance with the general principles of the Code ***insofar as they can reasonably be applied to buildings under construction.***

4.6.10.4 Flammable or explosive substances or equipment for repairs or alterations shall be permitted in a building while the building is occupied if the condition of use and safeguards provided do not create any additional danger or impediment to egress beyond the normally permissible conditions in the building.

CHAPTER 5 PERFORMANCE-BASED OPTION

5.3.2 Means of Egress. The design shall comply with the following requirements in addition to the performance criteria of Section 5.2 and the methods of Sections 5.4 through 5.8:

- (1) Changes in level in means of egress — 7.1.7
- (2) Guards — 7.1.8
- (3) Doors — 7.2.1
- (4) Stairs — 7.2.2, excluding the provisions of 7.2.2.5.1, 7.2.2.5.2, 7.2.2.6.2, 7.2.2.6.3, and 7.2.2.6.4
- (5) Ramps — 7.2.5, excluding the provisions of 7.2.5.4.1, 7.2.5.5, and 7.2.5.7.1
- (6) Fire escape ladders — 7.2.9
- (7) Alternating tread devices — 7.2.11
- (8) Capacity of means of egress — Section 7.3, excluding the provisions of 7.3.3 and 7.3.4

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- (9) Impediments to egress — 7.5.2
- (10) Illumination of means of egress — Section 7.8
- (11) Emergency lighting — Section 7.9
- (12) Marking of means of egress — Section 7.10

5.3.3 Equivalency. Equivalent designs for the features covered in the retained prescriptive requirements mandated by 5.3.2 shall be addressed in accordance with the equivalency provisions of Section 1.4.

(1.4* Equivalency. Nothing in this Code is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this Code.)

7.2 Means of Egress Components.**7.2.1.1.3 Occupied Building.**

7.2.1.1.3.1 For the purposes of Section 7.2, a building shall be considered to be occupied at any time it meets any of the following criteria:

- (1) It is open for general occupancy.
- (2) It is open to the public.
- (3) It is occupied by more than 10 persons.

NOTE: *As shown above, NFPA 101 defines “occupied” as, “any time a building is open to the public, or at any other time it is occupied by more than 10 persons. Under such conditions the egress doors may be locked such that occupants require keys to exit the building. The intent is to permit small security and cleaning crews during off-hours.*

7.2.1.1.3.2 Where means of egress doors are locked in a building that is not considered occupied, occupants shall not be locked beyond their control in buildings or building spaces, except for lockups in accordance with 22.4.6 and 23.4.6, detention and correctional occupancies, and health care occupancies.