

Requirements Documents

# HMIS-RD-FP-9717

## Fire Protection for Construction/Occupancy/Demolition Activities

Revision 2, Change 0

Published: 10/10/2024  
Effective: 10/10/2024

Program: Hanford Fire Protection and Emergency Services  
Topic: Fire Protection

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### Use Type: N/A



- No USQ Required

**JHA:** Administrative

**Periodic Review Due Date:**10/10/2029

Rev. 2, Chg. 0

## Change Summary

### Description of Change

The format of HMIS-RD-FP-9717 was revised to meet the requirements of HMIS-PRO-MS-589, Hanford Mission Integration Solutions Procedures and Related Documents. Also, source requirements references were updated.

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## Fire Protection for Construction/Occupancy/Demolition Activities

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### 1.0 PURPOSE

The purpose of this requirements document is to establish the fire protection requirements for construction, occupancy, deactivation of fire protection features, transitional facilities and demolition activities in order to meet the intent of National Fire Protection Association (NFPA) requirements along with CRD O 420.1C Chg. 3 (reference attachment in DOE letter 22-NSD-000147) *Facility Safety* DOE-STD-1066-2016, *Fire Protection*, and DOE-RL Letter 22-NSD-000147, Contract No. 89303320DEM000031 -The U.S. Department of Energy’s Direction to add DOE O 420.1C, Change 3, Facility Safety to the Contract, referred to as DOE-RL Letter 22-NSD-000147 for the remainder of this document.

The requirements cited in this document include specific Department of Energy (DOE) and Code requirements but also includes additional requirements or clarification to requirements that has been developed through operating experience and industry best practices. Requirements in this document apply to interior and exterior activities covered by the Hanford Mission Essential Services Contract (HMESC) scope of work.. For the purpose of this document, “temporary” shall mean less than 180 days.

This document partially implements the ISMS Core Function #2, Identify and Analyze Hazards.

### 2.0 SCOPE

This Level 1 Requirements Document is applicable to Hanford Mission Integration Solutions (HMIS) employees and HMIS subcontractors.

### 3.0 CONSTRUCTION/OCCUPANCY/DEMOLITION ACTIVITIES

#### 3.1 Construction and Alteration Fire Protection Requirements

NOTE: Under the requirement “type” column, “V” means verbatim and “I” means interpreted.

#	Requirement	Type V or I	Source
1.	Project management is responsible to invite assigned organizations (including the Hanford Fire Marshal’s (HFM) office) to the project “kick-off” meeting, wherein project scope and applicability of Fire Marshal permits and fire prevention programs shall be discussed (Ref: HMIS-PRO-CONST-14990, <i>Construction Management</i> ).	I	NFPA 241, Chapter 7.1  CRD O 420.1C, Chg. 3 (reference attachment in DOE letter 22-NSD- 000147) Facility Safety, Chapter II, 3.d(1)(i)

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2.	<p>The Construction Manager is responsible for the notification of the Hanford Fire Department of the upcoming project activities, including a preliminary schedule via email identifying the work scope and work area boundaries to <a href="mailto:HFDtours@rl.gov">HFDtours@rl.gov</a> (^HFDtours).</p> <p><i>NOTE: This notification will initiate Hanford Fire Department (HFD) inspections/tours in accordance with HFD-PRO-FPFCI-60700, Facility/Area Inspections and Tours, (SOP 2.E.3) and the pre-incident planning process in accordance with HFD-PRO-EOCO-61828, HFD Incident Management.</i></p>	I	<p>NFPA 241, Chapter 7.2.3</p> <p>NFPA 1 Chapter 16.4.2.3</p>
3.	<p>The construction manager is responsible to ensure that applicable Hanford Fire Marshal Permits has been issued to cover the scope of work in accordance with HMIS-RD-FP-8589, <i>Hanford Fire Marshal Permits</i>. (Also reference: HMIS-PRO-PM-24889, Appendix B).</p>	I	<p>NFPA 1, Chapter 1.7 &amp; 1.12</p> <p>DOE-RL Letter 22-NSD-000147, Item 13</p>
4.	<p>The Construction Manager is responsible to ensure that an <i>Initial HFD Construction/Demolition Fire Safety Inspection Checklist</i> (Site form <a href="#">A-6002-692</a>) is completed with assistance from a Deputy Fire Marshal(DFM) prior to the start of construction</p> <p>Follow-up inspections are required weekly at a minimum..</p>	I	<p>NFPA 1, Chapter 16.4.2</p> <p>NFPA 241, Chapter 7.2</p>
5.	<p>Construction sites are required to comply with applicable fire protection requirements per of NFPA 1, <i>Fire Code</i>. This includes compliance with all referenced Codes and Standards.</p> <p>This commonly includes, but is not limited to, compliance with NFPA 241, <i>Safeguarding Construction, Alteration, and Demolition Operations</i>, and NFPA 1141, <i>Fire Protection Infrastructure for Land Development in Suburban and Rural Areas</i>.</p>	I	<p>DOE-RL Letter 22-NSD-000147, Item 1.</p> <p>NFPA 1, Chapter 16.</p>
6.	<p>Application of the fire protection recommendations in FM Global Property Loss Prevention Data Sheet 1-0, <i>Safeguards During Construction, Alteration and Demolition</i>, are required using a graded approach to all construction and alteration projects.</p>	I	<p>CRD O 420.1C, Chg. 3 (reference attachment in DOE letter 22-NSD- 000147) Facility</p>

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			Safety, Chapter II, 1.c
7.	<p>Textiles and films (e.g., tarpaulins or plastic sheeting) used for temporary enclosures (e.g., vestibules or “greenhouses”) shall be certified as conforming to NFPA 701, <i>Standard Methods of Fire Tests for Flame Propagation of Textiles and Films</i>, Test Method 2.</p> <p>Textiles and films used for other purposes should also be fire retardant material tested in accordance with NFPA 701 or equivalent. However, exceptions may be granted by the FPE if it is determined that the material is more suited to the application, supports the principles of As Low As Reasonably Achievable (ALARA), when applicable, and does not present an unacceptable increase in fire risk.</p> <p><i>NOTE: Films meeting NFPA 701 criteria are available through the Hanford Central Warehouse.</i></p>	I	NFPA 241, Chapter 4.3
8.	<p>Non-emergency tie-ins to fire hydrants:</p> <p>Exception: The requirements of this section do not apply to hydrants on the training water system at HAMMER. These hydrants are numbered RW-H-XX (where XX indicates the hydrant number) and are identified by <b>red</b> caps on the hose connections.</p> <p><i>NOTE: The 100K and 400 area water systems are managed by Central Plateau Cleanup Company (CPCCo). The 300 area water systems are managed by Pacific Northwest National Labs (PNNL).</i></p> <p>a. If a non-emergency tie-in to a CPCCo managed fire hydrant is required, refer to CPCC-PRO-FP-40422, <i>Fire Marshal Permits/Interfaces</i>, for the required process and approvals.</p> <p>b. If a non-emergency tie in to a PNNL managed fire hydrant is required, the PNNL water Purveyor must be contacted.</p> <p><i>NOTE: The service catalog system is available at this <a href="#">link</a>. The nonemergency hydrant tie in selection can be found at Service Catalog &gt; Utilities &gt; Water Systems.</i></p>	I	WAC 246-290- 490

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	c. For HMIS hydrants, non-emergency tie-ins require the submission of a Kinetic Service Request (KSR) to HMIS Water and Sewer Utilities (W&SU) along with a <i>Non-emergency Hydrant Tie-In Permit</i> , Site form ( <a href="#">A-6003-681</a> )		
	d. Non-emergency tie-ins to fire hydrants located within hazard category 1, 2 or 3 nuclear facility boundaries require the performance of an Unreviewed Safety Question (USQ) review in accordance with the responsible Contractor's established process. Where fire suppression systems are credited with performing a nuclear safety function by the facility safety basis documentation, the USQ review requires a supporting engineering evaluation of the configuration and impact to the fire suppression system operability and performance by the fire hydrant tie-in.  The USQ number shall be recorded on the permit form.	I	10 CFR 830.203, Subpart B
	e. The user shall install 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 a 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.	I	NFPA 1, Section 18.5.6
	f. Only use approved fire hydrant wrenches to open and close a fire hydrant. Pipe wrenches shall <b>not</b> be used to open a hydrant.	I	HNF-52336, Rev. 2
	g. Follow all precautions specified on the permit to prevent damage to the fire hydrant and attached equipment. Refer to Fire Marshal Advisory Bulletin (FMAB) AB99-001, <i>Accessibility and Protection of Fire Hydrants</i> , for additional information.  For use of fire hydrants during cold weather follow HMIS-PRO-WC-472, <i>Cold Weather Protection</i> ) and FMAB FMAB-17-001, <i>Heated Fire Hydrant Enclosure</i> .  NOTE: FMABs can be obtained through the Hanford Fire Marshal's Office <a href="#">Webpage</a> .	I	HNF-52336 Rev. 2

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	h. To protect the site water systems from contaminants backflow prevention devices shall follow the requirements of HMIS-RD-FM-10361, <i>Controlling Cross Connections</i> . All backflow prevention device installations must be approved by the Water Purveyor prior to use.	I	WAC 246-290-490
9.	Construction activities which require off road travel shall comply with FMAB AB07-001, <i>Off-Road Vehicle Use and Travel</i> .  NOTE: FMABs can be obtained through the Hanford Fire Marshal's Office <a href="#">Webpage</a> .	I	HNF-52336, <i>Fire Marshal's Charter</i> , Rev. 2
10.	Portable Fire Extinguishers  Where fire extinguishers are required by the applicable NFPA Codes and Standards, the requirements for fire extinguishers listed in section 3.2 of this document shall apply.	I	HNF-52336, <i>Fire Marshal's Charter</i> , Rev. 2
11.	Cargo ("conex") containers used to support construction operations shall comply with the requirements of FMAB AB 13-001, <i>Use and Permitting of Storage Containers</i> , and section 3.2 of this document as applicable.  NOTE: FMABs can be obtained through the Hanford Fire Marshal's Office <a href="#">Webpage</a> .	I	HNF-52336, <i>Fire Marshal's Charter</i> , Rev. 2
12.	Relocatable structures (e.g., trailers, mobile office units, etc.) used to support construction operations shall comply with section 3.2 below.	I	HNF-52336, <i>Fire Marshal's Charter</i> , Rev. 2
13.	<b>Temporary Heating Equipment</b>  a. In addition to the applicable NFPA requirements, the use of electric heaters over 1500 watts and fuel-fired heaters shall be approved by the HFM in accordance with HMIS-RD-FP-8589.  b. Refer to section 3.2, item 6, of this document for additional requirements.  The following clarifications are provided for fuel fired heaters:	I	NFPA 1, Chapter 1.12  NFPA 241, Chapter 5.2

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	<p>Liquefied petroleum gas (LPG) fired heaters may be used indoors when permitted by the HFM as a temporary measure, and only under the following circumstances:</p> <ol style="list-style-type: none"> <li>1) The heater shall be located and used in accordance with the manufacturer's instructions.</li> <li>2) Except for emergency heating to prevent damage to buildings or contents, or buildings undergoing construction or major renovation, the fuel supply shall be located outside building and conveyed via pipe or hose to the heater.</li> <li>3) Precautions shall be taken to protect the supply pipe/hose from damage.</li> <li>4) Except for buildings undergoing construction or major renovation, or when the fuel supply is located outside and conveyed via pipe or hose to the heater, the heating element shall be constantly attended.</li> </ol>		

### 3.2 Use and Occupancy Fire Protection Requirements

#	Requirement	Type V or I	Source
1.	<p>All operational facilities shall comply with the requirements of NFPA 1 – 2021 Edition and NFPA 101, <i>Life Safety Code</i>, 2021 Edition, including all requirements referenced by those codes, along with any other applicable NFPA Codes and Standards (refer to HFD-PLN-FP-58194, <i>Hanford Fire Department Program Plan</i>, for a list of NFPA Codes and Standards). Applicability is determined by the responsible Deputy Fire Marshal (DFM).</p> <p>For the purposes of the HMIS Fire Protection Program, operational facilities shall include any building or facility with an occupiable area as defined by NFPA 101 or an occupiable space as defined by the International Building Code (IBC). Operational facilities shall also include structures</p>	I	DOE-RL Letter 22-NSD-000147, Item 1.

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	<p>that are in use or in standby for use to support the Hanford Mission (e.g. antenna towers).</p> <p>Facilities that are considered deactivated facilities in surveillance and maintenance as defined in Section 3.5 or are undergoing demolition are not considered operational facilities.</p>		
2.	<p><b>Maintenance, Inspection and Testing</b></p> <p>a. Whenever or wherever any device, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature is required for compliance with the provisions of this Code [NFPA 1], such device, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or other feature shall thereafter be continuously maintained. Maintenance shall be provided in accordance with applicable NFPA requirements or requirements developed as part of a performance-based design, or as directed by the AHJ.</p> <p>b. Existing life safety features obvious to the public, if not required by the Code, shall be either maintained or removed.</p> <p><i>NOTE: Refer to Section 3.3 of this procedure for the deactivation process.</i></p>	V	<p>NFPA 1, Chapter 4.5.8</p> <p>NFPA 101 Chapter 4.6.12</p>
	<p>c. Inspection, Testing and Maintenance (IT&amp;M) requirements shall be in accordance with HMIS-RD-FP-7899, Fire Protection System Testing/Inspection/Maintenance/Discrepancies.</p>		<p>DOE-RL Letter 22-NSD-000147, Item 1.</p>
3.	<p>Facilities that are operational shall have a current occupancy permit in accordance with HMIS-RD-FP-8589.</p> <p><i>NOTE: For surveillance and maintenance facilities that are normally unoccupied, refer to section 3.5.</i></p>	I	<p>NFPA 1, Chapter 1.12</p>

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4.	<p><b>Portable Fire Extinguishers</b></p> <p>a. Fire extinguishers shall be provided as required by NFPA 1 and NFPA 101 including referenced requirements.</p> <p>b. The location, type and mounting of fire extinguishers shall be in accordance with NFPA 10, <i>Standard for Portable Fire Extinguishers</i>, and the manufacturer's instructions.</p> <p>c. The Project Fire Protection Engineer (FPE) or DFM shall approve the replacement and relocation of any portable fire extinguisher.</p> <p>d. Fire extinguishers shall be obtained and disposed of in accordance with HNF-62598, <i>Acquiring/Disposing of Fire Extinguishers</i>.</p> <p><i>NOTE: It is the responsibility of the appropriate building owner or building administrator to replace used, damaged, or otherwise 'out of date' extinguishers.</i></p> <p><i>NOTE: Refilling, recharging, or providing internal inspections and hydrostatic testing of extinguishers is not performed by HFD. It is recommended that any extinguisher falling under the above should be replaced; contact your facility/project FPE for guidance.</i></p>	I	DOE-RL Letter 22-NSD-000147, Item 1.
		I	NFPA 101, Chapter 9.9 & NFPA 1, Chapter 13.6
		I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2
		I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2  HMESC Section J-3, Service Number 30
	<p>g. Vehicles or equipment requiring extinguishers shall mount them in a readily accessible location and they shall comply with inspection and maintenance requirements as found in NFPA 10 and this document.</p> <p><i>NOTE: For addition clarification on extinguisher mounting on vehicles and equipment, refer to FMAB AB09-001, <i>Fire Extinguishers for Vehicles</i>, which can be obtained through the Hanford Fire Marshal's Office <a href="#">Webpage</a>.</i></p>	I	NFPA 10, Chapter 6.1, NFPA 58, NFPA 385, NFPA 505

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	h. Facilities that maintain a cache of extinguishers for immediate issuance (e.g., hot work, construction, vehicle fleets, etc.) shall have a process in place to ensure that the extinguisher receives the required inspections. (reference FMAB AB16-001, <i>Portable Fire Extinguisher (PFX) Expectations</i> )	VI	FMAB AB16-001 Rev. 0
5.	Portable Heaters  a. Portable heaters shall be listed or approved, e.g., Underwriters Laboratories or American Gas Association (AGA) certified for their intended use and shall not be modified for other applications.	I	NFPA 1, Chapter 11.5
	b. The use of electric heaters over 1500 watts and fuel-fired heaters shall be approved by the HFM in accordance with HMIS-RD-FP-8589.	I	NFPA 1, Chapter 11.5  HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2
	c. Heaters shall be installed and used in accordance with the manufacturer's recommendations including, but not limited to, the following:  1) Adequate clearance to combustible furnishings, surfaces, or materials.  2) Adequate ventilation for fuel-fired heaters to prevent products of combustion buildup and to maintain stable flame quality.  3) Selection of fuel and refueling practices.  4) Consideration for proximity to sprinklers or heat detectors.	I	NFPA 1, Chapter 11.5
	d. Fuel-fired heaters shall be located outside and the heat ducted indoors, unless otherwise approved by the HFM.	I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2
	e. Ductwork shall be rated for the discharge temperatures of the heater.	I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2

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6.	<p><b>Flammable/Combustible Liquids</b></p> <p>a. Whenever flammable or combustible liquids are stored, handled or used in a facility, the quantities of liquid shall be compliant with the Hanford Fire Marshal Permit thresholds in HMIS-RD-FP-8589. If the flammable or combustible liquids exceed the permit threshold, a permit shall be requested in accordance with the procedure.</p> <p>b. When a permit threshold is exceeded, facility markings shall be provided in accordance with NFPA 704, <i>Standard System for the Identification of the Hazards of Material for Emergency Response</i>.</p> <p>b. The Maximum Allowable Quantity (MAQ) and control areas (as applicable) for each facility shall be established by the facility FPE or DFM.</p> <p>When the permit thresholds are exceeded, the MAQs shall be documented in the Hanford Fire Marshal Permit for the flammable and combustible liquids.</p> <p>NOTE: For clarification regarding MAQs and permit thresholds, contact your facility DFM.</p>	I	HNF-52336 <i>Fire Marshal's Charter</i> Rev. 2
			NFPA 1, Chapter 16.2.4.1.6, 60.5.1.8.2
		I	NFPA 1, Chapter 66.9  HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2
	d. Liquids used for building maintenance, painting, or other similar infrequent purposes, shall be limited to a 10-day supply and shall be permitted to be stored in closed containers or inside a liquid storage area. The amount of the 10-day supply shall be agreed upon by the DFM.	I	NFPA 1, Chapter 66.9.2.10  NFPA 30, Chapter 9.3.10
	e. Whenever feasible, all flammable and combustible liquids should be stored in flammable liquids storage cabinets, hazardous materials storage lockers or flammable liquids storage rooms when not in use regardless of whether such storage is required to comply with MAQ requirements.	I	DOE-STD-1066-2016, Section 5.1.4
7.	<p><b>Flammable Liquid Storage Cabinets</b></p> <p>a. Flammable liquid storage cabinets shall comply with NFPA 1.</p> <p>b. A single flammable liquid storage cabinet may not contain more than 454 liters (120 gal) of Class I, II, and</p>	I	NFPA 1, Chapter 66.9.4
		I	NFPA 1, Chapter 66.9.4

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	IIIA liquids or more than its listed capacity, whichever is less.		
	c. Combustible shelf liners or absorbent pads are not permitted within cabinets. For additional information, reference FMAB AB03-001, <i>Use of Absorbent Materials in Flammable Storage Cabinets</i> , which can be obtained through the Hanford Fire Marshal's Office <a href="#">Webpage</a> .	I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2
8.	<p><b>Laboratories Using Chemicals</b></p> <p>a. Laboratories using chemicals shall comply with the requirements of NFPA 1 and NFPA 45, <i>Standard on Fire Protection for Laboratories Using Chemicals</i>, including all referenced requirements.</p>	I	NFPA 1, Chapter 26
9.	<p><b>Control of Combustible Materials</b></p> <p><b>a. General Requirements</b></p> <p>1) The control of combustible materials shall be maintained ALARA and conform to the minimum requirements listed in b. below for all facilities, and b. and c. below for nuclear &amp; radiological facilities, unless the facility Fire Hazards Analysis (FHA) specifies other requirements.</p>	I	CRD O 420.1C, Chg. 3 (reference attachment in DOE letter 22-NSD-000147) Facility Safety, Chapter II, 3.d.(1)(g)
	<p><b>b. All Facilities</b></p> <p>1) Combustible waste either manmade or dry, dead vegetation (i.e., vagrant tumbleweeds, etc.) shall not be permitted to accumulate adjacent to buildings. A minimum 30-foot defensible space is required to be maintained to all dead vegetation.</p> <p>NOTE: <i>Noncombustible or fire-retardant materials shall be used for building construction whenever possible.</i></p>	I	NFPA 1, Chapter 19.1.2  NFPA 1144, Chapter 6.2
	<p>2) Sheet plastic shall be tested and documented as meeting NFPA 701, Test 2.</p> <p>NOTE 1: <i>Approved material is available at stores using the Passport System.</i></p>	I	NFPA 1, Chapter 12.6  DOE-STD-1066-2016, Section C.2.4.3

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	NOTE 2: <i>Sheet plastic not meeting NFPA 701 requirements may be used with FPE or DFM concurrence when determined that the material is not otherwise prohibited by code, is more suited to the application, supports the principles of ALARA, when applicable, and does not present an unacceptable increase in fire risk.</i>		Best Practice
	3) Combustible materials shall not be stored in building stairwells or corridors.  NOTE: <i>Combustibles stored in closed metal cabinets are permitted in corridors if the cabinets do not reduce the required exit width of the corridors.</i>	I	NFPA 101, 4.5.3.2, 7.1.10 & 7.2.2.5.3.1  NFPA 1, Section 10.19.4
	<b>c. Additional Controls for Combustibles in Nuclear and Radiological Facilities</b>  1) Use of combustible materials in facilities, including facility equipment shall be ALARA.  NOTE: <i>This will usually mean that noncombustible substitutes are found for such common materials as wood, plastic insulation, and especially plastic finish materials. When the noncombustible classification of a material is in question, it must be reviewed and approved by the Project DFM.</i>	I	DOE-STD-1066-2016, Section 5.1
	2) The selection and use of new insulated electrical wire for installation in cable trays shall be approved by the Project DFM.	I	Best Management Practice
	3) Nuclear facilities and facilities that handle radioactive materials within the scope of NFPA 801, <i>Standard for Fire Protection for Facilities Handling Radioactive Materials</i> , that do not have an FHA shall have a written fire protection program.	I	DOE-STD-1066-2016, Section 5.1.4.3  NFPA 801, Chapter 4.3 & 4.4
	4) Combustible material shall be controlled in accordance with the FHA or the facility fire protection program. Appropriate combustible control methods include:  a. Establishing threshold quantities,	I	NFPA 801, Chapter 4.3 & 4.4

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	<ul style="list-style-type: none"> <li>b. Establishing combustible material spacing/separation/location requirements,</li> <li>c. Identify surveillances to demonstrate combustible quantities are below threshold quantities,</li> <li>d. Using alternative storage locations,</li> <li>e. Establishing a means for controlling ignition sources,</li> <li>f. Establishing a qualitative combustible control program (such as ALARA) when a basis is developed that demonstrates that combustibles can be maintained below derived threshold quantities.</li> </ul>		
	<p>5) Materials used for temporary formworks, decking, scaffolding and other temporary applications (e.g. routine maintenance) shall be noncombustible.</p> <p>If permitted by the facility FHA or fire protection program, wood complying with the following may be used:</p> <ul style="list-style-type: none"> <li>a. Listed, pressure-impregnated, fire-retardant lumber complying with NFPA 703, <i>Standard for Fire Retardant-treated Wood and Fire-Retardant Coatings for Building Materials</i>.</li> <li>b. Timbers 6" X 6" or larger</li> <li>c. The use of fire-retardant wood shall be used only as a last resort and in a limited application after consultation with the project DFM.</li> </ul> <p><i>NOTE: For untreated wood materials currently in use, (except materials used for walking surfaces but excluding scaffolding), a fire-retardant coating compliant with NFPA 703 shall be permitted to be applied in lieu of removing and replacing the material if it is determined that replacement of the existing material is not feasible.</i></p>	I	NFPA 801, Chapter 4.3 & 7.1.5

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	<p>6) Wood scaffolding, if used, shall not be staged, stored, or stockpiled in the facility.</p> <p><i>NOTE: This requires that assembly and disassembly be done when the scaffolding is delivered to and removed from the facility. The DFM may issue a written exception to this requirement for contamination areas, provided that automatic sprinklers protect the staging/storage area, and such storage is acceptable to the FHA or facility fire protection program.</i></p>	I	NFPA 801, Chapter 4.3, & 7.1.5
	<p>7) Individual unlabeled pieces of fire-retardant wood (e.g., from a bundle or made by cutting larger pieces) shall be labeled as "Fire Retardant (FR-S)" or have an equivalent label before use.</p>	I	NFPA 801, Chapter 4.3, & 7.1.5
10.	<p><b>Smoking Receptacles</b></p> <p>a. Smoking receptacles shall comply with the following requirements:</p> <ol style="list-style-type: none"> <li>1) In areas where smoking is permitted, noncombustible smoking receptacles (ash trays) must be provided.</li> <li>2) New smoking receptacles shall be noncombustible construction.</li> </ol> <p><i>EXCEPTION: Existing FM Approved combustible smoking receptacles may remain in service until they require replacement. At that time, they shall be replaced with noncombustible units.</i></p> <ol style="list-style-type: none"> <li>3) Receptacles and designated smoking areas shall be maintained 30 ft. from dead vegetation.</li> <li>4) Receptacles shall be periodically emptied into a noncombustible trash can with a tight-fitting lid.</li> <li>5) When damaged or corroded, smoking receptacles shall be replaced.</li> </ol> <p><i>NOTE: For additional information, reference FMAB AB05-001, Approved Receptacles for Smoking Material &amp; Requirements for Use, which is available on the Hanford Fire Marshal's Office <a href="#">Webpage</a>.</i></p>	I	FMAB AB05-001, Rev. 2

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11.	<p><b>Egress Requirements</b></p> <p>a. Means of egress shall comply with the requirements of NFPA 101.</p> <p>EXCEPTION: For deactivated facilities and facilities only entered for surveillance and maintenance, refer to section 3.5.</p>	I	DOE-RL Letter 22-NSD-000147, Item 1.
	<p>b. Facility snow removal plans shall include all building exits and egress routes.</p>	I	NFPA 101, Chapter 7.1.10.1
12.	<p><b>Fire and Smoke-rated Construction</b></p> <p>a. The locations and boundaries of all fire-resistance rated and smoke rated construction within a building shall be identified on facility drawings.</p>	I	IBC Section 107.2
	<p>b. Fire doors and other opening protectives (dampers, etc.) shall be identified in the field with a unique identifier to facilitate testing and maintenance.</p>	I	NFPA 80, Chapter 5.2.2.4, NFPA 105, Chapter 7.6.4
	<p>c. In new construction, fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions shall be permanently identified in concealed spaces.</p> <p>In existing facilities, it is recommended that these barriers are labeled to help facilitate inspections and prevent them from being unintentionally compromised.</p>	I	IBC Section 703.7
	<p>d. Informational signs may be attached to fire doors. The area of these signs shall not exceed 5% of the door face area, and the signs shall not obstruct any windows on the doors. The signs shall be attached with an adhesive. Signs shall not be nailed, screwed, or tacked to fire doors. These signage requirements apply to fire doors installed in 1995 or later. Consult the facility FPE or DFM for the limitations on signs on fire doors prior to 1995.</p>	I	NFPA 80, Chapter 4.1.4
13.	<p><b>Barbeques</b></p> <p>The use of Barbeques is allowed on the Hanford site provided the barbeques are inspected, maintained and located properly</p>	I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2

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	<p>for use in accordance with the requirements in FMAB AB06-001, <i>Use of Barbecues on the Hanford Site</i>. See Bulletin for accompanying checklists.</p> <p>Portable Liquefied Petroleum Gas (LPG) cylinders shall comply with the applicable NFPA requirements and FMAB AB04-006, <i>Portable Liquefied Petroleum Gas Cylinders</i>.</p> <p>NOTE: Contact your facility FPE or DFM if additional clarification is needed. Bulletins are available on the Hanford Fire Marshal's Office <a href="#">Webpage</a>.</p>		

### 3.3 Deactivation of Fire Protection Features and Systems

#	Requirement	Type V or I	Source
1.	Deactivation requirements are not applicable to temporary shutdowns or outages where handled as planned impairments.	I	HNF-52336, <i>Fire Marshal's Charter</i> , Rev.2
2.	A fire marshal permit must be obtained from the Fire Marshal's Office prior to the deactivation of any fire protection feature.	I	NFPA 1, Chapter 1.12
3.	<p>The process for documenting and approving proposed fire protection feature deactivation is outlined in HFD Technical Procedure HFD-PRO-FS-60742 (4.A.10), <i>Deactivation of Facility Fire Protection Features</i>. It is acceptable to use a "graded" approach in preparing the analysis for justifying fire protection feature deactivation.</p> <p>a. For facilities having an FHA, the FHA shall be updated as applicable per the requirements of HMIS-PRO-FP-38421, <i>Fire Hazard Analysis Development and Implementation Process</i>, unless it already allows the proposed deactivation. The FHA must allow for the deactivation of the fire protection feature. Items to consider must include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Maximum Possible Fire Loss (MPFL) determination</li> <li>• Maximum Credible Fire Loss (MCFL) determination</li> </ul>	I	<p>DOE-RL Letter 22-NSD-000147, Item 16</p> <p>DOE-STD-1066-2016, Section 7.1.3 &amp; Appendix F</p> <p>CRD O 420.1C, Chg. 3 (reference attachment in DOE letter 22-NSD-000147) Facility Safety, Chapter II, 3.f.(1)(d)</p>

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	<ul style="list-style-type: none"> <li>• Exposure assessment</li> <li>• Water Supply Assessment</li> <li>• Life Safety Review</li> </ul> <p>b. For all deactivations, including those facilities with a FHA, a Deactivation Analysis shall be completed by the responsible FPE or DFM with assistance from the requesting organization in accordance with HFD Technical Procedure HFD-PRO-FS-60742 (4.A.10), current revision, and it shall include the following elements:</p> <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Facility Description/Construction</li> <li>3. Description of Facility Operations</li> <li>4. Description of fire protection system(s) or feature(s) to be deactivated</li> <li>5. If applicable, summary of anticipated pre-demolition work and the impact on combustible loading, including demolition dates.</li> <li>6. Analysis of applicable DOE, NFPA and other pertinent requirements</li> <li>7. MCFL and MPFL evaluation (See HMIS-PRO-FP-38421)</li> <li>8. Radiological/Hazardous Material Release Assessment</li> <li>9. Manual Fire Suppression Water Assessment</li> <li>10. Exposure Analysis per NFPA 80A</li> <li>11. Personnel Occupancy/Life Safety Features</li> <li>12. Requirements for component removal or identification</li> <li>13. Conclusions/Recommendations</li> </ol>		

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	<p>The deactivation analysis is permitted to reference released FHAs or other released documents to minimize duplication of information.</p> <p>c. A HFD response assessment is required to evaluate safety and response impacts to HFD personnel. Based on the HFD Response Assessment, a DOE authorized “stand-off” and protect position may be required.</p> <p>NOTES:</p> <p><i>The facility fire protection assessment for the facilities covered by items a. and b. above shall not require a concurrent update with the FHA or Deactivation Analysis but shall be updated following fire protection system deactivation to reflect the existing configuration.</i></p> <p><i>A “stand-off” and protect position refers to limiting fire department response to a defensive fire attack using exterior hose streams and similar tactics that do not require firefighters to enter the structure.</i></p>		
4.	<p>The facility/project organization requesting the deactivation of a fire protection feature shall be responsible for the following as applicable:</p> <p>a. Ensure an evaluation has been performed on the acceptability of fire protection feature deactivation per nuclear safety requirements, if required.</p> <p>b. Ensure a USQ review has been performed in accordance with an established process, if required.</p> <p>c. Ensure an evaluation has been performed on the potential company-level financial and political risks of fire protection feature deactivation, if hazardous and/or radioactive materials are present. (Reference HMIS-PLN-RIM-42375, Project Risk Management Plan, for optional risk evaluation guidance). The following elements shall be included as applicable:</p> <ul style="list-style-type: none"> <li>• Environmental evaluation of potential releases</li> </ul>		<p>Letter 22-NSD-000147_RL, Item 16)</p> <p>DOE-STD-1066-2016, Section 7</p> <p>10 CFR 830</p>

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	<ul style="list-style-type: none"> <li>• Hazardous material release and cleanup evaluation</li> <li>• Radiological material release and cleanup evaluation</li> <li>• Groundwater evaluation for fire suppression runoff</li> </ul>		
5.	<p>If either of the following items apply, then DOE approval is required, and facility demolition must begin within 30 days of deactivation of the fire protection feature:</p> <p>a. An analysis confirms that the MPFL exceeds DOE criteria for requiring a fire suppression feature.</p> <p>b. Analysis confirms that NFPA and other pertinent codes and standards criteria require the feature to remain in place.</p> <p>If the analysis confirms that the removal of the fire protection feature is permitted by DOE, NFPA and other applicable requirements and there are radiological or hazardous materials present in the facility, but the financial and political risks associated with a fire in the facility are not acceptable to the company, facility demolition must begin within 30 days of deactivation.</p> <p><i>NOTE: In the context of this RD, demolition is defined as the removal of the building frame or the removal of the materials directly attached to the frame such as sheetrock on the interior and sheathing or siding materials on the exterior by heavy equipment or similar means where there is no longer any personnel entry to the facility for any reason. It does not include other activities that are part of deactivation, decontamination, dismantlement and demolition, commonly referred to as D4.</i></p>	I	DOE-STD-1066-2016, Appendix F
6.	<p>Fire protection feature deactivation may proceed with no timetable for facility demolition if all the following are concluded:</p> <p>a. Analysis confirms that the MPFL does not exceed DOE criteria for requiring a fire protection feature.</p>	I	DOE-STD-1066-2016, Appendix F

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	<p>b. Analysis confirms that NFPA, DOE and other pertinent codes and standards criteria support fire protection feature deactivation.</p> <p>c. If radiological or hazardous materials are present in the facility, senior level company management confirms that the financial and political risks associated with a fire in the facility without the fire protection feature are acceptable to the company.</p> <p>d. The Hanford Fire Chief concurs the risk is acceptable.</p> <p><i>NOTE: This is the optimal path for deactivation. Deactivation of fire protection features in facilities that will continue to be operational or occupied must satisfy these requirements. Deactivation of special fire protection features installed to protect a specific component or process will also fall into this category once the component or process being protected is removed or deactivated.</i></p>		
7.	Fire protection feature deactivation is not permitted if determined to not be acceptable per nuclear safety requirements.	I	10 CFR 830
8.	Fire protection feature deactivation is not permitted if HFD and the HFM determine that emergency response or firefighter safety impacts are unacceptable.	I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2  DOE-RL Letter 22-NSD-000147, Item 16
9.	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 shall commence 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.	I	DOE-STD-1066-2016, Appendix F
10.	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, shall be performed on the basis of fire areas in a manner to ensure that the fire areas of the building not planned for demolition	I	DOE-STD-1066-2016, Appendix F

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	maintain fire protection. Demolition of the fire areas in which fire protection has been deactivated shall begin within 30 days following deactivation unless the FHA or the Deactivation Analysis justifies an alternate demolition commencement time.		
11.	<p>The following shall be required for all proposed fire protection feature deactivations:</p> <p>Administrative controls as prescribed by the FHA or Deactivation Analysis.</p> <p>A Hanford Fire Department Response Assessment evaluating safety to fire department personnel including proposed tactics in responding to a fire following deactivation.</p> <p>A Pre-Incident Plan reflecting changes as necessary.</p> <p>A Fire Marshal Permit</p>		<p>Letter 22-NSD-000147_RL, Item 16)</p> <p>DOE-STD-1066-2016, Appendix F</p>
12.	For facility fire system deactivation (e.g., sprinkler systems) associated underground water mains shall not be excavated or exposed prior to project receipt of approved Fire Marshal Permit.	I	HNF-52336 <i>Fire Marshal's Charter</i> , Rev. 2
13.	Deactivated fire protection and life safety systems and components shall be removed in accordance with NFPA requirements, except for Transitional Facilities.	I	<p>NFPA 1, 4.5.8.3</p> <p>NFPA 13, 29.2</p> <p>NFPA 101, 4.6.12.3</p> <p>DOE-STD-1066-2016, Appendix F</p>
14.	<p>For transitional facilities:</p> <ol style="list-style-type: none"> <li>a. All retained interior fire protection systems should be maintained operational to the extent possible while interior work activities are taking place</li> <li>b. The sequence of removal of these systems should be clearly spelled out in the FHA or deactivation analysis</li> <li>c. Sprinkler systems should be retained until all fixed and transient combustible materials have been removed.</li> </ol>	I	<p>DOE-STD-1066-2016, Appendix F</p> <p>NFPA 1, 10.12</p>

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	<p>d. Deactivated systems deteriorate rapidly. Fire suppression systems should not be removed from service for a prolonged period with the intent to restore protection for safety of workers when final disposition is funded.</p> <p>e. When feasible, automatic sprinklers should be maintained so that they can be supplied by the fire department utilizing the sprinkler connection.</p> <p>f. The site and facility fire water distribution system, including hydrants, fire department connections, and interior standpipe systems, should be maintained in an operable state.</p> <p>If any of these recommendations will not be met, adequate justification shall be provided in the deactivation analysis.</p>		

**3.4 Transitional Facilities**

#	Requirement	Type V or I	Source
1.	Facilities transitioning from occupied to unoccupied status shall be evaluated in accordance with DOE-STD-1066-2016 for appropriate life safety provisions to address infrequent entries and associated activities.	I	DOE-RL Letter 22-NSD-000147, Item 17
2.	For transitional facilities having an FHA, a transitional FHA shall be developed in accordance with DOE-STD-1066-2016, Section 7.1.3.	I	DOE-STD-1066-2016, Section 7.1.3
3.	Facilities being transitioned from unoccupied to occupied status shall be re-evaluated by the project or facility FPE per DOE-STD-1066-2016, Section 7.1.3 and Appendix F, NFPA 801, Chapter 8 and NFPA 241, Chapters 8, 10 and 11, including the applicable provisions of the other chapters of these standards in a graded approach to address life safety hazards, and the potential release of hazardous and radiological materials to the environment during occupied activities such as deactivation and decommissioning.	I	DOE-RL Letter 22-NSD-000147, Item 17

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### 3.5 Deactivated Facilities in Surveillance & Maintenance

#	Requirement	Type V or I	Source
1.	Facilities that have been placed in a safe condition and are now in long term shutdown with periodic minimum surveillance and maintenance activities and are only entered infrequently for inspections and minor maintenance are considered to be in surveillance & maintenance mode.	I	HNF-52336 <i>Fire Marshal's Charter, Rev. 2</i>
2.	In accordance with Hanford Fire Marshal Interpretation/Clarification Request (ICR) CY-2010-006, Surveillance & Maintenance facilities that are limited to 10 persons or less are not considered occupied which provides relief from NFPA 101 requirements.	I	ICR CY-2010-006  NFPA 101, Chapter 7.2.1.1.3
3.	For Surveillance & Maintenance facilities, life safety features shall be maintained to a level that meets the intent of DOE-STD-1066-2016 and NFPA 101. 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, a flashlight for each person, exit signs along the surveillance paths, accountability system, remote unlocked egress paths, and a means of communication.  The life safety features may be established on a case-by-case basis but shall be formally approved by the facility or project FPE. This approval may be documented in a work document, surveillance procedure or other appropriate means.	I	DOE-RL Letter 22-NSD-000147, Item 17  NFPA 101, Chapter 7  DOE-STD-1066- 2016, Appendix F
4.	Surveillance & Maintenance facilities occupied by less than 10 persons do not require an occupancy permit in accordance with ICR 2010-009. Exceeding 10 persons shall require a Hanford Fire Marshal Permit for occupancy and additional evaluation of life safety features by the facility or project FPE.	I	ICR 2010-009
5.	Performance of decontamination activities or activities that exceed minor maintenance exceeds the intent of a Surveillance & Maintenance facility and shall require evaluation as a transitional facility in accordance with section 3.4 of this document.	I	DOE-RL Letter 22-NSD-000147, Item 17  DOE-STD-1066- 2016, Section 7

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#	Requirement	Type V or I	Source
6.	Surveillance & Maintenance facilities are considered vacant buildings and shall comply with NFPA 1 requirements for vacant buildings and premises.	I	NFPA 1, Chapter 10.12

**3.6 Demolition/Deactivation/Decommission Requirements**

#	Requirement	Type V or I	Source
1.	Demolition, deactivation and decommissioning activities shall be performed in accordance with applicable sections of NFPA 1, NFPA 241 and NFPA 1141.	I	DOE-RL Letter 22-NSD-000147, Item 1
2.	In addition, nuclear and radiological facilities determined to be within the scope of NFPA 801 shall also comply with NFPA 801 and any facility specific FHA or Fire Protection Program requirements.	I	NFPA 801, Chapter 1
3.	Use of explosives for demolition shall comply with NFPA 495, <i>Explosive Materials Code</i> , and HMIS-RD-FP-11227, <i>Use of Explosives on the Hanford Site</i> .	I	NFPA 1, Chapter 65.9
4.	Demolition, deactivation and decommissioning activities shall also comply with all requirements of section 3.1 of this document.		

**4.0 RECORD IDENTIFICATION**

Performance of this procedure generates the following records which are maintained in accordance with HMIS-PRO-RM-10588, *Records Management Processes*.

**Records Capture Table**

Name of Document	Submittal Responsibility	Retention Responsibility
<i>HFD Construction/Demolition Fire Safety Inspection Checklist</i>	Requesting organization or project	HFD

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Name of Document	Submittal Responsibility	Retention Responsibility
<i>Nonemergency Hydrant Tie-in Permit</i>	Requesting organization or project	Water Utilities Kinetic Service Request

**5.0 SOURCES****5.1 Source Requirements**

DOE-RL Letter 22-NSD-000147, Contract No. 89303320DEM000031 -The U.S. Department of Energy's Direction to add DOE O 420.1C, Change 3, Facility Safety to the Contract CRD O 420.1C, Chg. 3 (reference attachment in DOE letter 22-NSD-000147), *Facility Safety DOE-STD-1066-2016, Fire Protection*

FM Global Property Loss Prevention Data Sheet 1-0, *Safeguards During Construction, Alteration and Demolition*

*International Building Code (IBC), 2018 Edition*

NFPA 1, *Fire Code, 2021 Edition*

NFPA 10, *Standard for Portable Fire Extinguishers, 2018 Edition*

NFPA 13, *Standard for the Installation of Sprinkler Systems, 2019 Edition*

NFPA 30, *Flammable and Combustible Liquids Code, 2021 Edition*

NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals, 2019 Edition*

NFPA 58, *Liquid Petroleum Gas Code, 2020 Edition*

NFPA 80, *Standard for Fire Doors and Other Opening Protectives, 2019 Edition*

NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures, 2017 Edition*

NFPA 101, *Life Safety Code, 2021 Edition*

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations, 2019 Edition*

NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids, 2017 Edition*

NFPA 495, *Explosive Materials Code, 2018 Edition*

NFPA 505, *Fire Safety Standard for Powered Industrial Trucks including Type Designations, Areas of Use, Conversions, Maintenance, and Operations, 2018 Edition*

NFPA 701, *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, 2019 Edition*

NFPA 703, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials, 2021 Edition*

NFPA 704, *Standard System for the Identification of the Hazards of Material for Emergency Response, 2017 Edition*

NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials, 2020 Edition*

NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban, 2017 Edition*

WAC 246-290-490, *Cross-Connection Control*

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HNF-52336 Rev. 2, *Authority, Responsibilities, and Duties of the Hanford Fire Marshal (Fire Marshal's Charter)*  
Hanford Fire Marshal Advisory Bulletin EM400-AB03-001, Rev. 0, *Use of Absorbent Materials in Flammable Storage Cabinets*  
Hanford Fire Marshal Advisory Bulletin EM400-AB04-006 Rev. 0, *Portable Liquefied Petroleum Gas Cylinders*  
Hanford Fire Marshal Advisory Bulletin AB05-001, Rev. 2, *Approved Receptacles for Smoking Material & Requirements for Use*  
Hanford Fire Marshal Advisory Bulletin AB06-001, Rev. 5, *Use of Barbecues on the Hanford Site*  
Hanford Fire Marshal Advisory Bulletin AB 2013-001, Rev. 1, *Use and Permitting of Storage Containers*

**5.2 References**

Hanford Fire Marshal Advisory Bulletin AB07-001, Rev. 16, *Off Road Vehicle Use and Travel*  
Hanford Fire Marshal Advisory Bulletin AB09-001, Rev. 4, *Fire Extinguishers for Vehicles*  
Hanford Fire Marshal Advisory Bulletin AB16-001, Rev. 0, *Portable Fire Extinguisher (PFX) Expectations*  
Hanford Fire Marshal Advisory Bulletin AB-17-001, Rev. 0, *Heated Fire Hydrant Enclosure*  
Hanford Fire Marshal's Office Interpretation/Clarification Request, CY-2010-006  
Hanford Fire Marshal's Office Interpretation/Clarification Request, 2010-009, S&M/D&D  
HFD-PLN-FP-58194, current version, *Hanford Fire Department Program Plan*  
HFD-PRO-FS-60742 (4.A.10), current version, *Deactivation of Facility Fire Protection Features*  
HFD-PRO-FPFCI-60700 (2.E.3), current version, *Facility/Area Inspections and Tours*  
HFD-PRO-EOCO-61828, current version, *HFD Incident Management*  
HMIS-PLN-RIM-42375, current version, *Project Risk Management Plan*  
HMIS-PRO-CONST-14990, current version, *Construction Management*  
HMIS-PRO-ENG-2001, current version, *Facility Modification Package Process*  
HMIS-PRO-PM-24889, current version, *Project Initiation, Execution and Execution*  
HMIS-PRO-FP-38421, current version, *Fire Hazard Analysis Development and Implementation Process*  
HMIS-PRO-RM-10588, current version, *Records Management Processes*  
HMIS-PRO-WC-472, current version, *Cold Weather Protection*  
HMIS-RD-ENG-1819, current version, *HMIS Engineering Requirements*  
HMIS-RD-FM-10361, current version, *Controlling Cross Connections*  
HMIS-RD-FP-7899, current version, *Fire Protection System Testing/Inspection/Maintenance/Discrepancies*  
HMIS-RD-FP-8589, current version, *Hanford Fire Marshal Permits*  
HMIS-RD-FP-9118, current version, *Fire Protection Design/Operations Criteria*  
HMIS-RD-FP-11227, current version, *Use of Explosives on the Hanford Site*

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**5.3 Forms**

[A-6002-692](#), *HFD Construction/Demolition Fire Safety Inspection Checklist*  
[A-6003-681](#), Nonemergency Hydrant Tie-in Permit,