

FIRE PROTECTION

Effective Date: 01/01/2021

PROGRAM APPLICABILITY: IMC 2600 App B

88055-01 INSPECTION OBJECTIVES

The objective of this procedure is to provide inspection requirements and guidance for U.S. Nuclear Regulatory Commission (NRC) inspectors to determine whether the operational status, material condition and design of fire protection systems at fuel cycle facilities meet the applicable requirements in NRC regulations and the facility's license.

88055-02 INSPECTION REQUIREMENTS AND GUIDANCE

02.01 Selection of Inspection Samples.

a. Inspection Requirements

1. Select a sample of structures, systems, and components in risk-significant areas/processes to verify compliance with the fire protection requirements applicable to the facility and as identified in this IP.
2. Select a sample of licensee activities that support the implementation of the fire protection program (e.g., audits, drills, procedure changes, etc.) to verify compliance with the requirements applicable to the facility. The inspectors must select a fire brigade drill or training (e.g., burn building training, fire response simulation) for observation at least once within two inspection periods (four years) in order to complete the procedure (See Section 02.06).

b. Inspection Guidance

1. The selection of fire protection features to be reviewed depends on the specifics of each licensee's program. Fire protection requirements for licensees differ greatly because of the significant differences in operations and licensing bases at fuel cycle facilities and thus any safety or security impact from fire. Therefore, the inspectors should, as part of inspection preparation, review fire protection program documentation specific for the licensee to be inspected. This review should include a review of changes to the program and site since the last inspection. Specific requirements are documented in the regulations, the license, the Safety Analysis Report (SAR), the Integrated Safety Analysis (ISA), the

building code(s) of record, licensee policies and procedures, or Fire Hazards Analysis (FHA).

In addition, in preparation for the inspection, the inspectors should discuss with the project inspectors and resident inspection staff, where applicable, the site's fire protection program, and any fire protection equipment availability or reliability problems (such as recurring failures or failures resulting in reportable events) the licensee has experienced since the last inspection that could impact risk-significant operations. The inspectors should use the ISA Summary or other safety analysis to determine the risk-significant operations. The inspectors should also consult the site's Focus Area Matrix and past inspection reports to ensure that all areas and major systems are inspected on a periodic basis. The inspector should use this information for the selection of plant areas containing safety controls and items relied on for safety (IROFS) that will be toured during the inspection to assess the design and material condition of fire protection equipment, systems, and features, and check their operational lineup and readiness.

Additionally, non-IROFS systems relied on to support a regulatory function, such as emergency preparedness, or protecting required security equipment or the criticality accident alarm system may be subject to NRC requirements as well. The inspectors may decide that it is appropriate to apply inspection time to those areas based on their risk or regulatory significance.

For those fire protection structures, systems, and components installed to satisfy NRC requirements, and designed to National Fire Protection Association (NFPA) codes and standards, the code edition in force at the time of the design and installation is the code of record to which the design is evaluated, unless otherwise stated in the license application. The licensee may also have committed to follow certain NFPA codes in their license. Underwriter's Laboratory (UL) certifications, or equivalent, should be used to determine the requirements for the performance of the system, and vendor manuals may identify requirements for installation, maintenance, and testing that are necessary for the system to perform its intended function.

Deviations from the codes should be identified and justified in the license application or FHA and must be approved by the authority having jurisdiction (AHJ). A licensee may apply the equivalency concept in meeting the provisions of the NFPA codes and standards. This is not a deviation and does not necessarily require NRC approval. When the license application states that the design "meets the NFPA code(s)," or "meets the intent of the NFPA code(s)" and does not identify any deviations from these codes, the NRC expects that the design conforms to the codes, and therefore the design should be inspected against the NFPA codes. Even when not committed to in the license, the applicable NFPA codes contain guidance that may reveal inadequacies in the design and implementation of controls or the identification of hazards.

Unless otherwise specified in a license document, the Director, Office of Nuclear Material Safety and Safeguards (NMSS), NRC, or designee is considered the to be the AHJ as described in NFPA documents for NRC regulated activities.

2. Once on site, the inspectors should initially determine what testing, training, hot work, welding, or cutting is scheduled to be performed by the licensee during the period of the inspection. From this, the inspectors should select sample activities to observe during the inspection. The inspectors should use the ISA Summary or other safety analysis to determine the risk-significant operations. The inspectors should inform a licensee representative that they would like to be kept informed of any change in the schedule of this work to ensure that an inspector observes the work.

02.02 Preventative Controls.

a. Inspection Requirements

1. Determine whether the licensee controls combustibles, including transient combustibles, flammable liquids, and metal dusts, in accordance with license requirements and consistent with applicable licensee procedures, the FHA and/or ISA.
2. Determine whether the licensee controls ignition sources, including hot work, in accordance with license requirements and licensee procedures and consistent with the FHA and/or ISA.
3. Determine whether the licensee controls inert atmospheres where required, in accordance with license requirements- and applicable licensee procedures.

b. Inspection Guidance

1. Combustible Controls

Fuel facilities contain many combustible materials, including flammable liquids, flammable gases, wood, paper, plastic, rags and other materials. Additionally, metals such as uranium and zirconium alloys are combustible, especially when in a finely divided form. The amount of combustible materials may also vary based on the facility's process. For example, solvent extraction type processes will contain relatively large amounts of combustible liquids in contact with licensed material. Combustible materials need to be controlled to prevent a fire.

The licensee should establish routine housekeeping and/or control of combustible materials inspections to ensure that the fire hazards are bounded by the assumptions in the FHA/ISA.

The inspectors may review the FHAs for selected areas to verify the licensee analyzed the hazards associated with the storage and handling of flammable and combustible liquids and gases. The inspectors should verify that the assumptions of the analysis are still valid and that the assumptions are protected by controls as necessary. The inspectors should verify that any fire protection controls credited to meet the performance requirements in 10 CFR 70.61 are identified as IROFS, and available and reliable to perform their function when needed.

The following hazards and respective controls may be considered in the review of licensee's FHAs:

- (a) The use of approved closed containers and tanks (see NFPA 30) to store and handle flammable and combustible liquids.
- (b) Storage of flammable liquids in closed containers when not in use.
- (c) Proper storage practice to minimize the risk of fire, including spontaneous combustion.
- (d) The use of grounding on bulk drums of flammable liquids when dispensing.
- (e) The use of fire-resistant barriers to separate fuel tanks, fuel gas cylinders, oxygen cylinders, and other hazards while in storage.
- (f) Inspections, testing, or monitoring to ensure connections on combustible liquid and gas piping/vessels are not leaking.
- (g) Proper ventilation of storage tanks to prevent the development of excessive vacuum or pressure as a result of filling, emptying or temperature changes.
- (h) The use of combustible gas analyzers for spaces in which flammable mixtures of combustible gas could accumulate or to detect leaks and activate shutoffs.
- (i) The use of fire-resistant hydraulic fluid in presses and other hydraulic equipment.
- (j) The use of non-combustible containers for storage of combustible trash.
- (k) Measures to ensure systems do not allow the uncontrolled release of vapors when flammable or combustible solvents are used.
- (l) Limits on indoor storage of flammable and combustible liquids to only what is needed for day-use and maintenance work, as analyzed in the FHA.
- (m) Procedures to clean up or controls to limit (e.g., floor drains, dikes) spills of flammable or combustible liquids, so as to not create an unanalyzed hazard, or affect plant safety controls and IROFS.
- (n) Storage and accumulations limits of combustible materials in locations where accumulation of combustible materials could occur (e.g., above suspended ceilings, below raised floors, under glove boxes or other process equipment, under stairs and/or in stairwells).
- (o) Accumulations of combustible material near ducts and high-efficiency particulate air filters in housings/ducts of filter rooms that are in service.

- (p) Accumulations of combustible material in mechanical rooms, electrical rooms, process areas (except as needed for normal shift work or when disposed of in approved non-combustible waste receptacles) or any other unanalyzed location.
- (q) Storage of materials susceptible to spontaneous ignition, such as oily rags and combustible metal fines.

If applicable, the inspectors may consult NFPA 30, "Flammable and Combustible Liquids Code," for guidance related to construction, installation, operation, and maintenance of combustible liquid storage and the related loading and dispensing systems. The guidance for construction, installation, operation, and maintenance of bulk gas (including liquefied gas) storage and the related loading and dispensing systems is available in other applicable NFPA standards (e.g., NFPA 54, "National Fuel Gas Code;" and NFPA 55, "Compressed Gases and Cryogenic Fluids).

The inspectors may consider the following guidance when conducting interviews with personnel, reviewing maintenance and operational logs, observing fire protection equipment, and observing work in progress.

- (a) The facility work planning organization should be familiar with the current compensatory measures and fire impairments (e.g., for inoperability of fire detection or suppression systems), and understands what adjustments are needed in planned work to minimize the introduction of combustibles or ignition sources (that could increase the likelihood of a fire or increase fire severity) into plant areas where degraded fire protection features or systems exist.
- (b) The work planning organization should implement appropriate control for storage and handling of pre-staged flammable and hazardous materials (e.g., solvents).
- (c) Emergency exit paths and access to fire protection equipment should not be blocked.
- (d) Machining operations in the facility such as sawing, grinding, machining, and abrasive cutting have the potential for combustible dust cloud formation and combustible scrap and swarf accumulation. See NFPA 484, "Standard for Combustibles Metals," and NFPA 77, "Static Electricity" for guidance on what controls may be needed.
- (e) Machining operations (e.g., grinding) for combustible metals should be performed in enclosures with a dust collection system in operation. The collected dust should be ducted to a dust collector. The collection hood and duct leading to the filter should be designed to minimize deposition of the fines and to facilitate cleaning (See NFPA 652, "Combustible Dust.")
- (f) Scrap and swarf generated by machining operations and accumulated in the immediate area should be swept as frequently as necessary (See the

FHA) and collected under water in covered metal containers. Such collections should be removed daily (or as required in the FHA) from the process areas. Dust and sludge collected in the dust separators and ducts should be removed as often as necessary.

2. Ignition Sources

Fuel facilities contain a range of fixed and stationary ignition sources, including grinding, cutting, and welding operations. Static electricity and heat from friction can also be ignition sources, particularly when equipment is damaged, broken, or operated in a manner it was not designed for.

Plant equipment such as incinerators, boilers, and boiler furnaces, and stationary combustion engines also represent potential ignition sources. These equipment should be separated from the remainder of the facility by fire barriers having a minimum 1-hour fire resistance rating, or as specified by the applicable requirement. The inspectors should verify that fire barriers, especially those identified as IROFS, are in proper condition to perform their function. The inspectors should also consider whether exhaust systems that have the potential to cause ignition are addressed in the FHA/ISA.

The inspector should verify that hot work is performed in accordance with licensee procedures by observing any welding, grinding, brazing, or flame cutting being performed in any of the process areas (see NFPA 51B for additional guidance). The licensee should address the following precautions and controls during hot work, as applicable to the facility, or analyze the effect of the lack of hot work controls in the FHA:

- (a) Hot work must not be performed in flammable and/or explosive atmospheres; near large quantities of exposed readily ignitable materials; in areas not authorized by management; or on metal partitions, walls, or roofs with a combustible covering or with combustible sandwich-type panel construction.
- (b) Floors must be free of combustibles, such as wood shavings and metal dust.
- (c) If combustibles are closer than 35 feet to the welding or cutting process, and the work cannot be moved or the combustibles relocated at least 35 feet away, they should be protected with flame-resistant covers or metal guards or curtains. This also applies to walls, partitions, ceilings, or roofs of combustible construction.
- (d) Openings in walls, floors, or ducts must be covered if within 35 feet of the work. Cutting can propel sparks overhead or downward, where combustibles are within a 35-foot sphere of the point of operation.
- (e) Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs should not be performed if close enough to cause ignition by heat conduction.

- (f) Charged and operable fire extinguishers must be readily available during hot work, as well as dry powder depending on the type of work. Trained fire watchers must be posted. In general, the posted fire watchers should not be engaged in any other activities and should remain posted for at least 30 minutes after the hot work is complete.
- (g) Equipment failures that could produce unintended ignition sources must also be considered in the FHA. Although in most cases controls on combustible materials will limit the hazard from unintended ignition sources.

3. Inert Atmospheres

In some operations the oxygen level is controlled by applying an inert atmosphere (e.g., argon, nitrogen) or by burning off the oxygen. This may be done for either process (to ensure a furnace has a reducing environment) or safety reasons. In either case the addition of oxygen or the loss of the inert atmosphere may cause an accident of concern and should be evaluated in the FHA/ISA.

The inspectors should observe the operation of the system being inerted, any operator manipulation of the inerting system itself, and routine maintenance and calibration of the inerting system to verify that the inert atmosphere is controlled in accordance with licensee procedures. The system may involve gas detectors, so inspectors may apply the guidance from Section 02.03 to review the detector function. The inspectors may consider the guidance below for the review of operating and maintenance procedures and operator interviews. See NFPA 69 for additional guidance on inerting systems.

- (a) Verify that the procedures require the operators to confirm that the inert atmosphere is present before introducing combustible material or initializing any ignition sources (grinding, etc.).
- (b) If applicable, verify that any devices used to indicate the presence of an inert atmosphere are properly maintained and calibrated.
- (c) Verify that any active components (e.g., supply valves) are properly tested and maintained.
- (d) Verify that operators have received training on the inerting system and understand the hazards associated with its operation.
- (e) Verify that operators have been trained on upset conditions and any required actions to take in response.

02.03 Fire and Gas Detection and Alarm Systems.

a. Inspection Requirements

Determine whether the design and current condition of the fire or gas detection devices are adequate to detect the condition(s) and perform the safety function credited in the

license application, FHA, and the ISA Summary. That is, verify that detection and alarm systems are able to detect the minimal fire within the required time to initiate the credited safety function to control the accident.

b. Inspection Guidance

When the licensee credits fire or gas detection in their ISA as a control, or uses it as a bounding assumption, the inspectors should verify that the system is able to perform its intended function. A variety of methods to detect a fire or hazardous fire-related condition are used in alarm systems and controls. These methods include, sprinkler flow rate alarms, smoke detectors (including ionization, photoelectric, and beam), heat detectors, fire alarm pull stations and gas detectors.

The inspectors should interview licensee staff, conduct walkdowns; and review design documentation, P&IDs, test procedures and records, vendor manuals to verify, to the extent applicable, that:

- (a) Detectors do not show physical damage, blockage, or potential interference that could affect their functionality.
- (b) The detection and alarm system is able to generate the required visual and/or audible alarm at a staffed location.
- (c) The fire or gas detection system is wired appropriately to correctly indicate where the alarm is located, when required, and that staff are trained in responding to the alarm.
- (d) Fire detection circuits are electronically supervised to provide indication (trouble alarm) of any identified faulted condition, if required.
- (e) All required functions of the fire or gas detection system are operational and tested. These functions include supervision of all signaling line circuits, initiating devices' circuits, notification appliances circuits, and signal transmission circuits.
- (f) Initiating devices (e.g., heat, smoke, and beam detectors) are able to sense the condition for which they were designed. For example, a smoke detector alarms at the smoke concentration for which the detector was listed, and that this corresponds to the smoke concentrations occurring at the detector during the fire of concern.
- (g) Initiating devices are routinely tested and calibrated to ensure their functionality, including after maintenance (See vendor manual for required tests).
- (h) Manual fire alarm pull stations or sprinkler flow alarms are capable to trigger the corresponding fire alarm.
- (i) Heat detectors are free of extraneous insulating material (e.g., paint) that could retard or prevent response.

- (j) Smoke and gas detectors are free of any condition (e.g., obstruction, air flow) that could prevent or unduly delay smoke or gas from entering the sensing chamber of the detector.
- (k) Fire detection panels receives power from two different sources which are each capable of supporting the design current load during fire conditions, if required.
- (l) Fire detection panels batteries are fully charged and free of any terminal corrosion, looseness in terminals' connections, or electrolyte leakage. This could cause an increase in the series resistance of the battery set, thus depriving the fire alarm system of the necessary operating potential under large current loads.

02.04 Suppression Systems and Activities.

a. Inspection Requirements

1. Determine whether the licensee carries out its responsibility for designing, installing, and maintaining suppression systems so they are available, operable, and in proper material condition to perform their intended safety function.
2. Determine whether the licensee maintains firefighting equipment at designated locations, that it is appropriate for the hazard and in proper material condition.
3. Determine whether a fire or fire suppression activities could damage safety controls in the area (e.g., sprinkler-caused flooding of other controls).
4. Determine whether adequate drainage and environmental protection is provided in areas protected by water suppression systems to preclude or limit release of effluents in accordance with the license application.

b. Inspection Guidance

When the licensee credits fire suppression in their ISA as a control the inspectors should sample selected systems to verify that the systems are able to perform their intended function. A variety of methods to suppress a fire are available, these include, water-based systems, local and full flooding CO₂ systems, clean agents, dry powder (for metal fires), and a variety of extinguishers. These systems may be automatic or manual, fixed or mobile. This section provides general guidance, more detailed guidance is available in the applicable standards that apply to the specific system. For additional guidance on these and other fire suppression systems consult with Regional and NMSS Fire Protection experts.

1. Suppression Systems

- (a) The inspectors should interview licensee staff, conduct walkdowns, and review design documentation, P&IDs, test procedures and records, vendor manuals, etc., to confirm that:

- (1) Visual and/or audible indication is received at a central staffed location, that the suppression system has been activated, when required.
 - (2) Indication is given of where the activated suppression system is located, when required.
 - (3) Procedures and training indicate what actions are required to manually place the system into operation, including proper valve line ups, when required.
 - (4) Operation of suppression system is not unacceptably impaired if the system is actuated by the fire detection system and the fire detection system is inoperable, reacts too slowly, or its critical detection attributes are degraded.
 - (5) Modifications have not compromised the effectiveness of the suppression system, including by adding additional hazards/combustible loading to the protected area, or by creating areas that are shielded from the suppressions system.
 - (6) Hangers and seismic braces are not damaged or loose.
 - (7) Where required, active components fail safe (e.g., gas isolation valves fail shut).
- (b) The inspectors should confirm that:
- (1) Water supply control valves are locked open or monitored and the water supply and pumping capability is operable and capable of supplying the water supply demand of the system. E.g., pumps provide the required pressures and flow rates, tanks and piping can supply the required volume and flow rate of water for both fixed sprinklers and fire hoses operating concurrently (or other worst case demand).
 - (2) The system provides adequate water spray/sprinkler coverage for the in situ hazard the system is protecting (See NFPA 13 for guidance).
 - (3) Sprinkler heads and nozzles are not leaking, not missing, not the wrong type, and are not obstructed by major overhead equipment (e.g., ventilation ducts, storage racks, mezzanines), damaged, painted, corroded, etc. or installed the wrong way. The required minimum clear space below the sprinkler deflector (e.g., 18 inches) and other sprinkler spacing and installation requirements are maintained. (Review the vendor manual for the sprinkler heads, and design/installation information for the sprinkler system)
 - (4) Adequate drainage is provided in areas protected by water suppression systems. Verify that a protected room or area has a

proper floor drainage system (floor drains are not restricted with debris, plugged, or blanked off) in areas where either water-based fixed suppression systems or manual fire brigade hose streams are expected. Determine whether these fire suppression activities could impact operation of critical equipment safety controls (e.g., sprinkler-caused flooding of other safety controls) (the presence of water in the area due to firefighting and its impact on NCS is covered in Inspection Procedure 88015, "Nuclear Criticality Safety").

- (5) Modifications to the sprinkler system (e.g., additional sprinklers to cover an additional hazard) do not degrade the hydraulic performance of the original designed system. (Review hydraulic analysis of modification.)
 - (6) The system is able to function in freezing weather.
 - (7) Any foaming agents used are appropriate for the hazard, stored, tested, mixed, and applied in accordance with applicable NFPA and vendor manual requirements. (See NFPA 11 and 16)
- (c) Where gaseous systems (e.g., CO₂, clean agent, inert gas) are credited, the inspectors should confirm that:
- (1) The gaseous suppression system (e.g., CO₂, FM200) is able to supply the required amount of agent to extinguish the fire is it credited for (different fires require different agents and concentrations to extinguish).
 - (2) Nozzles are not missing, misaligned, obstructed, or blocked by plant equipment such that gas dispersal would be significantly impeded. (e.g., for local application systems the nozzles must be pointed at the hazard)
 - (3) The suppression agent charge pressure is within the normal band, control system actuation supply valves are open, main supply valves are open and the system is in the appropriate standby mode.
 - (4) Suppression agent storage containers are free of corrosion and the containers are properly fastened and secured.
 - (5) For total flooding systems, confirm the room enclosure's ability to maintain the required gas concentration for the required length of time is not degraded (e.g., worn-out fire door weather stripping, minimal penetration seal degradation or minor cracks, no ventilation system isolation, removed or missing dampers), or more leakage paths than originally tested so that open penetrations will not hinder the performance of the system.
 - (6) Any credited fire dampers and fire doors are unobstructed, undamaged, properly wired with actuators, and designed so that

they are normally closed or will be able to close automatically upon actuation of the system.

- (d) Where CO₂ systems are credited, the inspectors should confirm that:
- (1) The lethal hazards of CO₂ collection in low points are addressed in emergency response and security procedures and training, or determined to not be a concern in the FHA.
 - (2) The system contains appropriate provisions to protect the workers from the lethal hazards of CO₂ exposure (e.g., activation delays, alarms, extra valves to prevent release) which do not unacceptably impair the system. (See NFPA 12, the FHA, and vendor manuals)
 - (3) The system is maintained by specially qualified personnel, and it is walked down after maintenance, to ensure that it remains able to perform its intended safety function.

2. Fire Fighting Equipment

Where manual firefighting is credited, inspect: fire hydrants and hose hookups, hose houses and racks, portable fire extinguishers and dry powder. Visually inspect the physical condition and structural integrity of ~~each~~-hydrant hose houses and other components listed in the licensee's fire protection program. Visually verify that equipment required by the licensee's program procedures is present in selected specified locations and is in proper working condition. Determine whether:

- (a) Portable fire extinguishers of the correct type for the fire (i.e. suitable extinguishing agents) and/or dry powder and scoops are provided at their designated locations, and access is unobstructed by plant equipment or other work related activities.
- (b) The general condition of fire extinguishers is satisfactory (e.g., pressure gauge reads in the acceptable range, nozzles are clear and unobstructed, test records indicate testing within the normal periodicity).
- (c) Hoses are installed at their designated locations and the general condition of hoses and hose stations is satisfactory (e.g., no holes in or chafing of the hose, nozzle not mechanically damaged and not obstructed, valve hand wheels in place and operable).
- (d) Hoses have a hydrostatic test date which will not exceed one year.
- (e) The attached 100 feet of fire hose (plus the 30 feet for water stream) covers the complete area including the overhead. Verify that the hose is properly connected to the standpipe hose connection and is properly placed on the hose rack. Verify that the shutoff valve is closed, hand wheel is in place, and valve is not leaking (e.g., compress the first hose section from hose connection to rack for signs of water in the hose).

- (f) There is a properly calibrated/adjusted pressure reduction device, if installed (25 percent or less calibration/adjustment error).
- (g) Any fire hoses in the hose rack are **not** damaged. Verify that the exterior of the hose jacket is dry with no signs of excessive dirt, debris, cuts, abrasions, or other obvious damage.
- (h) The hose rack swings freely. Verify that hose rack, hose station piping, and supports in the general area have no excessive rust and corrosion.
- (i) **Hose nozzles are not** damaged, missing, clogged, or **an** incorrect **type** (e.g., non Underwriters Laboratories/Factory Mutual (UL/FM) electric safe nozzles).
- (j) Access to the hose stations, **and other equipment**, is unobstructed by plant equipment or work-related activities.

3. Impact of fire or fire suppression activities on safety controls

The inspectors should conduct walkdowns, interview plant staff, and review design information to verify that:

- (a) Sprinkler actuation would not cause flooding of other safety controls
- (b) The licensee adequately considered the potential consequences(s) of cable failures, as a result of the fire suppression activities, for safety controls in the area, including instrumentation and control cabling.

4. Drainage and Environmental

For review of environmental issues related to water-based fire suppression consider the following issues:

- (a) Areas handling radioactive material or used for the storage and dispensing of flammable and combustible liquids should have installed a containment system to catch any hazardous effluent that would result from water runoff.
- (b) When water-based suppression is used, there is the possibility that the water would mix with hazardous substances (e.g., radioactive material, toxic combustion products from burning co-mingled material) and flow into uncontaminated area, nearby bodies of water or soak into nearby soil, threatening drinking water, etc. Depending on the area and type of fire, the run-off may be highly contaminated, and threaten nearby areas.

02.05 Passive Fire Protection Features.

a. Inspection Requirements

Determine whether components such as fire doors, fire dampers, fire barrier penetration seals, oil collection systems, and electrical raceway fire barrier systems (ERFBS) are **properly installed and** maintained in a proper material condition **to perform their function in accordance with the license requirements.**

b. Inspection Guidance

1. Fireproofing and Fire Walls

The fire rating of a fire barrier is typically established by subjecting the barrier to specific tests with pre-defined performance criteria. To obtain the same performance it is therefore necessary to install and maintain the fire barrier in the same or similar condition to the test conditions. The inspectors should conduct walkdowns and review design information to:

- (a) Determine whether the fireproofing was subjected to evaluation and/or fire tests to verify that the fireproofing is rated to maintain the integrity of structural members for the time specified. And that, the fireproofing was properly installed in accordance with vendor instructions to obtain that fire rating and has not been invalidated by plant changes. (See the UL Fire Resistance Directory.)
- (b) Determine whether any required post-installation testing was performed.
- (c) Determine whether structural steel fire proofing, such as fibrous or concrete encapsulation, is installed in such a way that the structural steel is uniformly covered (no bare areas).
- (d) Determine whether the fire ratings of fireproofing systems are sufficient for the anticipated fire duration and intensity. Verify through observation that no physical damage exists which would affect the structural integrity of the fireproof material and allow a direct path for flame/hot gas travel to the protected component (i.e., loose or sagging fire proof material wrap, water damage, loose bands, etc.).

2. Fire Doors

The inspectors should conduct walkdowns and review design information to determine whether:

- (a) Fire doors are rated and installed in accordance with the vendor manual to maintain the integrity of structural members for the time specified. (See also the UL Fire Resistance Directory.)
- (b) Fire doors and frames are UL labeled (or equivalent) and the label fire ratings of door assemblies are compatible with the fire ratings of their associated fire barriers.
- (c) Fire doors close freely (without dragging or sticking) and door latch hardware engages and latches securely. Generally, for the metal doors encountered during inspections, a 3-hour door needs a 5/8-inch latch throw and a 1-hour door needs 1/2-inch latch throw. (See NFPA 80).
- (d) Fire door frame and door-to-floor clearance gaps are not excessive (e.g., NFPA 80 criteria), and otherwise maintained in their proper configuration.

- (e) Fire doors in areas where gaseous fire suppression systems are used need to automatically close upon activation of the system.

3. Ventilation Fire Dampers

- (a) Through walkdowns and reviews of test records, determine whether the material conditions of ventilation system fire dampers, including electrical or heat activated fusible links (if applicable), ensure unobstructed operability. The inspectors should consider the following for selected dampers:
 - (1) For dampers, that cannot be readily observed in the selected plant areas, review the licensee's surveillance efforts directed towards verifying the continuing operability of ventilation fire dampers.
 - (2) Whether accessible fire dampers are UL labeled and the label fire ratings of dampers are compatible with the fire ratings of their associated fire barriers.
 - (3) Verify that fire dampers have no obvious signs of damage by visual verification. Verify through observation that the fire dampers fusible link is properly installed, and the fire dampers have no obstruction which would prevent closure.
 - (4) Buildup of dirt, dust, oil, rust, or other items on the track or coiled springs that could interfere with proper operation.
 - (5) Whether ventilation dampers in areas where gaseous fire suppression systems are used need to automatically close upon activation of the system.

4. Penetration Seals

- (a) Determine whether fire ratings for accessible fire penetration seals are compatible with the fire ratings of their associated fire barriers. Visually inspect the physical condition and structural integrity of each penetration within one or more selected firewalls, floors, or ceilings for the following. The inspectors may consider the following for the visual inspection of seals:
 - (1) The penetration has a seal installed and there is NO passage of light or air movement through the sealant.
 - (2) The foamed penetration seal surface has no cracks greater than 1/8 inch in width in the functional portion of the sealant.
 - (3) The foamed penetration seal surface has no holes greater than 1 inch in depth in the functional portion of the sealant.

- (4) There are no tears or rips in the functional portion of the sealant. Cables pulled away from the seal do not result in cracks > 1/8 inch in width, holes > 1 inch in depth or tears or rips in the functional portion of the sealant.
- (5) There are no open (unsealed) conduits or open pipes protruding through the seal and terminating on either side of the fire barrier.
- (6) The damming boards, when installed, such as Carborundum™, Duraboard®, Durablanket®, or Masonite board are an integral part of the seal. Verify that the damming boards and seams or **thermal system insulation** material is undamaged and in its originally installed condition.

5. Electrical Raceway Fire Barrier Systems (**ERFBS**)

- (a) Determine by observation that ERFBS required to provide necessary power for safety controls or IROFS, such as cable tray fire wraps for cables and blanket material, are in good condition. Visually inspect the physical condition and structural integrity of each ERFBS to confirm the following:
 - (1) Wrap materials are continuous and attached securely in place. In particular, check that material joints or seams are not separated from attachments or have gaps at the firewall structure.
 - (2) No exposed metal is present which might act as a **thermal short-circuit** from structural supports (i.e., all attachment supports, stud bolts, nuts, and washers are properly covered with the fireproofing material).
 - (3) Banding, wire tie, and other fastener pattern and spacing appears appropriate.
 - (4) No breaks, tears, cracks, or holes are present.
 - (5) No crumbling of material is present.
 - (6) No water damage has occurred.
 - (7) No sagging is observed.
 - (8) No blisters or bubbles are present.

6. **Flammable/Combustible** Spill, Leakage and Containment/Collection Systems

- (a) **Flammable/combustible liquid** leakage, ~~and~~ containment/collection, and **floor drain** systems are fire protection features designed to collect leakage, spills, and spray from equipment and/or storage tanks that contain **flammable** or combustible liquids (See NFPA 30, "Flammable and Combustible Liquids Code," and **Section 02.01 above**). **Spills overflowing**

or escaping from these systems may result in greater than anticipated fires due to increased surface area, and therefore increased hazards to the workers and increased releases, as well as increased risks of damaging other IROFS, etc. Where such controls are credited, visually inspect the physical condition and structural integrity of IROFS leakage and containment/collection system for the following:

- (1) The leakage and containment/collection system has sufficient volume for collecting and holding the contents from the largest container allowed to prevent overflow from endangering important structures, facilities, or safety systems, **or other safety basis requirement in the FHA or ISA.**
 - (2) The containment/collection containment dike is **subject to routine inspection to verify that it is liquid tight, and is made of materials (e.g., caulk, gaskets) that are able to adequately perform their function during a fire, if required.**
 - (3) Any piping passing through the dike walls has closed isolation block valves installed. Where provision is made for draining water from diked areas, the drains should be controlled to prevent combustible liquids from entering areas where they would constitute a hazard to important structures, facilities, or safety systems.
- (b) **Review the analysis of selected flammable/combustible liquid storage and handling areas to verify that the licensee has identified any required IROFS related to storage and containment (e.g., either identifies IROFS, or analyses the hazards without containment and screens it out as low consequence, or by controlling the likelihood through preventative controls on leakage or ignition).**
 - (c) **Interview operators to verify that the necessary precautions and procedurally required actions related to spills/leak of flammable and combustible liquids are understood.**
 - (d) **Interview operators and emergency response personnel (e.g., fire brigade members) to verify that during a fire in a diked area or flammable/combustible liquid storage and handling area personnel are able to access any necessary valves or controls without entering the diked area or anticipated fire area.**

02.06 Fire Protection Program Elements.

a. Inspection Requirements

1. **Compensatory Measures:** Determine whether compensatory measures are put in place for out-of-service, degraded or inoperable required fire protection equipment, systems or features **in accordance with the license requirements.**
2. **Fire Brigade Training and Drills:** Observe a fire brigade drill (e.g., burn building training, fire response simulation) at least once within two inspection periods

(four years) to verify the drill is conducted in accordance with the license requirements. Determine whether the fire brigade qualifications and training (including drills) meet the requirements of the license and applicable procedures.

3. **Training Compliance with License Requirements:** As applicable, evaluate compliance with license requirements relating to implementation of training for operators in the area of fire protection, including:
 - (a) **IROFS or safety controls:** Select a sample of risk-significant administrative IROFS and determine whether operator training and knowledge requirements in the license are met.
 - (b) **Fire Safety for Operators:** Evaluate whether the licensee is complying with other fire safety training requirements specified in the license such as manual fire-fighting techniques or “see and flee” actions.
4. **Communications:** Verify that emergency communications systems (e.g., radios) are available, operable, adequate, and reliable for their required performance in fire response activities in accordance with the license requirements.
5. **Organizational Structure:** Discuss recent changes to the licensee’s organizational structure with licensee staff and management representatives to determine whether the change in accordance with license requirements.
6. **Emergency Lighting:** Verify that emergency lighting is available and operable when needed in accordance with the license requirements.
7. **Pre-Fire Plans:** Review changes in the facility Pre-Fire Plans for the selected areas (if required by license condition) made since the previous fire protection inspection and determine if the changes are consistent with the facility FHA.

b. Inspection Guidance

1. **Compensatory Measures**

The use of compensatory measures, on a short-term basis, is an integral part of licensees’ fire protection programs. In most cases, such measures can effectively compensate for the reduction in the level of fire protection defense-in-depth until the operability of the degraded or inoperable fire protection feature can be restored, or the nonconformance can be corrected. For typical fire protection system deficiencies (e.g., inoperable fire detection and suppression systems) the plant administrative procedures should specify the appropriate compensatory measures.

Each level of defense in fire protection (i.e., prevent fires, detect and suppress fires, and limit fire damage), should meet certain minimum requirements; however, strengthening any one can compensate in some measure for weaknesses, known or unknown, in others. In some cases, reductions in defense in depth can be immediately corrected. For example, combustibles can be removed if found in a combustible free zone. In other cases, more time is needed to correct the problem (e.g., repair an inoperable fire detection system, or

install a missing fire barrier). In still other cases, fire protection features are purposefully removed from service (e.g., a fire barrier penetration seal may be removed to allow a new cable run). When immediate corrective actions cannot be taken, compensatory measures are implemented to mitigate the increased fire risk created by the degraded, inoperable, or nonconforming condition until permanent corrective actions can be implemented.

Fire watches are the most common form of compensatory measure for typical fire protection system deficiencies. Fire watches are personnel trained to inspect for the control of ignition sources, fire hazards, and combustible materials; to look for signs of incipient fires; to provide prompt notification of fire hazards and fires; and, in some cases, to take actions to begin fire suppression activities. The primary purpose of the fire watch is to look for fire hazards and other conditions that could lead to a fire.

Fire watches may also detect fires, call out the fire brigade, give exact information regarding the nature and location of the fire to the fire brigade, and **even** initiate fire suppression activities for incipient stage fires **if allowed by site procedures**. **The inspectors may assess whether:**

- (a) Compensatory measures are put in place by the licensee for out-of-service **(including for testing)**, degraded or inoperable fire protection equipment that is required to be operable; or inoperable systems or features (e.g., detection and suppression systems and equipment, passive fire barrier features, etc.).
- (b) **For identified impaired fire protection features, compensatory actions (usually a posted fire watch) are established and continued until the component is restored.**
- (c) Compensatory measures are adequate to provide at least the same reduction in fire risk (considering the out of service time) as the fire protection item(s) for which the compensatory measures are applied.
- (d) **The training and duties of posted compensatory action fire watchers are adequate, and fire watch rounds are completed within specified procedural time frames.**
- (e) Licensee's plans for permanent corrective actions, and the effectiveness of the corrective actions for returning the equipment to service in a reasonable period of time, are adequate.

2. **Fire Brigade Training and Drills**

If **a** drill is not scheduled to take place during the inspection, the inspection requirement may be accomplished by interviewing Fire Brigade members to determine the actions they would take in the event of a fire response, **and reviewing documentation of recent events in which the fire brigade was activated**. Different fire scenarios should be **posed to the fire brigade members** to determine the extent of Fire Brigade training. **For sites without a resident inspector, a drill must be observed at least once within two inspection periods (four years) in order**

to complete the inspection procedure. The following information should be assessed during a drill observation, and/or during interviews and review of training:

- (a) The organization, training, qualifications, and equipment of the fire brigade are adequate to respond to the credible fire scenarios identified in the Emergency Plan/ISA, with assistance from offsite fire departments. (NFPA 600, "Standard on Industrial Fire Brigades," and NFPA 1081, "Standard for Industrial Fire Brigade Member Professional Qualifications" describe the requirements for the organization, training, and personal protective equipment of fire brigades whenever they are established by the employer and may be used as guidance.)
- (b) Protective clothing/turnout gear and self-contained breathing apparatus (SCBA) equipment is properly put on, used, and removed.
- (c) Fire hose lines are capable of reaching all necessary fire hazard locations, the lines are laid out without flow constrictions, the hose is simulated as being charged with water, and the nozzle is pattern (flow stream) tested prior to entering the fire area of concern.
- (d) The fire area of concern is entered in a controlled manner (e.g., fire brigade members stay low to the floor and feel the door for heat prior to entry into the fire area). Drills simulate forced entry into a structure or confined space. Fire brigade members are trained to recognize and exit a hazardous area for which they are not equipped.
- (e) Sufficient firefighting equipment is brought to the scene by the fire brigade to properly perform its firefighting duties, and manual fire suppression activities are simulated.
- (f) The fire brigade members practice overhaul of the fire scene, so that structural integrity is not compromised, and hidden fires are extinguished.
- (g) The fire brigade leader's firefighting² directions are thorough, clear, and effective. The interface with offsite fire departments is adequate to accomplish required tasks.
- (h) Members of the fire brigade check for fire victims and propagation of the fire into other plant areas. Fire brigade members simulate emergency medical care that they are trained and qualified to provide.
- (i) Effective smoke removal operations are simulated.
- (j) The Pre-Fire Plan is implemented (e.g., it is consulted as needed to identify hazards, and strategies).
- (k) Firefighting techniques for different hazards that might be present at the facility are practiced at the required frequency.

- (l) Fire brigade members participate in a drill semiannually, or as required; and participate in a live fire training annually, or as required. Live fire training includes props that are representative of, and that simulate as closely as possible the hazards and conditions that could be encountered by fire brigade members and meets the applicable training requirements.

3. Operator Training

Training and fire safety techniques for operators will vary from site to site. Specific regulatory requirements related to the licensee's training program will be contained in the license, license conditions, or licensee procedures. In addition, training for administrative controls that are IROFS is required to meet 10 CFR 70.62(d) to ensure the IROFS is available and reliable. The license may require the licensee to implement a training program described in their application.

- (a) In evaluating the implementation of the approved or required program, pay attention to completion of requirements related to initial training, periodic retraining, on-the-job training, and the results of tests and examination of trainees.
- (b) Review a selection of training material and records for initial and continuing training for a variety of workers, including tests and exams (if tests are required).
- (c) Discuss the training program with one or more supervisors and one or more operators or technicians, selected at random, to confirm that their participation in the training program is as indicated by their training records. Interview operators about why selected controls are needed, their intended safety functions, and the requirements for the controls. Where operator firefighting or "see and flee" actions are credited interview operators about how they would respond to various scenarios (e.g., if you saw smoke).
- (d) Discuss the program with the licensee's representative who is responsible for training. Discuss any changes made since the last inspection and confirm that substantive changes were reviewed and approved by management and, if required, by the NRC; review and discuss the licensee's evaluation of the overall effectiveness of the training program. The inspection should be directed at assessing the sufficiency of the training program in addressing the fire safety aspects of hazards that can affect special nuclear material (SNM) at the facility. The principal objective of the training program is to ensure that employees have been adequately prepared to perform their job tasks in a safe and effective manner.

4. Communications

Assess the capability of the communication systems (e.g., radios) to support the operators and fire brigade members in the conduct and coordination of their required actions (e.g., consider ambient noise levels, clarity of reception, reliability, and coverage patterns). If specific issues arise relating to communications adequacy, then observe communications tests in the subject

plant area or areas. Communication tests should use a realistic scenario such as during audible alarm conditions. Review the battery use characteristics and duration for the fire brigade radios, and verify that the batteries are appropriately rated (full charge) for talk and receive use.

5. Organizational Changes

Discuss with licensee representatives any organizational changes, structural changes, and/or changes in personnel responsibilities and functions since the last inspection.

Review licensee procedures governing the change(s) and determine whether the individuals who made the change(s) were qualified to make them, and whether the changes were properly made and approved. Focus on whether the qualifications of the staff meet license requirements, including years of relevant experience, educational background, and training required for the newly assigned responsibilities. Changes in organization should be examined with particular attention to changes in personnel, functions, responsibilities, and authorities.

6. Emergency Lighting

The inspectors should interview plant personnel, conduct walk-downs, and review records to verify that emergency lighting, either in fixed or portable form, is maintained in proper condition to perform its safety function.

As applicable, determine whether:

- (a) Battery-powered backup lighting units are provided at the fire brigade storage locations and response assembly areas.
- (b) Lighting is adequate to support fire brigade assembly and dress-out operations.
- (c) Power distribution system contains protective devices so that a fire in the area will not cause loss of emergency lighting in any unaffected area needing lighting.
- (d) Battery power supplies are rated with the hour capacity required by the code of record.
- (e) Operability testing and maintenance of the lighting units follow licensee procedures and manufacturer's recommendations to demonstrate the ability to perform their safety function (e.g., if workers are not able to evacuate, they may be exposed to greater than analyzed hazards)
- (f) Sufficient illumination is provided to permit access to and operation or verification of components for safety controls.
- (g) Emergency lighting unit batteries are being maintained consistent with the manufacturer's recommendations.

- (h) Changes to emergency lighting devices are reviewed in accordance with the fire protection program.

7. Pre-Fire Plans

In some instances, the Pre-Fire Plan is part of the general emergency plan required by the license. However, the Pre-Fire Plan is different from an emergency plan in that it requires information needed by fire-fighting personnel responding to an emergency. Often, the same team of employees is trained to respond to both fires and radiological emergencies. This is acceptable, since a fire emergency may turn out to be a radiological emergency as well.

The inspector should determine whether the Pre-Fire Plans continue to include these elements, as required by the license:

- (a) The most favorable direction to attack a fire in each area taking into consideration the ventilation direction, access to hallways, stairs and doors which are most likely to be fire free, and the best station or elevation for fighting the fire.
- (b) Designation of plant systems that should have plans in place to reduce the damage potential from a local fire which could affect a greater area (e.g., any hydraulic or electrical systems in the area covered by the specific firefighting procedure that could increase the hazards in the area because of over pressurization or electrical hazards).
- (c) Designation of vital heat sensitive (safety controls and IROFS) system components that should be kept cool while fighting a local fire. Critical equipment which contains particularly hazardous combustible material should be designated to receive cooling.
- (d) Identification of radiological and toxic hazards in fire zones.
- (e) Ventilation system operation that ensures desired plant pressure distribution when the ventilation flow is modified for fire containment or smoke clearing operations.
- (f) Indication of the areas of concentration of combustibles, storage of flammable or combustible liquids, and areas where the use of water for fire suppression is restricted due to criticality safety concerns. (More detailed review of criticality concerns due to firefighting is handled in IP 88015)
- (g) Description of the offsite fire department's resources, and estimated response time by the offsite fire department to provide assistance to the facility.
- (h) Identification of, preferably with the help of site plans and drawings, the location of firefighting equipment such as portable extinguishers, automatic fire suppression systems, stand-pipes, hydrants, hoses, and manual pull

stations for the fire alarm. In addition, passive features like fire walls and fire doors should be clearly indicated.

- (i) Identification of evacuation routes and emergency lighting should be clearly identified.
- (j) Identification of fire suppression system and flammable gas isolation valves.

02.07 Identification and Resolution of Problems.

a. Inspection Requirements

1. Determine whether the licensee is identifying issues in the area of fire protection, entering them into the corrective action program (CAP), and correcting the condition as required by license, procedure, and or NRC requirements. Licensees with a credited CAP will have their corrective action program inspected in accordance with IP 88161, "Corrective Action Program (CAP) Implementation at Fuel Cycle Facilities". Corrective actions for traditional enforcement violations will be inspected in accordance with IP 92702, "Follow up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, And Alternative Dispute Resolution Confirmatory Orders".
2. Verify the licensee is conducting audits and self-assessments as described in the license application and applicable licensing basis documents.

b. Inspection Guidance

1. Fire Protection Issues

Licensees may be required to implement a program for evaluating and resolving fire protection issues. Generally, licensees use the CAP for such purpose. If applicable, the inspector should review safety-significant issues and fire protection system failures documented in the CAP to determine if an adjustment to the inspection scope is needed, and whether the licensee complied with the license requirements.

2. Audits and Self-Assessments

Licensees may be required to conduct audits or self-assessments of the fire protection program. The inspectors should select a sample of audits or self-assessments performed since the previous inspection to determine whether the licensee met the requirements in the license, as well as any site-specific guidance or procedures outlining the conduct of such audits. Priority should be given to audits/self-assessments addressing risk-significant issues. The inspectors may consider the following attributes for the review of audits and self assessments, if applicable:

- (a) Scope of the audit;

- (b) Frequency of the audit;
- (c) Independence of staff that conducted the audit;
- (d) Documentation, tracking, and resolution of audit findings.

88055-03 RESOURCE ESTIMATE

The resource estimate to perform this inspection procedure is as specified in Table 1 of IMC 2600 Appendix B, with a variance of $\pm 10\%$.

88055-04 REFERENCES

04.01 National Fire Protection Association (NFPA) Codes

- NFPA 10, "Portable Fire Extinguishers"
- NFPA 11, "Low-, Medium-, and High-Expansion Foam"
- NFPA 12, "Carbon Dioxide Extinguishing Systems"
- NFPA 13, "Sprinkler Systems"
- NFPA 14, "Standpipe and Hose Systems"
- NFPA 15, "Water Spray Fixed Systems for Fire Protection"
- NFPA 16, "Foam-Water Sprinkler and Foam-Water Spray Systems"
- NFPA 20, "Stationary Pumps for Fire Protection"
- NFPA 20H, "Stationary Pumps and Standpipe Systems"
- NFPA 24, "Private Fire Service Mains and Their Appurtenances"
- NFPA 25, "Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems"
- NFPA 30, "Flammable and Combustible Liquids Code"
- NFPA 31, "Oil Burning Equipment"
- NFPA 37, "Stationary Combustion Engines and Gas Turbines"
- NFPA 45, "Laboratories Using Chemicals"
- NFPA 51B, "Fire Prevention During Welding, Cutting and Other Hot Work"
- NFPA 54, "National Fuel Gas Code"

NFPA 55, "Compressed Gases and Cryogenic Fluids"

NFPA 69, "Explosion Prevention Systems"

NFPA 70, "National Electrical Code"

NFPA 70B, "Electrical Equipment Maintenance"

NFPA 70E, "Electrical Safety in the Workplace"

NFPA 72, "National Fire Alarm and Signaling Code"

NFPA 75, "Information Technology Equipment"

NFPA 77, "Static Electricity"

NFPA 79, "Industrial Machinery"

NFPA 80, "Fire Doors and Other Opening Protectives"

NFPA 80A, "Protection of Buildings from Exterior Fire Exposures"

NFPA 85, "Boiler and Combustion Systems Hazard Code"

NFPA 86, "Ovens and Furnaces"

NFPA 101, "Life Safety Code"

NFPA 220, "Types of Building Construction"

NFPA 251, "Fire Tests of Building Construction and Materials"

NFPA 321, "Basic Classification of Flammable and Combustible Liquids"

NFPA 484, "Combustible Metals"

NFPA 600, "Facility Fire Brigades"

NFPA 652, "Combustible Dust"

NFPA 750, "Water Mist Fire Protection Systems"

NFPA 801, "Facilities Handling Radioactive Materials"

NFPA 2001, "Clean Agent Fire Extinguishing Systems"

04.02 U.S. Nuclear Regulatory Commission Documents

NUREG-1520, "Standard Review Plan for Fuel Cycle Facilities License Applications — Final Report" Rev. 2, June 2015

American Society for Testing and Materials, ASTM E-84, "Surface Burning Characteristics of Building Materials"

American Society for Testing and Materials, ASTM E-119, "Fire Tests of Building Construction and Materials"

Factory Mutual System Approval Guide, "Equipment, Materials, Services for Conservation of Property"

National Fire Protection Association, "Fire Protection Handbook"

Underwriters Laboratories Standard UL 555, "Standard for Fire Dampers"

Underwriters Laboratories Standard UL 586, (ANSI B 132.1), "Standard for Safety for High-Efficiency, Particulate, Air Filter Units"

Underwriters Laboratories, "Building Materials Directory"

88055-05 PROCEDURE COMPLETION

Implementation of each applicable inspection requirement will constitute completion of this procedure. Individual inspection samples and breadth of review will be determined by the inspector(s) based on the licensee's compliance with requirements, taking into consideration the risk-significance of activities, and extent of the activities that can be observed or records that are available.

A fire brigade drill must be observed by the NRC at least once within two inspection periods (four years) in order to complete the procedure.

END

Attachment:
Revision History for IP 88055

Attachment 1 - Revision History for IP 88055

| Commitment Tracking Number | Accession Number Issue Date Change Notice | Description of Change | Description of Training Required and Completion Date | Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information) |
|----------------------------|---|--|--|---|
| N/A | ML061790328 09/05/06 CN 06-020 | This document has been revised to: (1) emphasize the risk-informed, performance-based approach to inspection, (2) impose changes to the core inspection program based on operating experience, and (3) remove completed or obsolete MCs and incorporate other fuel cycle MCs into a central location. | N/A | ML061790337 |
| N/A | ML080880493 08/19/08 CN 08-024 | This document has been revised to add more guidance into the Compensatory Measures and Annual Inspection of the Fire Brigade Drill sections. | N/A | ML080880471 |
| N/A | ML13233A186 01/23/14 CN 14-003 | This document has been significantly revised to update the format according to new MC 0040 standards. Redundant information between the requirements and guidance sections has been removed to increase efficiency. Minor grammar edits have been completed. Additional information regarding the PI&R section has been added from IP 88005. Additional training information has been added from IP 88010. | N/A | ML13347A993 |
| N/A | ML18099A293 10/01/18 CN 18-033 | Revision includes editorial changes to remove Part 76 certificate holder references and transfer or resource hours from IP 88055 to IP 88135 (Resident Inspector Program) | N/A | N/A |

| Commitment Tracking Number | Accession Number Issue Date Change Notice | Description of Change | Description of Training Required and Completion Date | Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information) |
|----------------------------|---|--|--|---|
| N/A | ML20241A306 11/09/20 CN 20-061 | Revision to implement the recommendations from the Smarter Inspection Program (ML20077L247and ML20073G659). Also, the information in the document is restructured from previous version. | Completed by December 2020 | N/A |