U.S. DEPARTMENT OF ENERGY
OFFICE OF RIVER PROTECTION

TITLE: **ORP FIRE PROTECTION PROGRAM**

Number: ENS-ENG-IP-05 R0
Issued: 12/15/09
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1.0 PURPOSE AND INTRODUCTION

The purpose of this interfacing procedure (IP), is to establish the expectations and clarifications for the fire protection functional area requirements of Department of Energy (DOE) O 420.1B, Facility Safety, including fire protection responsibilities related to Federal and Contractor worker protection under the Federal Employee Occupational Safety and Health Program and the Worker Safety and Health Rule of 10 Code of Federal Regulation 851 and other applicable directives for an effective fire protection program at the DOE Office of River Protection (ORP) Hanford facilities. Functional area requirements included in DOE O 420.1B and other DOE Directives, other than the fire protection functional area requirements, are not within the scope of this IP.

2.0 CANCELLATION OR RECORD OF CHANGE

This is a new interfacing procedure that replaces ORP M 420.1-1 R1, *ORP Fire Protection Program*, dated October 31, 2007.

3.0 APPLICABILITY

The provisions of this IP apply to Office of River Protection (ORP) elements, prime contractors, and subcontractors of prime contractors performing work for the ORP at Hanford, as provided by law and/or contract, and as implemented by the appropriate contracting officer.

4.0 DEFINITIONS

4.1 ACRONYMS

AHJ	Authority Having Jurisdiction
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
ESD	ORP Engineering Services Division
FHA	Fire Hazard Analysis
HFD	Hanford Fire Department
HFPF	Hanford Fire Protection Forum
IBC	International Building Code
IFC	International Fire Code

IP	Interfacing Procedure
MCFL	Maximum Credible Fire Loss
MPFL	Maximum Possible Fire Loss
NFPA	National Fire Protection Association
ORP	DOE Office of River Protection
RL	Richland Operations Office
SFPE	Society of Fire Protection Engineers

4.2 DEFINITIONS

Equivalency. The approved alternative means of satisfying the technical provisions of a fire protection code, standard, order, or this IP as submitted to and approved by ORP.

Exemption. A DOE approved departure from fire protection requirements found in DOE orders, notices, or Manuals.

Finding. A statement of fact addressing and describing a deficient condition relative to a code, order, procedure, policy, or other mandatory requirement.

Fire Area. A location bounded by construction having a minimum fire resistance rating of 2 hr with openings protected by appropriately fire-rated doors, dampers, or penetration seals. A fire rating greater than 2 hr may be required if the anticipated fire, due to heat release of the fire from combustible loading, ventilation, and other factors, is not contained with the 2-hr fire area.

Fire Hazard Analysis. A comprehensive and qualitative assessment of the risk from fire within individual fire areas in a DOE facility so as to ascertain whether the DOE fire protection objectives of DOE Order 420.1B, are met.

Fire Loss. The dollar cost of restoring damaged property to its prefire condition (see DOE M 231A.1-1, Appendix F). In determining loss, the estimated damage to the facility and contents shall include replacement cost less salvage value. Losses will exclude costs of restoration of property that is decommissioned and not carried on the books as a value and property that is scheduled for demolition. Include the cost of decontamination and cleanup, the loss of production or program continuity, the indirect costs of fire extinguishment (such as damaged fire department equipment), and consequent effects on related areas, in all property loss amounts.

Fire Protection. A broad term that encompasses all aspects of fire safety, including: building construction and fixed building fire features, fire suppression and detection systems, fire water systems, emergency process safety control systems, fire departments and emergency response forces, fire protection engineering, and fire prevention. Fire protection is concerned with preventing or minimizing the direct and indirect consequences of fire, including fire-related explosions, natural phenomenon, smoke damage and water damage.

Fire Protection System. Any system designed to detect, extinguish, or limit the extent of fire injury or damage.

Flame spread. A numerical classification that indexes the relative burning behavior of a material by quantifying the spread of flame in a test specimen in accordance with ASTM E-84, Standard Test Method for Surface Burning Characteristics of Building Materials.

Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement). A legal agreement between DOE, Washington State Department of Ecology, and the U.S. Environmental Protection Agency to clean up radioactive and chemical wastes at the Hanford Site.

Hanford Fire Marshal. Person who has the authority to administer and enforce the Fire Prevention Program for the Hanford Site. This responsibility and authority is granted by ORP and the Richland Operations Office (RL). The duties of the Fire Marshal are reviewed and written by the Hanford Fire Protection Forum and forwarded to ORP and RL for review and approval. The Fire Marshal roles and responsibilities are contained in the Authority, Responsibilities, and Duties of the Hanford Fire Marshal Attachment of the Fire Prevention Program description contained in the HANFORD CHAPTER of the DOE FIRE PROTECTION HANDBOOK.

Hanford Fire Protection Forum. A medium for open discussion of fire protection issues to assist DOE in maintaining a uniform fire protection program on the Hanford Site. The forum is made up of contractor fire protection engineers, managers, staff, designers, fire prevention staff, the Hanford Fire Marshal, fire department staff, fire system maintenance managers and engineers, and the DOE fire protection engineers. The Hanford Fire Protection Forum is a DOE chartered organization.

Ignitable Waste. Characteristic of waste flammability defined by Dangerous Waste Regulations, WAC 173-303. Liquids, solids, compressed gases, or oxidizers may be ignitable waste as defined by WAC 173-303. For example, a liquid ignitable waste is a liquid waste having a flash point less than 140°F (60°C), except for aqueous solutions containing less than 24% alcohol by volume.

Interior Finish. The exposed surface of a wall, ceiling, or floor surface material.

Maximum Credible Fire Loss (MCFL). The property damage that would be expected from a fire, assuming that all installed fire protection systems function as designed and the effect of emergency response is omitted except for post-fire actions, such as salvage work, shutting down water systems, and restoring operations. See DOE M 231.1-1A, Appendix F, for determining loss estimations.

Maximum Possible Fire Loss (MPFL). The value of property, excluding land, 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. See DOE M 231.1-1A, Appendix F, for determining loss estimations.

Nonstatutory Code or Standard. A code or standard that is mandatory as a matter of DOE policy contained in this IP as opposed to a code or standard that is mandatory as a result of applicable Federal or State law.

Observation. An opinion regarding a condition that does not violate a specific requirement, but where recommendation for improvement is based on good management or industry standard practice.

Primary (Control) Valve. A valve controlling a fire protection system, the closing of which by itself will totally prevent automatic operation of the system.

Property. All government-owned or leased structures and contents for which the DOE has responsibility, including the following:

a. All DOE land, structures, and contents.

b. All leased locations.

c. All other government property on DOE land or in DOE structures.

d. Other property that occupies DOE land or is in DOE structures.

Qualified Fire Protection Engineer. An engineer who is a graduate of an accredited university or college with a B. S. Degree in an engineering or a related technical field and meets the qualifications for Member Grade in the Society of Fire Protection Engineers, or an engineer that has a Professional Member grade in the SFPE, or an engineer that is a Registered Professional Fire Protection Engineer. ORP qualified fire protection engineers must also meet the DOE Fire Protection Engineering Functional Area Qualification Standard.

Reactive Waste. Characteristic of a waste as defined by Dangerous Waste Regulations, WAC 173-303-090(7).

Smoke Developed Rating. A numerical classification system that indexes the smoke generation rate of a given material as determined by ASTM E-84, Standard Test Method for Surface Burning Characteristics of Building Materials.

5.0 RESPONSIBILITIES

5.1 DOE-OFFICE OF RIVER PROTECTION (ORP)

5.1.1 ORP Division Directors and ORP Line Mangers with Assigned responsibilities for Facilities, Programs, and/or Operations shall:

a. Ensure contractor implementation of fire safety requirements defined in authorization basis documents, fire hazard analyses, and this IP, as delineated by the contract.

b. Ensure the latest contractor facility fire hazard analyses (FHAs) submitted with authorization basis document submittals are forwarded to the ORP fire protection engineer for review.

c. Ensure that contractor requests for fire safety exemptions and equivalencies are reviewed in accordance with this IP. See Section 6 of this IP.

d. Obtain technical support for fire protection engineering from the Engineering Services Division where required.

5.1.2 Director for Engineering Services Division (ESD) shall:

a. Maintain access to an adequate fire protection staff including one or more qualified fire protection engineers to accomplish the objectives of DOE O 420.1B and other program elements described in this IP.

b. Schedule and perform documented assessments of contractor fire protection programs in accordance DOE O 420.1B and ORP Directives Management. Fire protection assessments shall be conducted of each prime contractor every three years by ESD and may be supported by other program and support staff. Fire protection assessments will evaluate the contractor's fire protection program, including field walkdowns of facilities, and include applicable programmatic and facility related elements specified by DOE G 420.1-3, or superseded version in effect.

c. Review contractor fire protection exemption and equivalency requests when requested by ORP Division Directors and Line Managers in accordance with DOE requirements and Section 6 of this IP.

d. Coordinate and provide technical fire protection support to ORP Division Directors and ORP Line Mangers.

e. Review contractor's annual fire protection summaries, collate, and submit summary to the appropriate DOE Headquarters Office in accordance with DOE M 231.1-1A.

f. Support the ORP Authority Having Jurisdiction (AHJ) responsibilities for fire protection described in this IP, issue guidance and interpretations of the ORP Fire Protection and establish written fire protection program requirements through the ORP Directives Management.

g. Support review of new facility and existing nuclear facility fire hazard analyses.

h. Provide fire protection engineering representation at the Hanford Fire Protection Forum meeting (see definitions) and routine fire protection program interface meetings with contractors.

i. Coordinate with RL and the Hanford Fire Department on related fire protection and fire department technical matters and assist DOE safety representatives in life safety and fire related Federal Employee Occupational Safety and Health related inspections as required by DOE O 440.1B, when requested.

j. Represent ORP by participating in the complex wide DOE Fire Safety Committee and provide fire protection engineering representation at the annual DOE Fire Protection Workshop.

5.2 ORP PRIME CONTRACTORS

5.2.1 Tank Operations Contractor (TOC)

a. The TOC shall implement the applicable fire protection and life safety provisions of DOE O 420.1B, Attachment 2, Contractor Requirements Document (CRD) and 10 Code of Federal Regulation 851 (subject to clarifications contained in the following sub-sections and Section 5.3), applicable NFPA Codes and Standards, and supplemental requirements in Section 7 of this IP, including subcontractor flow down requirements.

b. Clarifications to DOE O 420.1B, Attachment 2, Chapter II, Fire Protection:

1) Section 3.b. (5) of the DOE 420.1B CRD specifies "fire hazard analyses (FHAs)" to be completed for all hazard category 1, 2, and 3 nuclear facilities, significant new facilities, and facilities that represent unique or significant fire safety risks. The following clarifications are provided:

a. A FHA shall be completed for significant new facilities (new facilities that have an MPFL of $25,000,000 or more, a new moderate hazard non-nuclear facility, or new high hazard non-nuclear facility), existing and new nuclear facilities, and other facilities as defined by DOE O 420.1B. For new facility design, a preliminary FHA shall be completed during conceptual design and revised during definitive design of the project design process. The preliminary fire hazard analyses during the design process shall address to the maximum extent possible the elements required by the final fire hazard analysis. Facilities required to have a fire hazard analysis shall have only one fire hazard analysis document. Facility modifications that require a project will not have a stand alone fire hazard analysis document but must be reflected in the facility fire hazard analysis document.

b. The FHA must arrive at a conclusion that either the facility meets the fire protection objectives or does not meet the objectives with implementation actions that are required in order for the facility to meet the objectives. The FHA must be documented and show the thought process and assumptions required to arrive at the conclusion.

c. The FHA must include an assessment of the risk from fire and related hazards (direct flame impingement, hot gases, smoke mitigation, fire fighting water damage, fire exposure to structural members, etc.) in relationship to existing or proposed fire safety features to ensure that the facility can be safely controlled and stabilized during and after a fire. In accordance with the "graded approach" concept, the level of detail necessary in the FHA is directly related to the complexity of the facility and the potential risk to the public, worker, and the environment.

d. The focus of the FHA shall be the individual fire areas that comprise the facility unless analytical deterministic modeling methods can demonstrate a lessor or greater fire potential. A fire area is defined as a location bounded by fire rated construction having a minimum fire resistance rating of 2 hours.

e. Fire models developed by the National Institute of Standards and Technology or fire models acceptable by the DOE Authority Having Jurisdiction that utilize deterministic fire behavioral methods may be used in the development of the fire hazard analysis. The fire hazard analysis shall not preclude the assumption of a fire from occurring when an energy source and a combustible source are present. Average combustible loading as a means to characterize the fire severity is also not considered an acceptable technique. Fire modeling software which is used to support eliminating, limiting, or mitigating nuclear hazards to workers, the public, or the environment must also the applicable quality assurance requirements of DOE O 414.1C and DOE G 414.1-4.

f. For nuclear facilities, the accident analyses for fire and explosion events shall be consistent in both the FHA and facility nuclear safety documentation where the FHA author and the safety analyst jointly identify fire-related hazards and evaluate the

postulated fire scenario(s). The final FHA shall be referenced by the facility Documented Safety Analysis, including, the final or interim safety analysis.

g. Fire hazard analyses must be performed under the direction of a qualified fire protection engineer as defined by this IP.

The final and preliminary fire hazard analyses shall contain, but not be limited to, the following elements:

- Description of construction.
- Protection of essential safety class and safety significant equipment.
- Fire protection features.
- Description of fire hazards.
- Life safety considerations.
- Critical process equipment.
- High value property.
- Damage potential: Maximum Credible Fire Loss (MCFL) and Maximum Possible Fire Loss (MPFL) - See DOE M 231.1-1A, Appendix F for determining loss estimations.
- Fire Department response.
- Recovery potential.
- Potential for a toxic, biological and/or radiation incident due to a fire.
- Emergency planning.
- Security considerations related to fire protection.
- Natural hazards (earthquake, flood, wind) impact on fire safety.
- Exposure fire potential, including the potential for fire spread between fire areas.
- Reference the fire department needs assessment baseline document.
- Deficiencies or "recommendations" that are required to be corrected to meet fire protection objectives.
- Risk of fire and related hazards (direct flame impingement, hot gases, smoke mitigation, fire fighting water damage, etc.) - See DOE G 420-1.3, Section 4.6

h. Implementation Plans for fire hazard analyses. The results of a fire hazard analysis may determine that implementation of "recommendations" or corrective actions to address deficiencies are required in order for the facility to demonstrate that the fire protection objectives of DOE O 420.1B and life safety are met. Following completion, and ORP review of the FHA, the contractor shall develop an FHA implementation plan. The FHA implementation plan shall describe each recommendation or deficiency requiring action, and include implementation strategies, funding, and schedules for each item recommended or determined to be deficient by the FHA. The FHA implementation plan shall be submitted to the ORP Contracting Officer Representative for review. If a change has occurred in which the FHA recommendation is no longer valid or cannot be accomplished due to a change in operational considerations the FHA shall be modified as appropriate within the requirements of this IP and resubmitted to ORP for review.

i. Maintenance of fire hazard analyses. Fire hazard analyses for nuclear facilities or other hazardous facilities that require a fire hazard analysis, as determined by the DOE

Authority Having Jurisdiction, shall be maintained to ensure that facility, operations, and hazards are accurately depicted in the FHA. Revisions to FHAs are addressed by DOE O 420.1B.

2) Section 3.b. (7) of the DOE 420.1B CRD specifies the need for access to qualified, trained fire protection staff that includes fire protection engineers. The following clarifications are provided:

   a. A qualified fire protection engineer is an engineer that is a graduate of an accredited university or college with a Bachelor of Science in an engineering or related technical field and meets the qualifications for Member Grade in the Society of Fire Protection Engineers, or an engineer that has a member grade in the Society of Fire Protection Engineers, or an engineer that is a Registered Professional Fire Protection Engineer.

   b. The TOC shall have on staff at least one qualified fire protection engineer subject to specific clarifications of this IP. Additional qualified fire protection engineers and fire protection staff shall be provided as necessary to perform the functions and meet this IP.

3) Section 3.b. (14) of the DOE 420.1B CRD specifies contractors to conduct periodic facility assessments on a schedule as directed by DOE. The following clarification is provided. Annual fire protection assessments shall be made for facilities that are valued in excess of $100 million, or in non-nuclear facilities considered to be a high hazard facility. Fire protection assessments shall be made at least every three years for a facility valued at $3 million to $100 million, a non-nuclear facility considered to be a moderate hazard facility, or Category 1, 2 or 3 nuclear facility. Facilities, where property is less than $3 million, shall not require a fire protection facility assessment that contains the required nature and scope elements contained in Section 4.13 of DOE G 420.1-3, or superseded version in effect, unless significant programmatic impacts, hazardous materials, or radioactive materials are involved. If such facility assessments are required they shall be made at least every three years. Fire protection program assessments shall be made every three years. Assessments will include the elements as contained in Section 4.13 of DOE G 420.1-3, or superseded version in effect and copies shall be kept on file in accordance with Section 9 of this IP. Assessment corrective action process shall incorporate elements specified by Section 4.14 of DOE G 420.1-3, or superseded version in effect.

4) Section 3.c. (1) of the DOE 420.1B CRD specifies a reliable and adequate supply of water for fire suppression. The following clarifications are provided:

   a. Distribution mains, either sanitary or raw water, that are being extended to supply water for domestic and/or process water and will provide water for fire suppression systems (sprinklers and/or hydrants), shall be at least 12 inches in diameter. Sectional valves shall be installed in the following manner for new installations and water distribution main upgrades.

b. Multiple sectional isolation valves shall be provided at each intersection between a supply source and a main loop (one valve for each leg).

1. Sectional valves shall be installed in accordance with a point system, such that no more than six points accumulate between sectional valves. The points for this arrangement are: one point for a fire hydrant, and two points for an automatic sprinkler system.

2. For new buildings, each building fire sprinkler riser shall be served by an independent underground water supply connection controlled by a supervised indicating control valve. Multiple system risers supplied by a single supply riser manifold are prohibited. A wet pipe system shall be permitted to supply an auxiliary (secondary) dry pipe, preaction, or deluge system, provided the water supply is adequate (i.e. computer room, loading dock, freezer, etc).

3. Water supplies for fire protection shall be of the looped grid type, providing two independent points of supply and two-way flow with sectional valving arranged to provide alternate water flow paths from the source to any point in the distribution system, where MPFL exceeds $3 million. Application of this requirement to facilities that are existing will be made on a case-by-case basis after consultation with the ORP AHJ and Contracting Officer.

4. A minimum of two operational fire hydrants shall be provided for each building where parts of the exterior of the building shall be reached by hose lays of not over 350 feet with consideration given to accessibility and obstructions. Application of this requirement to facilities that exist will be made on a case-by-case basis after consultation with the ORP AHJ and the Hanford Fire Department. For new construction, at least one hydrant shall be located within 150 feet of fire department connections. Hydrants shall be of the standard type used at Hanford.

c. Fire flows shall be available for a period of at least two hours. A minimum four-hour supply shall be provided for large buildings, buildings with special public or physical hazards, multiple building sites, or groups of combustible buildings. For combined systems serving fire protection and other water demands (domestic and/or process), the supply and its distribution system shall be adequately sized to serve the combined peak flow for all uses. When storage tanks are used for combined service water and fire protection water, dedicated tank(s) or other physical means, such as a vertical standpipe, shall assure the minimum volume for fire uses.

5) Section 3.a. (3) of the DOE O 420.1B CRD states that fire protection for DOE facilities will meet or exceed applicable building codes for the region and NFPA codes. The following clarifications are provided, subject to statutory regulations contained in 10 CFR 851:

a. New facilities and major facility modifications must conform to the fire resistance requirements, allowable floor area, building height limitations, and building separations of the International Building Code (IBC). Consistent with the CRD, the provisions of

the IBC takes precedence over NFPA 5000, Building Construction and Safety Code. Building construction related to egress and life safety shall comply with the National Fire Protection Association (NFPA) 101, Life Safety Code. Conflicts between the IBC and NFPA 101 related to fire resistance rating shall conform to NFPA 101. Compliance with the Life Safety Code shall be considered to satisfy the exit requirements of OSHA 29 CFR 1910.

b. Typically the International Fire Code (IFC) is a companion document to the IBC. However, for DOE operations, the IFC shall only be applied when the generation, treatment, storage, and disposal of ignitable and reactive wastes, defined in DANGEROUS WASTE REGULATIONS, WAC 173-303, is required by the Tri-Party Agreement. The NFPA 1, Uniform Fire Code, takes precedence over the IFC in all other situations. Other requirements of IFC are not considered criteria but may be used as a guide when established criteria do not address a specific situation.

c. Aspects related to fire protection shall comply with the most recent edition of the applicable NFPA Code or Standard. The fire protection related codes and standards in effect when facility final design commences (code of record) remain in effect for the life of the facility. When major modifications occur, as determined by the AHJ, the current edition of the code shall apply to the modification. EXCEPTION: If there is a significant hazard that endangers building occupants, the public, or the environment as determined by the AHJ, the facility shall be upgraded to the requirements of the current edition of the code or standard.

5.2.2 Waste Treatment and Immobilization Plant (WTP) Contractor

ORP requires the WTP Construction Contractor to integrate fire protection into work planning and execution by complying with approved safety requirements and other applicable documents as specified in Contract No. DE-AC27-01RV14136, Section J, Attachment E, as amended by the DOE contracting officer.

5.3 OTHER PROGRAM ELEMENTS AND CLARIFICATIONS

a. **Authority Having Jurisdiction (AHJ)**: The DOE AHJ is the decision-making authority in matters concerning fire protection. DOE O 420.1B, delegates the AHJ to the Head of the DOE Field Office. NFPA Codes and Standards, required by DOE, also describe the AHJ as approving fire related equipment, material installations and procedures which is more appropriately within the responsibility of the contractor. As such, this IP recognizes there are different levels of routine AHJ decision-making responsibilities necessary to execute fire protection programs under the responsibility of ORP and clarifies two levels of the AHJ. ORP shall act as the Highest Level AHJ. The Head of the ORP Field Office delegates the AHJ as follows. The Highest Level AHJ in ORP is the organizational decision maker (utilizing the formal concurrence process) affecting any final matter concerning fire protection at ORP. The ORP AHJ will obtain review and concurrence by the ORP Qualified Fire Protection Engineer prior to making final AHJ related decisions, consistent with this IP. Generally the ORP AHJ will be responsible for review of fire hazard analyses, review of fire safety exemptions and equivalency requests, approval of fire safety exemptions and

equivalency requests (with the exception of approval of exemptions to fire safety requirements explicitly specified by DOE O 420.1B and 10 CFR 851, which are approved by DOE Headquarters per DOE O 420.1B), and final interpretation of ORP fire protection policy and code related requirements. For approving routine fire protection equipment, materials, installation, operational procedures, and routine fire protection code interpretations, the AHJ responsibility resides within the contractors programs and procedures with input from the contractors qualified fire protection engineer(s).

b. **Owner and Owner's Representative:** NFPA Standards Codes and Standards, required by DOE, describe the "owner" and "owner's representative" performing specified functions relative to the design, installation, acceptance and operation of fire protection related equipment. For the purposes of this IP, ORP defines the prime contractor with input from the contractors qualified fire protection engineer(s) as the designated owner's representative performing the specific functions where NFPA Standards or Codes specify an owner or owner's representative function.

c. **Application of Codes and Standards.** Fire protection criteria, delineated in the codes and standards specified in DOE Order 420.1B and this IP, are the minimum requirements for the implementation of the ORP Fire Protection Program. Where conflicts in the application of these codes and standards arise, the more restrictive requirements apply or an interpretation request may be made to the ORP AHJ. The fire protection-related codes and standards in effect when facility final design commences (code of record) remain in effect for the life of the facility except when major modifications occur the current edition of the code must apply to the modification. If the ORP AHJ determines that a significant hazard endangers building occupants, the public, or the environment, the facility must be upgraded to the requirements of the current edition of the code or standard by written direction of the contracting officer.

d. **Fire Safety Exemptions and Equivalencies.** It is the intent of the ORP Fire Protection Program to encourage the application of alternative and innovative fire protection methods that will meet the objectives of the fire protection program. Therefore, fire safety exemptions and equivalencies from these requirements are encouraged. The fire safety exemption or equivalency request is a documented request that is written by the contractor and submitted to the ORP AHJ for review and approval, when appropriate. The level of documentation necessary to support these requests will vary, depending on the issue. See Section 4.15 of DOE G 420.1-3 for additional information.

e. **The Hanford Fire Protection Forum (HFPF)**. The HFPF is a medium for open discussion of fire protection issues to assist DOE ORP and RL in maintaining a uniform fire protection program on the Hanford Site. The forum is made up of contractor fire protection engineers, managers, staff, designers, fire prevention staff, the Hanford Fire Marshal, fire department staff, fire system maintenance managers and engineers, and the DOE fire protection engineers. The HFPF is an ORP and RL chartered organization. The HFPF writes the duties of the Fire Marshal and forwards the Fire Marshal's duties to ORP and RL for review and approval. The contractor is encouraged to provide fire protection representation at the HFPF meetings.

f. **Fire related emergency services.** The Hanford Fire Department (HFD) provides emergency fire suppression, technical rescue, emergency medical and ambulance services, on-scene

incident command structure, and hazardous material response to DOE facilities on the Hanford site. While each ORP contractor is responsible to obtain appropriate emergency and fire protection inspection, testing, and maintenance services, only the HFD is responsible for maintaining the emergency service levels of the fire department, with the following exceptions:

1) Other contractors are required to provide facility assistance to the HFD in the development of the prefire/action plan for their subject facilities, and,

2) Contractors are encouraged to institutionalize and recognize the Hanford Fire Marshal's authority as contained in the Authority, Responsibilities, and Duties of the Hanford Fire Marshal Attachment of the Fire Prevention Program description contained in the HANFORD CHAPTER of the DOE FIRE PROTECTION HANDBOOK. Prime contractors associated with a different contract from that where the Fire Marshal's Office is located are encouraged to form an agreement or memorandum of understanding with the Hanford Fire Marshal to implement this authority.

6.0 FIRE SAFETY EXEMPTIONS AND EQUIVALENCIES REQUEST PROCESS

When required, a documented request for a fire safety equivalency or exemption, defined by this IP, is developed by the contractor submitted to ORP along with pertinent information and level of documentation as specified by DOE G 420-1.3. The following process guides the review and approval of these requests:

a. Contractor developed request is sent to the appropriate ORP contracting officer for review and recommended approval.

b. The Contracting Officer forwards the request to the ORP Engineering Services Division for review by a qualified Fire Protection Engineer.

c. The Fire Protection Engineer conducts a technical review which may involve a physical field verification of the facilities and subjects described in the request and coordinate the review with the contractor and other DOE staff and management as necessary to complete the review.

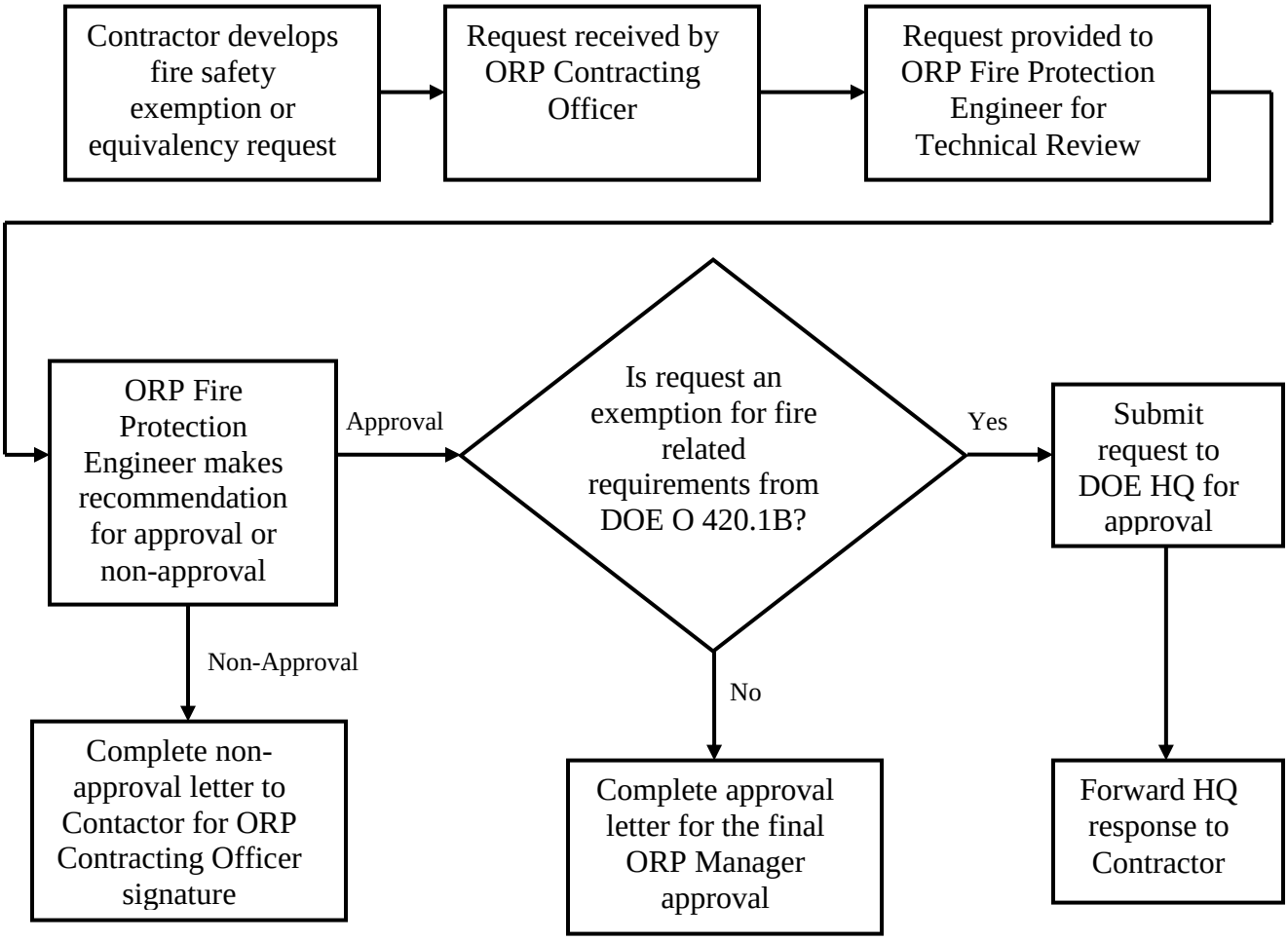
d. The Fire Protection Engineer makes recommendation with technical justification for request approval or non-approval.

e. For recommended approval of fire safety exemptions to requirements contained in DOE O 420.1B, the Fire Protection Engineer initiates concurrence of a recommended approval request memorandum which is sent to the applicable DOE Headquarters Secretarial Officer for final review and approval. The final approval memorandum from DOE Headquarters is then forwarded by the ORP contracting Officer to the contractor.

f. For recommended approval of fire safety exemptions to requirements contained in this IP, which are not specifically contained in DOE O 420.1B and for approval of fire safety exemptions, the Fire Protection Engineer initiates concurrence of the recommended approval letter for the final ORP Manager approval.

g. For recommended non-approval the Fire Protection Engineer initiates concurrence of a non-approval letter including technical justification for non-approval through the Contracting Officer.

6.1 FIRE SAFETY EXEMPTION AND EQUIVALENCY REQUEST FLOW CHART



7.0 SUPPLEMENTAL REQUIREMENTS

The following supplemental requirements are applicable to the Tank Farm Contractor, including flow down to applicable subcontractors, as identified in Section 5 of this IP:

a. Complete automatic fire suppression system per NFPA standards are required in all structures having a maximum possible fire loss (defined by DOE-STD-1066-99) in excess of $3 million, when required by a NFPA standard, or when the IBC requires it for construction height, allowable square footage size, construction type or occupancy classification. When the maximum possible fire loss exceeds $50 million a redundant fire protection system (defined by DOE-STD-1066-99) is required. When the maximum

possible fire loss (MPFL) exceeds $150 million, a redundant fire protection system plus engineered fire barriers are required to limit the MPFL to $150 million. Application of this requirement to existing facilities that have a short life shall be applied on a case-by-case basis utilizing the fire hazard analysis process.

b. New project and facility design, construction and modifications shall comply with DOE-STD-1066-99, Fire Protection Design Criteria. All references to the word "should" in DOE-STD-1066-99 will be interpreted as a "shall".

c. Relocatable structures, defined by DOE-STD-1088-95, Fire Protection for Relocatable Structures, shall comply with DOE-STD-1088-95 and other applicable requirements specified by this IP. All references to the word "should" in DOE-STD-1088-95 will be interpreted as a "shall".

d. Fire rated assemblies shall be installed, as required by DOE-STD-1066-99, the fire hazard analysis, NFPA or building code to reduce loss potentials.

e. Nuclear facilities and laboratories shall have interior finish materials (decorations, furnishings, and exposed wall or insulating materials) that have an Underwriters Laboratories (ASTM E-84/NFPA 255) flame spread rating of 25 or less, and smoke developed rating of 50 or less, except for acoustical materials, which shall have a smoke developed rating of 100 or less. The minimum average critical radiant flux for floor covering material shall be 0.45 watts per square centimeter, when tested in accordance with ASTM E-648 (NFPA 253).

f. The “Annual Fire Protection Summary” (one hard copy and one electronic copy) for the previous calendar year shall be submitted by the Contractor to the ORP Director of ESD by February 1 of each year, as required by DOE O 231.1A and DOE M 231.1-1A.

g. MPFL values described in the assessments shall, as required by this IP and DOE G 420.1-3, utilize the property valuation and loss estimation guidelines found in DOE M 231.1-1A, Appendix F.

8.0 REFERENCES

1. DOE O 231.1A, *Environment, Safety and Health Reporting*, June 3, 2004
2. DOE M 231.1-1A, *Environment, Safety and Health Reporting Manual*, March 19, 2004
3. DOE O 414.1C, *Quality Assurance*, June 17, 2005
4. DOE G 414.1-4, *Safety Software Guide for use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance*, June 17, 2005
5. DOE O 420.1B, *Facility Safety*, December 22, 2005
6. DOE O 440.1B**,** *Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees*, May 17, 2007

7. DOE G 440.1-8, *Implementation Guide for Use with 10 CFR Part 851, Worker Safety and Health Programs*, December 27, 2006
8. DOE G 420.1-3, *Implementation Guide for Use with DOE Fire Protection and Emergency Services Program for Use with DOE O 420.1B, Facility Safety*, September 27, 2007
9. DOE-STD-1088-95, *DOE Standard Fire Protection for Relocatable Structures*, June 1995
10. DOE-STD-1066-99, *DOE Standard Fire Protection Design Criteria*, June 1999
11. DOE-STD-1137-2007, *DOE Fire Protection Engineering Functional Area Qualification Standard*, December 2007
12. Washington Administrative Code (WAC), Section 173-303, *Dangerous Waste Regulations*

9.0 RECORDS

The following records are generated by ORP during the performance of the procedure:

Record Description	QA Record Y/N	QA Record Retention L/NP	Responsibility for Submittal
Exemption and Equivalency Approvals	Y	L	ESD

L=Lifetime
NP=Non permanent

The identified records shall be processed and maintained in accordance with the ORP program for Records Management, ESQ-QSH-IP-08, Records Management

Fire protection assessments shall be retained by the Contractor, and made available to ORP representatives upon request. Copies of the two most recent assessment reports shall be kept readily accessible on file.

10.0 ATTACHMENTS

10.1 CONTRACTOR REQUIREMENTS DOCUMENT

Attachment 10.1

The Tank Farm Contractor, including flow down to applicable subcontractors, shall implement Sections 5.2, 5.3, and 7.0 of this IP.

For the Waste Treatment and Immobilization Plant Contractor, this IP is only intended to describe other fire protection program elements unique to Hanford and provide general clarifications (see Section 5.3). This IP does not supersede any fire protection requirements or expectations contained in the project safety requirements document, safety evaluation reports or other departmental requirements for the WTP project.