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Idaho Cleanup Project	Program Requirements Document	For Additional Info: http://EDMS	Effective Date: 07/18/11
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Manual: 14A– Safety and Health–Occupational Safety and Fire Protection

Change Number: 333535

*The current revision can be verified on EDMS.

1. PURPOSE

The Idaho Cleanup Project (ICP) Fire Protection Program ensures compliance with applicable fire protection requirements and establishes a level of fire protection sufficient to achieve the programmatic goals identified in DOE Order 420.1B, “Facility Safety.”

2. POLICY

2.1 The policy of the company is to operate and manage all organizational elements and facilities in a manner that will minimize the potential for the following:

- The occurrence of a fire or related event that could threaten the health and safety of workers, the public, the environment, or U.S. Department of Energy Idaho Operations Office (DOE-ID) property. *[DOE O 420.1B, 1a]*
- An unacceptable release of hazardous or radiological materials as a result of fire or related hazards. *[DOE O 420.1B, 1b]*
- Unacceptable interruptions of vital DOE-ID programs as a result of fire or related hazards. *[DOE O 420.1B, 1c]*
- Property losses from a fire or related events. *[DOE O 420.1B, 1d]*
- Damage to critical process controls and safety-class systems as a result of fire or related events. *[DOE O 420.1B, 1e]*

2.2 Company management is committed to meeting the goals of the ICP Fire Protection Program and to supporting a level of fire protection and fire suppression capability sufficient to minimize losses from fire and related hazards consistent with the best class of protected property in private industry (i.e., *highly protected risks* [see def.]). A graded approach shall be utilized to meet the minimum requirements for buildings that are being prepared for cold, dark, and dry (CD&D) or decontamination, decommissioning, and demolition (DD&D) status. Fire safety must be an integral part of all activities and facilities are designed with both active and passive fire protection features such that reliance is not placed on only one means to achieve defense in depth and ensure an acceptable level of fire safety. *[DOE O 420.1B, 3a(1), (2), 3b (1)(b)]*

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- 2.3 Company management is committed to ensuring that ICP facilities are designed to and meet all applicable fire protection requirements, codes, and standards or exceed those requirements and standards when necessary to meet safety objectives unless an exemption or equivalency has been granted. *[DOE O 420.1B, 3a(3), 3b(1)(a)]*
- 2.4 The primary sources of requirements for the ICP Fire Protection Program are U.S. Department of Energy (DOE) Order 420.1B; 10 CFR 851, “Worker Safety and Health Program”; the International Building Code (IBC 2000); and National Fire Protection Association (NFPA) codes and standards. *[DOE O 420.1B, 3a(3)]*
- 2.5 Applicable fire protection requirements are interpreted by cognizant *fire protection staff* (see def.) and are published as controlled documents in Manual 14A–*Safety and Health–Occupational Safety and Fire Protection* as well as facility-specific documents. All managers are expected to implement the fire protection requirements within their areas of responsibility and to ensure that their personnel comply with the requirements. *[DOE O 420.1B, 3b(2)(a-i)]*

3. APPLICABILITY

The requirements apply to fire protection at all facilities operated by the prime contractor (ICP) at the Idaho National Laboratory (INL). *[DOE O 420.1B, 2]*

4. REQUIREMENTS

4.1 Mandatory Requirements for the Idaho Cleanup Project Fire Protection Program

- 4.1.1 Mandatory requirements for the ICP Fire Protection Program are derived from the following sources: *[DOE O 420.1B, 3a(3)(a) & (b), 3b(1)(a)&(b)]*
- Applicable National Fire Protection Association (NFPA) codes and standards
 - 29 *Code of Federal Regulations* (CFR) 1910, “Occupational Safety and Health Standards”
 - 29 CFR 1926, “Safety and Health Regulations for Construction”
 - 10 CFR 851, “Worker Safety and Health Program”
 - U.S. Department of Energy (DOE) Order 420.1B

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- DOE Order 440.1A, “Worker Protection Management for DOE Federal and Contractor Employees”

NOTE: *The (10 CFR 851) Rule replaces the Contractor Requirements Document of DOE O 440.1A and tailored health and safety contractual agreements. [DOE G 440.1-8(1)]*

- DOE Manual 231.1-1A, “Environment, Safety and Health Reporting Manual Change 1, Appendix F, Annual Fire Protection Summary”
- International Building Code (Code of Record)
- Other DOE orders and statutory requirements not listed above that contain requirements of a more limited extent relating to the DOE Fire Protection Program
- DOE AHJ Delegation Letter – CCN300128, May 4, 2005
- DOE AHJ Delegation Letter – CCN308221, March 23, 2009.

4.2 Nonmandatory Requirements for the Idaho Cleanup Project Fire Protection Program

4.2.1 Information from the following documents will be incorporated into the ICP Fire Protection Program as nonmandatory guidance:
[Company Practice]

- DOE G 420.1-3, “Implementation Guide for DOE Fire Protection and Emergency Services Programs for Use with DOE O 420.1B, Facility Safety”
- DOE-STD-1066-99, “Fire Protection Design Criteria”
- DOE-STD-1088-95, “Fire Protection for Relocatable Structures”
- DOE-HDBK-1062-96, “DOE Fire Protection Handbook”
- International Fire Code (ICC 2004)
- STD-173, “2004 ICP Architectural Engineering Standards”
- Factory Mutual data sheets.

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5. FIRE PROTECTION PROGRAMMATIC ELEMENTS**5.1 Fire Protection Programmatic Element 1**

A policy statement incorporating the requirements of DOE Order 420.1B, related DOE directives, and other applicable federal, state, and local fire protection requirements. Section 2 of this procedure contains the policy and management commitment statements required by DOE Order 420.1B.

[DOE O 420.1B, 1 & 3b(1)(a) & (b)]

5.2 Fire Protection Programmatic Element Number 2

5.2.1 The comprehensive written ICP Fire Protection Program includes criteria that reflect additional site-specific aspects of the ICP Fire Protection Program for the design and installation of fire protection systems, which are described in the following subsections. *[DOE O 420.1B, 3b(2)(a) thru (i)]*

5.2.2 A graded approach shall be utilized to meet the minimum requirements for buildings and facilities that are being prepared for cold, dark, and dry (CD&D); decontamination, decommissioning, and demolition (DD&D); and temporary buildings utilized for the CD&D/DD&D process. *[DOE O 420.1B, 3c, 3c(1) thru(12)]*

NOTE: *DOE G 420.1-3 is incorporated into the design and installation requirements. Facility fire protection engineers (FFPEs) may request deviations from the ICP Fire Marshal regarding guidance requirements that are not required to meet the fire protection programmatic goals.*

5.2.3 The fire protection design shall comply with the requirements of Management Control Procedure (MCP)-1450, “Conduct of Engineering.” To minimize the loss from fire, all designs for new and modified DOE-owned facilities shall comply with the mandatory criteria identified in Section 4.1 and incorporate applicable guidance from Section 4.2. This will include the following:

[DOE O 420.1B, 3c, 3c(1) thru (12)]

- Reliable water supply of adequate capacity for fire suppression. *[DOE O 420.1B, 3c(1)]*
- Noncombustible or fire-resistive construction, where appropriate. Complete fire-rated barriers that are commensurate with the fire hazard to isolate hazardous occupancies and minimize fire spread and loss potential consistent with the defined limits established by DOE G 420.1-3. *[DOE O 420.1B, 3c(2)]*

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- Automatic fire-extinguishing systems are required throughout all facilities and in all areas subject to loss of safety-class systems, life safety hazards, unacceptable program interruption, or as a minimum, any building/facility in excess of 5,000 square feet or any building/facility with a maximum possible fire loss (MPFL) (see def.) of \$3 million or more. [DOE O 420.1B, 3c(4); DOE G 420.1-3]
- Where governing the use of fire fighting water or other neutron moderating materials to suppress fire within or adjacent to moderation controlled areas or no alternative exists to criticality safety restrictions on the use of water for fire suppression, the need for such restrictions shall be fully documented with written technical justification. [DOE O 420.1B, 3b(11) & (12)]
- Redundant *fire protection systems* (see def.) in areas where safety-class systems are vulnerable to fire damage and where no redundant safety capability exists outside the fire area. In new buildings/facilities, redundant safety-class systems will be in separate fire areas. Redundant fire protection systems also will be provided in areas where the MPFL exceeds \$50 million. [DOE O 420.1B, 3c(5) & (6)]
- Means to summon the Fire Department in the event of a fire. [DOE O 420.1B, 3c(7)]
- Means to notify and evacuate building/facility occupants in the event of a fire (such as a fire detection or fire alarm system and illuminated, protected egress paths). [DOE O 420.1B, 3c(7) & (8)]
- Physical access and appropriate equipment that is acceptable for effective fire department intervention (such as interior standpipe system in multistory or large, complex facilities). [DOE O 420.1B, 3c(9)]
- Means to prevent the accidental release of significant quantities of contaminated products of combustion and fire-fighting water to the environment (such as ventilation control and filter systems, curbs, and dikes). Such features would only be necessary if required by the *fire hazards analysis* (FHA) (see def.), *documented safety analysis* (DSA) (see def.), *fire safety assessment* (FSA) (see def.), *abbreviated fire assessment* (AFA) (see def.), or Combination FHA/FSA in conjunction with other building, facility, or site environmental protection measures. [DOE O 420.1B, 3c(10)]

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- Fire and related hazards that are unique to the operation and are not addressed by industry codes and standards shall be protected by isolation, segregation, or use of special fire-control systems (such as inert gas or explosion suppression), as determined by the FHA. [DOE O 420.1B, 3c(11)]
- Fire protection systems shall be designed such that their inadvertent operation, inactivation, or failure of structural stability will not result in the loss of vital safety functions or inoperability of safety-class systems, as determined by the DSA. [DOE O 420.1B, 3c(12)]

5.2.4 Control of Temporary Facilities

Administrative controls shall be established and implemented to control the construction and placement of temporary facilities. The controls will provide for the type of construction, including materials and finishes, owner identification, occupancy limits, and limits on contents based on value and installed fire protection features in accordance with DOE-ID *Architectural Engineering Standards* (DOE-ID 2002) and the guidance in DOE-STD-1088-95, “Fire Protection for Relocatable Structures.” [DOE Order 420.1B, 3c), 3c(1) thru (12)]

5.2.5 Safeguarding Construction, Alteration, and Demolition Operations

Safeguarding construction, alteration, and demolition operations shall be performed on a graded approach as designated by the facility fire protection engineer using NFPA 241, *Safeguarding Construction, Alteration, and Demolition Operations*, as the referenced standard. [NFPA 241 1-3 and NFPA 801, 4.3(9)]

5.2.6 Control of Cold, Dark, and Dry; Decontamination, Decommissioning, and Demolition; Lay Up; and Safe Shutdown of Facilities [DOE O 420.1B, 3b(2)(a)(d)(g)]

- 5.2.6.1 All ICP Fire Protection Program requirements may not be appropriate for facilities undergoing CD&D, DD&D, lay up, and safe shutdown. Decisions relating to fire safety of such building/facilities shall be made upon completion of an FHA, FSA, Combination FHA/FSA or AFA on the basis of the guidance contained in DOE G 420.1-3. [DOE O 420.1B, 3b(2)(a)(c)]

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- 5.2.6.2 Building and equipment replacement cost plus content cost for the building/facility must be reduced to less than \$3 million prior to inactivation of automatic fire suppression or fire alarm systems. The FSA or AFA shall reflect a MPFL damage potential of less than \$3 million.
[DOE O 420.1B, 3b(2)(a)(c)]
- 5.2.6.3 The isolation of fire protection systems will be conducted in accordance with MCP-585, “Managing Fire Protection Impairments,” and the conditions of the approved FSA or AFA. Systems will not be isolated prior to the completion of all design modifications necessary to ensure the continued operability of interconnected fire protection systems. In addition, an out-of-service or out-of-commission impairment will be completed.
[DOE O 420.1B, 3b(2)(c)(d)(f), 3b(3) & (4)]
- 5.2.6.4 The INL Fire Department will be notified to ensure that affected pre-incident plans are updated to reflect the revised occupancy of CD&D, DD&D, lay up, or inactivated facilities. *[DOE O 420.1B, 3b(16)]*
- 5.2.6.5 Affected fire protection system drawings and inspection, testing, and maintenance procedures will be identified during the planning phase of the inactivation project and revisions/deletions will be completed prior to project closeout. Affected documents and procedures will be managed in accordance with MCP-1450.
[DOE O 420.1B, 3b(2)(a), 3b(3) & (4)]
- 5.2.6.6 At least every 3 years, fire protection inspections of inactivated facilities will be performed to ensure that inactivation conditions specified in the FSA or AFA are maintained. An updated FSA or AFA will be prepared and issued following the inspection, if required. Fire protection inspections should be coordinated with other required inspections to maximize inspection efficiency.
[DOE O 420.1B, 3b(13)]
- 5.2.6.7 Administrative controls shall be documented, shall include as a minimum proper signage with the point of contact and phone number, and shall state the current status of the building/facility (such as “INACTIVE FACILITY,” entry requirements, and proper personal protective equipment requirements for entry). *[DOE O 420.1B, 3b(2)(a)]*

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5.2.6.8 The appropriate FFPE will be contacted to review all procedures, work orders, job safety analyses, hot work permits, and other documents that pertain to fire protection and the requirements for inactivating the building/facility. *[DOE O 420.1B, 3b(2)(a) & (d)]*

5.2.6.9 The building/facility will be cleared of all combustibles and flammables at all times. There shall be NO storage allowed in the building. *[DOE O 420.1B, 3b(2)(g)]*

5.2.7 Code of Record

The codes and standards in effect when the design of new buildings/facilities begins shall be considered the code of record. *[DOE O 420.1B, 3a(3)(a) & (b)]*

5.2.8 Subsequent Editions of Codes or Standards

Provisions of subsequent editions of codes or standards (promulgated after the COR) must be met to the extent that they are explicitly stated to be applicable to existing facilities. Other provisions of updated codes and standards must be applied to existing facilities when a construction modification takes place or when a potential for immediate risk to life safety or health has been identified through either the facility assessment or fire hazards analysis (FHA) review process, or during the construction review or permitting process. *[DOE O 420.1B, 3a(3)(b)]*

5.2.9 Operations

5.2.9.1 All operations shall be conducted in a manner that minimizes fire risk and complies with the mandatory requirements identified in Section 4.1 of this procedure. *[DOE O 420.1B, 3b(2)(h)]*

5.2.9.2 Operations management, in consultation with the FFPE, shall ensure that procedures relating to operations with inherent fire risks adequately identify and mitigate the associated fire hazards. *[DOE O 420.1B, 3b(5)(a) & (c)]*

5.2.10 Inspection, Testing, and Maintenance

5.2.10.1 All fire protection systems and equipment shall be maintained in accordance with Program Requirements Document (PRD) -158, "Inspection, Testing, and Maintenance of Fire Protection Systems and Equipment," to ensure their operability as designed. *[DOE O 420.1B, 3b(2)(d)]*

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- 5.2.10.2 The FFPE shall review and approve the maintenance procedures for fire protection systems and equipment. *[DOE O 420.1B, 3b(2)(d)]*
- 5.2.10.3 The FFPE shall review and sign off on completed work packages associated with the inspection, testing, and maintenance of fire protection systems and equipment. *[DOE O 420.1B & Company Practice]*
- 5.2.10.4 Trends in system and equipment performance shall be monitored to determine if significant degradation of system performance is occurring over time. Identified degradation shall trigger the revision of the inspection, testing, and maintenance program to feature more conservative frequencies. *[DOE O 420.1B, 3b(14)]*

5.2.11 Fire Protection System Impairments

- 5.2.11.1 Fire protection system impairments shall be managed to ensure that fire protection systems and equipment are in a state of readiness or trigger appropriate compensatory measures when systems or equipment are unable to perform their intended function. *[DOE O 420.1B, 3b(2)(f)]*
- 5.2.11.2 Impaired systems or equipment shall be returned to service in timely manner. “Managing Fire Protection Impairments” (MCP-585) implements the company’s fire-impairment program requirements. *[DOE O 420.1B, 3b(2)(f)]*
- 5.2.11.3 Roles and responsibilities for fire protection system and equipment impairments are defined in MCP-585. *[Company Practice]*

5.2.12 Storage and Handling of Flammable and Combustible Liquids

The storage and handling of flammable and combustible liquids shall be managed to ensure adequate mitigation of the associated hazards. The inventory and use of flammable and combustible liquids shall be minimized to the extent practical. Qualified fire protection engineers shall be included in the development and review of administrative controls for the storage and handling of these materials to ensure that fire hazards are adequately identified and mitigated. PRD-308, “Handling and Use of Flammable and Combustible Liquids,” MCP-2708, “Maintaining Facility Chemical Storage Limits,” MCP-2043, “Management of Time Sensitive Chemicals,” and MCP-2044, “Compatible Chemical Storage,” implement the ICP Fire Protection

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Program for storage and handling of flammable and combustible liquids' requirements. *[DOE O 420.1B, 3b(2)(e)]*

5.2.13 Storage and Handling of Radioactive and Hazardous Materials

Radioactive and other hazardous materials shall be stored and handled in accordance with the mandatory requirements identified in Section 4.1 of this PRD and/or facility-specific authorization basis requirements. Qualified fire protection engineers shall be included in the development and review of administrative controls for storage and handling of these materials to ensure that fire hazards are adequately identified and mitigated. *[DOE Order 420.1B, 3b(2)(e)]*

5.2.14 Control of Hot Work Activities

Welding, cutting, and other hot work activities shall be performed in accordance with PRD-5110, "Idaho Cleanup Project Welding, Cutting, and Other Hot Work," to ensure adequate mitigation of their associated hazards. Qualified fire protection engineers shall be included in the review of work control documents involving hot work. *[DOE O 420.1B, 3b(2)(g)]*

5.2.15 Use of Scaffolding

Use of scaffolding shall be performed in accordance with PRD-5098, "Scaffolding," to ensure adequate mitigation of their associated hazards. *[Company Practice]*

5.2.16 Wildland Fire Management

Plan (PLN)-14401, "INL Wildland Fire Management Plan," provides coordination of wildland fire prevention, preparedness and response activities with the ICP contractor is essential in meeting program objectives. ICP provides critical response resources including but not limited to equipment. *[Company Practice]*

5.2.17 Quality Assurance, Safety Categorization, and Configuration Control

Quality assurance for fire protection systems and equipment shall be provided in accordance with the company's quality assurance program. Fire protection systems and equipment shall be defined as Commercial Grade, QL-4 unless determined otherwise by the Facility Fire Protection Engineer in accordance with the criteria in MCP-540, "Assigning Quality Levels." Configuration control for fire protection systems and equipment shall be provided in accordance with PRD-115, "Configuration Management." *[Company Practice]*

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5.2.18 Fire Protection Performance Indicators

The fire-protection performance indicators are established to effectively monitor the ICP Fire Protection Program. Baseline performance indicators include the following: *[Company Practice]*

5.2.18.1 Fire Protection Systems and Equipment

- 5.2.18.1.1 Evaluation and report of inspection, testing, and maintenance of nuclear facilities' fire protection systems and equipment. Criteria: 90% of activities completed within 30 days of the required performance for nuclear facilities and the balance of plant. An allowance of 1.25 times the stated *frequency* (see def.) will be allowed when approved by the Authority Having Jurisdiction (AHJ). *[TSR-100 1.6, NFPA 72 3.3.106]*

NOTE: *Though the frequency is stated for each interval, an extension of the time interval to 1.25 times the stated frequency is allowed for operational flexibility. Each requirement shall be performed within the specified interval, with a maximum extension of 25% of the interval between any two consecutive surveillances. (This extension is intended to provide operational flexibility; however, the extension shall not be relied upon as a routine extension of the specified time interval.)*

- 5.2.18.1.2 Evaluation and report of site area impairment logs. Criteria: 90% of impairments restored in accordance with MCP-585. *[Company Practice]*

- 5.2.18.1.3 Evaluation and review of the Project Fire Protection Status Board scheduling for assessments, FHAs, FHA/FSAs, FSAs, and AFAs quarterly. Criteria: 90% of FHA/FSAs, FSAs, and AFAs completed in accordance with MCP-583, "Performing Fire Hazards Analysis (FHA), Fire Safety Assessments (FSA), and Abbreviated Fire Assessments (AFA)." *[Company Practice]*

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5.2.18.2 Fire-Related Losses

Annual Summary of Fire Loss (Calendar Year). Criteria: Annual losses not to exceed five cents of fire loss per \$100.00 of property value. *[DOE Manual 231.1-1]*

5.2.19 Fire Hazards Analysis/Fire Safety Assessment/Abbreviated Fire Assessment Schedules

5.2.19.1 FHAs and Combination FHA/FSAs using a graded approach conducted for Hazard Category 1, 2, and 3 nuclear facilities, significant new facilities, and facilities that represent unique fire safety risks to be revised:
[DOE O 420.1B, 3b(5)]

- When changes to the annual DSA updates impact the contents in the FHA or Combination FHA/FSA,
[DOE O 420.1B, 3b(5)c1, 3b(6)]
- A modification to an associated facility or process adds a significant new fire safety risk, or
[DOE O 420.1B, 3b(5)c2]
- The 3 year review identifies the need for changes.
[DOE Order 420.1B, 3b(5)c3]

NOTE: *Combination FHA/FSAs for nuclear facilities and facilities valued at \$100 million and over are reviewed and updated annually.*

5.2.19.2 FSAs for nuclear facilities and facilities valued at \$100 million and over annually, less than \$100 million every three years. *[DOE G 420.1-3]*

5.2.19.3 AFAs shall be completed and reviewed every three years.
[DOE G 420.1-3]

NOTE 1: *The schedule will be maintained in the ICP Fire Marshal's office as a part of the "Fire Protection Status Board."*

NOTE 2: *FHA and FSA may be combined in a single document if the required elements identified in MCP-583 are addressed.*

NOTE 3: *AFAs may be used for facilities valued at less than \$3 million or as determined by the AHJ.*

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5.2.20 Lessons Learned

Fire protection-related lessons learned generated from INL operations and received from outside sources shall be reviewed to identify potential vulnerabilities and corrective actions initiated as necessary in accordance with MCP-192, “Processing Lessons Learned and Operating Experience Information.” *[Company Practice]*

5.2.21 Fire Incident Investigation and Reporting

5.2.21.1 All *fires* (see def.), regardless of size and whether they have been extinguished, shall be reported immediately as a minimum to the following: *[Company Practice]*

- INL Fire Department
- Facility/building manager
- FFPE/FFPT
- ICP Fire Marshal
- DOE-ID fire protection engineer.

5.2.21.2 The INL Fire Department shall prepare a fire incident run report for all fires. *[Company Practice]*

5.2.21.3 The ICP Fire Marshal shall coordinate an investigation for cause, origin, or circumstance of any fire, explosion, or near-miss fires and accidents, incidents, and occurrences. *[Company Practice]*

5.2.21.4 A graded approach shall be used to determine the qualifications of the investigator(s) and the investigation’s level of effort. The ICP Fire Marshal shall concur with the level of rigor proposed for the investigation and qualifications of the investigator(s). *[Company Practice]*

5.2.21.5 Form 442.12, “Report of Fire,” shall be completed and kept on file for all fire occurrences. *[Company Practice]*

5.2.22 Combustible Loading

5.2.22.1 Implement a fire protection combustible loading program on a “graded approach” for facilities, buildings, or rooms that have no automatic fire protection system, have concentrated locations of high combustible loading (including areas where the installed sprinkler system rating might be challenged), or activities that generate high volumes of

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transient combustibles. In addition, a combustible loading program is required for any facility, building or room determined to require such by the fire hazards analysis (FHA), fire safety assessment (FSA), Combination FHA/FSA, or abbreviated fire assessment (AFA).
[DOE O 420.1B, 3b(2)(a)(c)(d)]

5.2.22.2 A fire protection combustible loading program will include, as a minimum, a documented program describing the method used to control combustible loading. The program will include as the following:

- Specified periodicity of inspections
- Method of documenting the combustible loading inspections. [Company Practice]

5.2.23 Fire Prevention

5.2.23.1 The ICP Fire Prevention Plan shall maintain an effective program to support the DOE-ID authority having jurisdiction (AHJ) as required by the letter (CCN 300128) from R. B. Provencher, DOE-ID, “Delegation of Authority Having Jurisdiction for Fire Protection for the Idaho Completion Project Contract No. DE-AC07-05ID14516 (OS-QSD-05-042),” dated May 4, 2005. The program shall be based on nationally recognized codes and standards to include the *International Building Code* (ICC 2000), National Fire Protection Association (NFPA) codes and standards, and applicable DOE orders relating to fire prevention. [DOE-ID Letter CNN 300128]

5.2.23.2 The fire prevention program shall include, but not be limited to, the following:

- Smoking shall be prohibited in all contractor-operated buildings and all government-owned vehicles. Smoking shall be permitted in designated areas only. [DOE O 420.1B, 3b(2)(g)]
- Good housekeeping shall be maintained in all areas to keep egress routes clear, fire protection equipment unobstructed, and combustible loading to a minimum. [DOE O 420.1B, 3b(2)(i)]

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- Transient combustibles shall be minimized to the extent practical in all contractor-operated facilities.
[DOE O 420.1B, 3b(2)(i)]

5.2.24 Employee Involvement

Employees are encouraged to report fire protection concerns and may do so without fear of reprisal. No worker, foreman, supervisor, manager, or any other employee is allowed to take or threaten to take any act of reprisal, retribution, or discipline against any employee for having reported a fire safety concern. *[DOE O 420.1B, 3b(2)(a)(i)]*

5.3 Fire Protection Programmatic Element Number 3

The ICP Fire Protection Program shall maintain written fire safety procedures and implementing documents. The procedures and policies are maintained within *Manual 14A–Safety and Health–Occupational Safety and Fire Protection* and can be accessed in the Electronic Document Management System (EDMS).
[DOE O 420.1B, 3b(2)(a-i)]

5.4 Fire Protection Programmatic Element Number 4

5.4.1 Ensure that the requirements of the DOE Fire Protection Program are documented and incorporated into the plans and specifications for all new buildings/facilities and significant modifications of existing buildings/facilities. Appendix A, Fire Protection Design Criteria Development Process and Design Verification Process, defines specific review and approval requirements of FFPEs and the ICP Fire Marshal and as follows: *[DOE O 420.1B, 3b(3)]*

- The FFPEs shall provide fire-protection design criteria input for new building/facility designs and significant modifications and shall review designs for code compliance prior to approval
[DOE O 420.1B, 3b(4)]
- The ICP Fire Marshal (or designee) shall review and approve design criteria for new and modified buildings/facilities representing significant fire risk
[DOE O 420.1B, 3b(4)DOE-ID Letter CNN 300128]
- All fire protection plans and specifications for *significant new and modified building/facility designs* (see def.) shall be performed by or under the responsible charge of a registered professional engineer
[DOE O 420.1B, 3b(3) &(7)]

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- The ICP Fire Marshal (or designee) shall review and approve design documents presenting significant fire protection challenges or risk
[DOE O 420.1B, 3b(3) & (4)DOE-ID Letter CNN 300128]

NOTE: *Review and approval by the ICP Fire Marshal (or designee) does not relieve the applicant of compliance with established codes and standards.*

- The ICP Fire Marshal (or designee) shall review and approve calculations, shop drawings, and acceptance test procedures for fire alarm and suppression systems and equipment
[DOE O 420.1B, 3b(3) & (4); DOE-ID Letter CNN 300128]
- The ICP Fire Marshal's qualified technical representative shall witness the performance of the acceptance test procedures
[DOE O 420.1B, 3b(3) & (4); DOE-ID Letter CNN 300128]
- The ICP Fire Marshal (or designee) shall review and sign all exemption and equivalency requests.
[DOE O 420.1B, 3b(15)DOE-ID Letter CNN 300128]
- If use or modification of gaseous fire protection system is contemplated, the NE-ID AHJ must be formally notified, as NE-ID may provide additional direction.
[DOE-ID Letter CCN 300128]

5.5 Fire Protection Programmatic Element Number 5

5.5.1 The FHAs or Combination FHA/FSAs shall be completed for all nuclear facilities, significant new facilities, and facilities that present a unique or significant fire safety risk and as follows: *[DOE O 420.1B, 3b(5)]*

- A qualified FFPE shall write, review, and maintain FHAs or Combination FHA/FSAs. The ICP Fire Marshal shall be consulted for a determination of whether an FHA is required for significant new facilities and facilities that present a unique or significant fire safety risk. *[DOE Order 420.1B]*
- The conclusion of the FHA or Combination FHA/FSA shall be used to validate the design basis and beyond design basis accident scenarios in applicable DSAs.
[DOE O 420.1B, 3b(5)(a)m 3b(6)]

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- The ICP Fire Marshal shall review the FHA or Combination FHA/FSA for completeness in accordance with applicable DOE orders and directives and company policies and procedures. *[DOE O 420.1B, 3b(5)]*
- The FFPEs shall be included in the review of DSAs to ensure that vital fire protection systems are identified and applicable portions of the FHA or Combination FHA/FSA are integrated. *[DOE O 420.1B, 3b(6)]*
- MCP-583 implements the requirements to complete a fire hazards analysis or combination fire hazards analysis/fire safety assessment. *[DOE O 420.1B, 3b(5)]*

5.6 Fire Protection Programmatic Element Number 6

5.6.1 Provide a qualified and trained *fire protection staff* (see def.), including fire protection engineers and technicians. A qualified fire protection engineer shall be an individual possessing at least one of the following qualifications: *[DOE O 420.1B, 3b(7)]*

- Registered professional engineer in fire protection *[DOE O 420.1B, 3b(7)]*
- Graduate of an accredited engineering curriculum with no less than 4 years of engineering practice, at least 3 of these years being in responsible charge of fire protection engineering work *[DOE O 420.1B, 3b(7)]*
- Someone who has demonstrated knowledge of engineering principles and who has completed no less than 6 years of engineering practice, being in responsible charge of fire protection engineering work for at least 3 of these years. *[DOE O 420.1B, 3b(7)]*

5.6.2 Prospective candidates for new fire protection engineering and fire protection technical positions shall be reviewed by the ICP Fire Marshal and approved by the ICP Environment, Safety, Health, and Quality (ESH&Q) director. *[DOE O 420.1B, 3b(7)]*

5.6.3 The FFPEs shall be qualified in accordance with Standard (STD) -1105, “Fire Protection Qualification,” by the ICP Fire Marshal or his/her designated alternate. *[DOE O 420.1B, 3b(7)]*

5.6.4 The FFPEs shall be provided professional development and/or continuing education opportunities as required for maintaining competence in the field of fire protection. *[DOE O 420.1B, 3b(7)]*

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- 5.6.5 The FFPEs shall be provided access to the necessary materials to perform their job requirements. *[DOE O 420.1B, 3b(7)]*
- 5.6.6 FFPE's designated by their respective projects as technical staff shall meet the entry level education requirements of DOE O 5480.20A, "Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities." *[DOE O 420.1B, 3b(7)]*
- 5.6.7 Personnel assigned to perform inspection, testing, or maintenance functions on fire protection systems or equipment shall be trained and qualified for the assigned tasks. Qualifications may include certification issued by the National Institute for Certification in Engineering Technologies (NICET) system designers and technicians. Training shall be repeated as necessary to maintain proficiency and in accordance with STD-1134, "ICP Technical Qualifications for Personnel Performing Inspection, Testing, and Maintenance on Water Based Fire Protection Systems." *[DOE O 420.1B, 3b(7)]*
- 5.6.8 Employees shall be trained annually as to the appropriate response in the event of a fire, including the recognition of fire alarm notification devices and the immediate evacuation of the facility. *[DOE O 420.1B, 3b(2)(a)]*
- 5.6.9 Employees shall receive awareness training on the principles of fire extinguisher use and the hazards involved in *incipient stage fire* (see def.) suppression annually. *[DOE O 420.1B, 3b(2)(a)]*
- 5.6.10 Employees designated by management as expected by job function to use a fire extinguisher to suppress incipient fires shall receive hands-on fire extinguisher training annually. *[DOE O 420.1B, 3b(2)(a)]*

5.7 Fire Protection Programmatic Element Number 7

- 5.7.1 The INL Fire Department Baseline Needs Assessment establishes the minimum required capabilities of the site fire-fighting forces. This includes minimum staffing, apparatus, facilities, equipment training, fire pre-incident plans, and off-site assistance requirements and procedures. Information from the assessment shall be incorporated into the Site Emergency Plan and as follows: *[DOE O 420.1B, 3b(8)]*
- Information from the assessment shall be incorporated into the applicable FHA, FSA, Combination FHA/FSA, DSA, AFA, and other required government documentation *[DOE O 420.1B, 3b(9)]*

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- The company shall maintain access to an adequate INL Fire Department and interface agreement with off-site emergency service organizations based on the required needs as determined by the assessment *[DOE O 420.1B, 3b(9)]*
- Emergency drills and exercises structured to emphasize realistic scenarios and standard INL Fire Department tactical evolutions shall be performed as a minimum annually. *[DOE O 420.1B, 3b(10)]*

5.8 Fire Protection Programmatic Element Number 8

The INL Fire Department shall complete written pre-incident strategies, plans, and standard operating procedures to enhance the effectiveness of site fire-fighting forces. Pre-incident plans shall address as a minimum the use of fire-fighting water or other neutron-moderating materials within or adjacent to moderation-controlled areas. *[DOE O 420.1B, 3b(8)(a) thru (c), 3b(10)]*

5.9 Fire Protection Programmatic Element Number 9

5.9.1 A comprehensive, documented fire protection self-assessment program—which includes all aspects (program and facility)—of the ICP Fire Protection Program shall be performed on a regular basis at a *frequency* (see def.) established by the company. *[DOE O 420.1B, 3b(13)]*

5.9.1.1 Quarterly self-assessments will be performed and documented by FFPEs. Assessment criteria will include (but not be limited to) periodic assessments of fire protection procedures listed in Manual 14A to ensure adequate and compliant implementation. *[Company Practice]*

5.9.2 Facility, building, and area fire protection assessments shall be performed in accordance with MCP-583 and DOE Order 420.1B. *[DOE O 420.1B, 3b(5)(a) & (c), 3b(6), DOE G 420.1-3]*

5.9.3 A comprehensive fire protection programmatic assessment shall be performed in accordance with DOE Order 420.1B. This assessment shall be completed every 3 years. *[DOE O 420.1B, 3b(13)]*

5.9.4 The ICP ESH&Q directorate shall identify and periodically assess critical fire protection program elements to identify opportunities for improvement in accordance with company policies and procedures. *[DOE O 420.1B, 3b(13)]*

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5.9.5 An Annual Fire Protection Summary Report will be issued by CWI to DOE-ID in accordance with the requirements of DOE-M 231.1-1A, “Environment, Safety and Health Reporting Manual, Appendix F dated March 19, 2004. *[DOE-M 231.1-1A]*

5.9.5.1 Facility Fire Protection Engineers will provide data in accordance with DOE-M 231.1-1A, Appendix F, to the CWI Fire Marshal in the first quarter of each calendar year. *[DOE-M 231.1-1A]*

5.10 Fire Protection Programmatic Element Number 10

5.10.1 Fire protection-related appraisal findings, recommendations, and other deficiencies shall be identified, prioritized, and monitored in accordance with MCP-598, “Corrective Action System,” and as follows: *[DOE O 420.1B, 3b(14)]*

- All validated fire protection appraisal findings, recommendations, and deficiencies shall be reported through the Issue Communication and Resolution Environment System (I-CARE). *[DOE O 420.1B, 3b(14)]*
- Responsible management shall prioritize the findings, recommendations, and other deficiencies with input from the FFPEs and ensure that a timely resolution is achieved. The FFPEs shall provide periodic feedback to the ICP Fire Marshal on the status of significant fire protection issues. *[DOE O 420.1B, 3b(14)]*
- The ICP Fire Marshal shall intervene in the review and approval of facility and site-wide fire protection programmatic issues as needed for concurrence with corrective action plans and interim compensatory measures, as required. *[DOE O 420.1B, 3b(14)]*

5.11 Fire Protection Programmatic Element Number 11

5.11.1 Identify fire protection areas of noncompliance that require an AHJ Record, equivalency, or exemption and as follows: *[DOE O 420.1B, 3b(15); DOE-ID Letter CNN 300128]*

- Where strict compliance with fire protection requirements is not possible, AHJ Records, exemptions, or equivalencies shall be prepared and approved in accordance with MCP-581, “Fire Protection Authority Having Jurisdiction (AHJ) Records, Exemptions and Equivalencies.” *[DOE O 420.1B, 3b(15); DOE-ID Letter CNN 300128]*

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- The ICP Fire Marshal shall assist the DOE-ID AHJ by making code interpretations and initial reviews of fire safety exemptions and equivalencies in the administration of the ICP Fire Protection Program. The ICP Fire Marshal's concurrence is required prior to submittal to DOE-ID. The DOE maintains final AHJ review and approval authority for fire safety exemptions and equivalencies. *[DOE O 420.1B, 3b(15); DOE-ID Letter CNN 300128]*

5.12 Fire Protection Programmatic Element Number 12

Establish the roles and responsibilities of the ICP Fire Marshal.
[DOE-ID Letter CNN 300128]

5.13 Fire Protection Program Responsibilities

- 5.13.1 The contractor president and general manager shall ensure that the ICP Fire Protection Program requirements are enforced in all directorates.
[DOE Order 420.1B, 3b(2)(b)]
- 5.13.2 The contractor vice presidents and directors shall ensure that necessary resources are available and directed to conduct department operations in accordance with the ICP Fire Protection Program.
[DOE Order 420.1B, eb(2)(b)]
- 5.13.3 The ESH&Q director is responsible for the following:
[DOE O 420.1B, 3b(2)(b)]
- Ensure that the ICP Fire Marshal office is adequately staffed
 - Approve the Sitewide ICP Fire Protection Program
 - Interface with facility management to ensure consistent implementation of the Sitewide ICP Fire Protection Program
 - Assign responsibility for tracking and trending the fire protection performance indicators to appropriate organizations
 - Establish company fire protection policies, requirements, procedures, and goals and direct the company's fire protection initiatives
 - Maintain the company-level fire protection procedure documents
 - Identify applicable fire protection requirements for incorporation into the *Subcontractor Requirements Manual*.

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5.13.4 The ICP Fire Marshal is responsible for AHJ activities delegated by the letter (CCN 300128) from R. B. Provencher, DOE-ID, “Delegation of Authority Having Jurisdiction for Fire Protection for the Idaho Completion Project Contract No. DE-AC07-05ID14516 (OS-QSD-05-042),” dated May 4, 2005. In addition, the ICP Fire Marshal is responsible for assisting the DOE-ID AHJ by making code interpretations of fire protection requirements, ensuring such interpretations are appropriately documented, concurring with fire protection interpretations, and concurring with fire protection equivalency and exemption requests before submittal to DOE-ID. Additional duties are as follows:

[DOE O 420.1B, 3b(2)(b); DOE-ID Letter CNN 300128]

- Administer the ICP Fire Protection Program.
- Conduct self-assessments and management reviews, as necessary. Ensure the adequacy and consistent implementation of the ICP Fire Protection Program. The ICP Fire Marshal shall review FHAs, FSAs, and AFAs for completeness in accordance with applicable DOE orders and company PRDs and MCPs.
- Require that compensatory measures be conducted when conditions are deemed warranted.
- Review and approve construction documents and shop drawings for new construction modification or rehabilitation (see Appendix A).
- Define functional fire protection responsibilities.
- Review and approve/disapprove AHJ Records, review and concur/reject requests for equivalencies and exemptions.
- Issue advisory bulletins to assist with implementation of the ICP Fire Protection Program.
- Establish and issue permits, certificates, approvals, or orders pertaining to fire control and fire hazards. Revoke permits, certificates, or approvals issued if any violation of fire codes and standards is found upon inspection or any false statements or misrepresentations submitted on which the permit, certification, or approval was based.
- Develop qualification, certification, and training requirements for fire protection professionals. Review and approve applicable fire protection training programs.

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- Serve as the contractor point of contact with DOE-ID for programmatic fire protection issues.
- Ensure that the tri-annual programmatic fire protection assessments are conducted and corrective actions are developed for identified deficiencies.
- Prepare the annual DOE Fire Protection Summary Report.
[DOE M 231.1-1, Appendix F]
- Coordinate all investigations.
- Serve as the contractor point of contact for external Sitewide and programmatic fire protection audits.
- Assign the subject matter expert for fire protection topical areas.
- Review internal and external fire protection lesson-learned information for applicability at the INL.

5.13.5 The ESH&Q facility managers shall be responsible for the following:
[DOE O 420.1B, 3b(2)(b)]

- Identify at each site area the required personnel to implement and maintain the ICP Fire Protection Program
- Identify and provide necessary resources for the ICP Fire Protection Program implementation and FFPE training requirements and professional development
- Provide FFPE personnel day-to-day work assignments and schedules
- Provide feedback information requests for fire protection information to the ICP Fire Marshal.

5.13.6 The Area Project Director (APD) shall be responsible for the following:
[DOE O 420.1B, 3b(2)(a)]

- Implement the company ICP Fire Protection Program requirements within the facilities and programs for which they are responsible
- Ensure adequate staffing with qualified FFPEs and funding to provide the ICP Fire Protection Program implementation.

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5.13.7 The FFPEs shall be responsible for the following: [DOE O 420.1B, 3b(2)(a)]

- Administer the facility fire protection program and monitor its implementation
- Manage professional, company, and facility training as required for position and assignments
- Analyze facility operating and maintenance procedures for fire protection concerns and ensure that appropriate mitigation is incorporated to minimize the fire risk
- Evaluate, review, and approve fire protection system impairments and outages and establish compensatory measures
- Establish occupancy requirements and fire protection design criteria for designs of new and modified system, structures, and components (SSCs) (see Appendix A)
- Review design packages to ensure that fire-protection design criteria have been satisfied (see Appendix A)
- Communicate fire protection issues, concerns, and other pertinent information to facility ESH&Q management and the ICP Fire Marshal

NOTE: *Fire protection issues identified during routine fire protection walkdowns are documented using Form 442.39, "Fire Protection Walkdown Report."*

- Perform required FHAs, FSAs, and AFAs in accordance with DOE orders and company policies and procedures
- Provide technical support to all facility organizations in the interpretation and correlation of fire protection codes and standards
- Provide technical guidance for the resolution of facility fire-protection deficiencies
- Support Employee Safety Teams and Voluntary Protection Program activities
- Review and approve facility fire protection-related procurements
- Provide technical support to facility Emergency Response Organizations

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- Serve as the facility point of contact with the INL Fire Department
- Develop and/or review AHJ Record requests, as necessary and forward to the ICP Fire Marshal
- Develop fire protection equivalency and exemption requests, as necessary.

5.13.8 Employees shall be responsible for the following: *[DOE O 420.1B, 3b(2)(a)]*

- Follow established fire protection procedures
- Practice good housekeeping in the work areas
- Conduct day-to-day operations in a manner that minimizes fire hazards
- Correct any condition posing a fire threat or report the condition to the immediate supervisor if it cannot be immediately corrected
- Report damaged, missing, or unauthorized use of fire protection equipment to the immediate supervisor
- Know the location of all exits and fire-fighting equipment in the assigned work areas
- Respond to all fires without incurring personal risk as follows:
 - Notify the appropriate Fire Department by activating the nearest manual fire alarm or by phone (INL Site ext. 777, Idaho Falls ext. 9-911)
 - Notify all affected personnel to evacuate immediately
 - Provide suppression on incipient-stage fires with the nearest fire extinguisher (within the individual's respective training and ability) until the arrival of the Fire Department
 - Assist the Medical Response Team or Fire Department by providing through the on-scene commander any available or crucial information regarding:
 - Trapped persons
 - Radiation areas
 - Contamination risks

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- Involved chemicals or chemicals that could become involved
- Any unusual aspects of the fire area that might affect fire-fighting operations
- Explosion risks
- Emergency actions taken before Fire Department arrival
- Energized electrical equipment in the fire area.

6. DEFINITIONS

Abbreviated Fire Assessment (AFA). The AFAs assess buildings, facilities, and areas that are valued at \$3 million, not considered high hazard, and not involved in any vital programs for compliance with DOE Order 420.1B and MCP-583. Buildings, facilities, and areas considered low risk, low hazard, not involved in any vital programs, and adequately protected with a fire protection system can be evaluated by the facility fire protection engineer as requiring an AFA with concurrence of the ICP Fire Marshal. In addition, inactive facilities, CD&D, DD&D, and abandoned and lay-up buildings and facilities should be considered for an AFA.

Fire Protection Staff. Includes Facility Fire Protection Engineers (FFPE's) as qualified by STD-1105 and Facility Fire Protection Technologists (FFPT's), who are also qualified by STD-1105 and are considered partially qualified FFPE's with their authorized duties and responsibilities outlined in their qualification letter assigned by the Fire Marshal. CWI procedures that specify responsibilities to be performed by an FFPE can also be fulfilled by an FFPT as long as they are authorized to perform such duties and responsibilities in their qualification letter.

Documented Safety Analysis (DSA). Reports that document the adequacy of the safety analysis for each facility to ensure that the facility can be constructed, operated, maintained, shut down, decontaminated, and decommissioned safely and in compliance with applicable laws and regulations.

Fire. The state, process, or an instance of combustion in which ignited fuel or other material combines with oxygen, giving off light, heat, and flame.

Fire Hazards Analysis (FHA). A comprehensive assessment of the risks from fire within individual fire areas in a building or structure in relation to existing or proposed fire protection. The analysis is developed to ascertain whether applicable DOE fire protection criteria are met. An FHA is used as a management tool to identify the fire risks present in an area, building, or structure; identify fire protection systems; and to document if the fire protection provided is adequate to control the risks.

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Fire Safety Assessment (FSA). The principal objective of an FSA is to identify significant fire safety deficiencies that would prevent the achievement of DOE's fire-safety policy objectives. The FSA should encompass facility and programmatic elements, describe what was done during the effort, and feature a baseline description of the facility, hazards, and other occupancy considerations and fire protection features. In addition, list all noted deficiencies along with a recommendation for remediation and interim compensatory measures, if necessary, pending resolution.

Frequency. Items required to be completed within a specified frequency shall adhere to the allowable extensions defined in Table 1. An extension of the time interval to 1.25 times the stated frequency is allowed for operational flexibility. Each requirement should be performed within the specified interval. This extension is intended to provide operational flexibility both for scheduling and for performing surveillances. However, the extension shall not be relied upon as a routine extension of the specified time interval.

Table 1. Notation, frequency, and extension.

Notation	Frequency	Total Time Including a 25% Extension
Each 8-hour shift	At least once every 8 hours	10 hours
Each 10-hour shift	At least once every 10 hours	12.5 hours
Each 12-hour shift	At least once every 12 hours	15 hours
Daily	At least once every 24 hours	30 hours
Weekly	At least once every 7 days	9 days
Biweekly	At least once every 14 days	18 days
Monthly	At least once every 30 days	38 days
Quarterly	At least once every 90 days	113 days
Semiannually	At least once every 180 days	225 days
Annually	At least once every 365 days	456 days
Campaign	Prior to each campaign start up	NA
Startup	Prior to start of operations	NA
Restart	Prior to each startup	NA

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Highly Protected Risk. This term characterizes the best-protected class of industrial facilities, as underwritten by Factory Mutual or Industrial Risk Insurers. This requires compliance with the fire protection and loss prevention standards detailed in applicable fire protection standards and codes. This term also implies that qualified fire protection engineering judgment has been used to obtain the highest economically justifiable level of industrial loss prevention. The most evident characteristic of an improved risk property is the existence of reliable, automatic fire-extinguishing systems. This applies to all buildings where the construction or content is vital to operational continuity or vulnerable to a large property loss from fire.

Incipient Stage Fire. A fire that is in the initial or beginning stage and can be controlled or extinguished by portable fire extinguishers, Class II standpipe, or small hose systems without the need for protective clothing or a breathing apparatus.

Maximum Possible Fire Loss (MPFL). The value of property within a fire area unless an FHA demonstrates a lesser (or greater) loss potential. This assumes the failure of both automatic fire-suppression systems and manual fire-fighting efforts.

Redundant fire protection systems. Redundant protection may be a fire-rated barrier system or a smoke detection system in conjunction with a fully capable fire department, among other options.

Significant New or Modified Facility Design. A facility design, new or modified, that requires the preparation of detailed specifications, plans, acceptance test procedures, and vendor data requirements for the preparation of bid packages.

7. REFERENCES

29 CFR 1910,, “Occupational Safety and Health Standards,” *Code of Federal Regulations*, Office of the Federal Register.

29 CFR 1926, “Safety and Health Regulations for Construction,” *Code of Federal Regulations*, Office of the Federal Register.

10 CFR 851, “Worker Safety and Health Program,” *Code of Federal Regulations*, Office of the Federal Register.

DOE G 420.1-3, “Implementation Guide for DOE Fire Protection and Emergency Services Programs for Use with DOE O 420.1.B, Facility Safety,” U.S. Department of Energy

DOE O 420.1B, “Facility Safety,” U.S. Department of Energy

DOE O 5480.20A, “Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities”

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DOE-HDBK-1062-96, 1996, “DOE Fire Protection Handbook,” U.S. Department of Energy (Removed from Technical Standards Process)

DOE-STD-1066-99, 1999, “Fire Protection Design Criteria,” U.S. Department of Energy

DOE-STD-1088-95, 1995, “Fire Protection for Relocatable Structures,” U.S. Department of Energy

DOE-ID, 2002, *Architectural Engineering Standards*, Rev. 29, U.S. Department of Energy Idaho Operations Office, <http://www.inel.gov/publicdocuments/doe/archeng-standards/default.shtml>

Form 442.12, “Report of Fire,” Idaho Cleanup Project

Form 442.39, “Fire Protection Walkdown Report”

IBC, *International Building Code*

IFC, *International Fire Code*

MCP-8, “Performing Management Assessments and Management Reviews,” *Manual 3–ES&H Program Support*, Idaho Cleanup Project.

MCP-49, “Occupational Injury/Illness Reporting and Followup,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

MCP-192, “Processing Lessons Learned and Operating Experience Information,” *Manual 3–ES&H Program Support*, Idaho Cleanup Project

MCP-540, “Assigning Quality Levels,” *Manual 10A–Engineering*, Idaho Cleanup Project

MCP-581, “Fire Protection Authority Having Jurisdiction (AHJ) Records, Exemptions and Equivalencies,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

MCP-583, “Performing Fire Hazards Analysis (FHA), Fire Safety Assessments (FSA), Abbreviated Fire Assessments (AFA),” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project.

MCP-585, “Managing Fire Protection Impairments,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

MCP-598, “Corrective Action System,” *Manual 3–ES&H Program Support*, Idaho Cleanup Project

MCP-1450, “Conduct of Engineering,” *Manual 10A–Engineering*, Idaho Cleanup Project

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MCP-2043, “Management of Time Sensitive Chemicals,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

MCP-2044, “Compatible Chemical Storage,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

MCP-2708, “Maintaining Facility Chemical Storage Limits,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

NFPA 70, “National Electric Code,” National Fire Protection Association.

PRD-115, “Configuration Management,” *Manual 10A–Engineering*, Idaho Cleanup Project

PRD-158, “Inspection, Testing, and Maintenance of Fire Protection Systems and Equipment,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

PRD-308, “Handling and Use of Flammable and Combustible Liquids,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho National Engineering and Environmental Laboratory

PRD-5110, “Idaho Cleanup Project Welding, Cutting, and Other Hot Work,” *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, Idaho Cleanup Project

Project and Construction Management Department, *Subcontractor Requirements Manual*, TOC-59, Idaho National Laboratory

Provencher, R. B., DOE-ID, 2005, letter entitled “Delegation of Authority Having Jurisdiction for Fire Protection for the Idaho Completion Project Contract No. DE-AC07-05ID14516 (OS-QSD-05-042),” CCN 300128

Safety and Fire Protection Department, *Manual 14A–Safety and Health–Occupational Safety and Fire Protection*, TOC-48, Idaho Cleanup Project

STD-1105, “Fire Protection Qualification,” Idaho Cleanup Project

STD-1134, “ICP Technical Qualifications for Personnel Performing Inspection, Testing, and Maintenance on Water Based Fire Protection Systems,” Idaho Cleanup Project

8. APPENDIXES

Appendix A, Fire Protection Design Criteria Development Process and Design Verification Process

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Appendix A

Fire Protection Design Criteria Development Process and Design Verification Process

The Idaho Cleanup Project (ICP) Fire Protection Program, in cooperation with the ICP Fire Marshal, is committed to ensuring that the designs for new and modified ICP facilities incorporate the necessary features to minimize fire risk to acceptable levels. It is the intent of the program to involve qualified fire protection personnel in the identification of required fire-protection design criteria and the verification that designs incorporate and comply with the identified design criteria.

The facility fire protection engineer (FFPE) will be included in the development of design criteria and design verification for all engineering changes involving compliance with the mandatory fire protection-related criteria identified in the main body of this Program Requirements Document (PRD). Examples include, but are not limited to, the following:

- A. Fire suppression or fire alarm systems and equipment
- B. Passive fire barriers
- C. Proposed occupancy changes to include modifications in hazardous and combustible material inventory
- D. Floor plan modifications affecting means of egress and fire protection system coverage
- E. Building construction materials.

The ICP Fire Marshal shall be included in the review and approval of new and significant changes presenting complex fire-protection challenges for regulatory compliance.

Technical and Functional Requirements

The FFPEs shall be included on the technical and functional requirement (T&FR) team as a required reviewer for all engineering changes.

Exception: The FFPE does not need to be included on the T&FR team if, in the determination of the FFPE, the proposed change does not involve fire protection issues or compliance with the mandatory fire protection criteria identified in Section 4.1 of this PRD.

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The ICP Fire Marshal shall be included on the T&FR team as a required reviewer for engineering changes of the following nature:

NOTE: *The ICP Fire Marshal may enforce the development of a facility hazards analysis (FHA) in accordance with Management Control Procedure (MCP)-583, “Performing Fire Hazards Analysis (FHA), Fire Safety Assessment (FSA), and Abbreviated Fire Assessments (AFA),” to support design considerations of nuclear facilities, facilities handling radioactive material, or other facilities that present significant fire protection challenges.*

- A. Construction of new and significant modifications to nuclear facilities
- B. Construction of new and significant modifications to structures, systems, and components (SSCs) involving storage, handling, or thermal treatment of radioactive or chemically hazardous materials
- C. Construction of new facilities greater than 5,000 ft² or \$3 million in property value
- D. Modifications of existing ICP structures affecting greater than 5,000 ft² or \$3 million in property value
- E. All new boiler installations
- F. All new or significant modifications to combustion fuel trains
- G. All new water storage and/or distribution system installations
- H. All new installations or modifications to gaseous fire-suppression systems
- I. The INL proprietary fire alarm center’s receiving equipment.

Design Verification

The FFPE shall be included on the design verification teams as a required reviewer for all engineering changes.

Exception: The FFPE does not need to be included on the design verification team if, in the determination of the FFPE, the proposed change does not clearly involve fire protection issues or compliance with the mandatory fire protection criteria identified in Section 4.1 of this PRD.

The ICP Fire Marshal shall be included on the design verification team as a required reviewer for engineering changes of the following nature:

- A. When required for the T&FR team above

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- B. New or significant modifications to the following:
 - 1. Automatic suppression systems
 - 2. Fire alarm systems
 - 3. Fuel gas/liquefied petroleum gas storage and handling SSCs
 - 4. Flammable/combustible liquid storage and handling SSCs
 - 5. Compressed or liquefied gas storage and handling systems
 - 6. Explosive storage or handling SSCs
 - 7. Lightning protection systems.
- C. Decontamination, decommissioning, and demolition (DD&D); cold, dark, and dry (CD&D); and/or lay-up designs for nuclear facilities and facilities valued in excess of \$3 million.
- D. The ICP Fire Marshal shall be consulted for approval of the “National Electric Code” (NFPA 70) authority having jurisdiction (AHJ) issues to include the following:
 - 1. “National Electric Code” interpretations (NFPA 70)
 - 2. Disposition of nonconformance reports or other deficiencies related to compliance with the “National Electric Code” (NFPA 70).

Vendor Data Review

The ICP Fire Marshall (or designee) shall be notified prior to testing so a representative can be present to witness the required testing.

The ICP Fire Marshal office shall be a required approver of vendor data as follows:

- A. Shop drawings, calculations, and acceptance test procedures for the following:
 - 1. Automatic suppression systems
 - 2. Gaseous suppression systems
 - 3. Fire alarm systems
 - 4. Fire water distribution and supply systems
 - 5. All acceptance testing of fire protection systems required by the approved design documents.
- B. Material submittals:
 - 1. Proprietary alarm receiving hardware
 - 2. Fire water pumps, drivers, and controllers
 - 3. All gaseous fire-suppression system components.

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Final Project Acceptance Testing and Walkdowns

The ICP Fire Marshal (or designee) shall be notified of final project acceptance testing and walkdowns for projects involving new or significant modifications to SSCs.