INSPECTION TECHNICAL PROCEDURE

I-137

INSPECTION OF FIRE PROTECTION SYSTEM CONSTRUCTION

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Table of Contents

INSPECTION TECHNICAL PROCEDURE I-137, REV. 0
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1.0 PURPOSE

This inspection procedure provides guidance in assessing the Contractor's program and implementation covering fire protection system construction activities. This guidance is based on the requirements set forth in the Safety Requirements Document (SRD), Section 4.5.

This procedure assesses the adequacy and effectiveness of the following:

- The program, drawings, and/or procedures governing the construction of fire protection systems.
- Implementation activities for the fire protection system construction program.
- Training and qualification of personnel performing construction and inspection activities.
- System of records.

2.0 OBJECTIVES

This inspection procedure verifies the Contractor has established and implemented effective programs, drawings, and/or procedures for constructing fire protection systems in structures important to safety at the River Protection Project Waste Treatment Plant (RPP-WTP). This includes addressing programs for the following: (1) establishing and implementing commitments regarding programs and plans related to the above, and (2) managing and providing oversight to ensure that the above commitments are implemented effectively.

This inspection procedure is designed for use as a component of a complete construction inspection program. This and other inspection procedures will be used on an ongoing basis, as needed, to provide assurance that construction activities are being conducted as required by authorization basis commitments and Contractor procedures. Although it is expected during the construction phase that a significant portion of this procedure will be accomplished at least once for each major contractor/subcontractor involved with the activities addressed by this procedure, it is not expected that the entire procedure will be completed during any one inspection and/or every time the inspection procedure is used.

3.0 INSPECTION REQUIREMENTS

The authorization basis for inspection of the fire protection system construction procedures and drawing implementation flows from the commitment of the SRD, Section 4.5, "Safety Criteria," to implement DOE Order G-440.1 (Implementation Guide for use with DOE Orders 440.1 and 440.1 Fire Safety Program, dated September 30, 1995), DOE-STD-1066 (Fire Protection Design Criteria, dated July 1999), and NFPA 801-95. DOE-STD-1066 recognizes national consensus standards and other design criteria do not comprehensively or adequately address fire protection issues at DOE facilities and was intended to be used in conjunction with the applicable building code and NFPA Codes and Standards. The OSR expects that the Contractor will accomplish all of the requirements of DOE Order G-440.1, DOE-STD-1066-99, and the applicable NFPA Codes and Standards in the design of the fire protection system and implement the design in the fire protection systems construction procedures and drawings.

This inspection procedure focuses on the implementation of the drawings, procedures and certain critical NFPA and DOE Standard construction unique aspects. NFPA 801-95 requires that fire protection systems be designed and installed in accordance with certain NFPA requirements. For example:

- NFPA 801-95, Chapter 3, paragraph 3-6.2, prescribes that fire doors and windows be installed in accordance with NFPA 80 (Standard for Fire Doors and Fire Windows).

- NFPA 801-95, Chapter 3, paragraph 3-13.4, prescribes that all electrical systems be installed in accordance with NFPA 70 (National Electrical Code).

- NFPA 801-95, Chapter 4, paragraph 4-2.1.3, prescribes that the fire water system be arranged in conformance with NFPA 22 (Standard for Water Tanks for Private Fire Protection).

- NFPA 801-95, Chapter 4, paragraph 4-4.1, prescribes that supply mains and fire hydrants be installed in accordance with NFPA 24 (Standard for the Installation of Private Fire Service Mains and Their Appurtenances).

- NFPA 801-95, Chapter 4, paragraph 4-5.1, prescribes that standpipe and hose systems be installed in accordance with NFPA 14 (Standard for the Installation of Standpipe and Hose Systems).

- NFPA 801-95, Chapter 4, paragraph 4-7.1, prescribes that the design of fire suppression systems be in accordance with certain identified NFPA standards. A logical extension of this prescrition is that the referenced appropriate NFPA standard prescribes certain installation requirements which, when followed, provide assurance that the design and designer’s intent will be implemented in the field construction. Accordingly, by implication, NFPA 801-95 requires that sprinkler systems be installed in accordance with NFPA 13 (Standard for the Installation of Sprinkler Systems).

3.1 Assessing the Adequacy of the Contractor's Construction Implementing Procedures

3.1.1 The inspector should verify the Contractor has established and approved construction drawings and/or procedures implementing the construction and quality requirements of the NFPA standards identified above.

3.1.2 The inspector should verify the procedures provide for inspections to ensure that work activities required to be verified and documented, by the drawings and/or procedures of paragraph 3.1.1, above, are accomplished as required by those documents.

3.1.3 The inspector should verify the Contractor has established procedures for ensuring craft and inspection personnel performing work implementing the programs and procedures of paragraph 3.1.1, above, are qualified to perform their assigned work as required by the applicable NFPA standard. (SRD SC 4-5.15)

3.2 Assessing the Implementation of the Contractor's Fire Protection System Construction Activities

The inspector should verify that the work implementing the fire protection system construction requirements is being accomplished under controlled conditions in accordance with the applicable NFPA standard requirements, stated above, and as implemented by the Contractor’s approved drawings and/or procedures.

3.3 Assessing the Implementation of the Contractor's Personnel Training and Qualification Program

The inspector should verify the craft and inspection personnel involved in the performance of fire protection system construction are trained and qualified, as required by the applicable NFPA standards, stated above, and as implemented by the Contractor’s approved procedures, to perform their job functions. (SRD SC 4.5-15)

3.4 Assessing the Contractor's Implementation of the Records System

The inspector should verify those records demonstrating the achievement of required fire protection construction activities are as specified by NFPA standards, stated above, and as implemented by the Contractor’s approved procedures; reviewed for accuracy and assurance that the recorded information meets project requirements, approved, and sufficiently stored and maintained to support technical requirements and compliance.

4.0 INSPECTION GUIDANCE

4.1 Assessing the Adequacy of the Contractor's Construction Implementing Procedures

The inspector is expected to read DOE-STD-1066-99, DOE G-440.1, and the referenced NFPA Standards before conducting inspections in the areas, below, and in Section 4.2 of this inspection procedure, in order to become generally familiar with the requirements of these documents and be sufficiently knowledgeable to conduct a substantial inspection of the identified areas.

4.1.1 The inspector should review the following areas as identified.

4.1.1.1 The inspector should review the Contractor's procedures and drawings for constructing the water supply systems to verify that the procedures and drawings adequately address the attributes identified below: (NFPA 20-96, "Centrifugal Fire Pumps," and NFPA 22-96, "Water Tanks")

- Pressure gauges having a dial not less than 3.5 inches in diameter are connected near the pump discharge casing and the pump suction. The suction and discharge pressure gauges must have the capability to indicate a pressure at least equal to twice the rated working pressure or suction pressure of the pump, as applicable, but not less than 200 psi for the discharge gauge and not less than 100 psi for the suction gauge. (NFPA 20-96, Section 2-5)

- Steel pipe must be used above ground except for connection to underground suction or discharge pipe. Sections of steel pipe must be joined by means of screwed, flanged, mechnical grooved joints, or other approved fittings. (NFPA 20-96, Section 2-8) The type of pipe thread dressing, bolt thread dressing, torqueing requirements and thread engagement criteria must be specified.

- Pump suction piping must be laid out to avoid air leaks and air pockets. (NFPA 20-96, Section 2-9.6.1)

- A clearance of not less than 1 inch shall be provided around pipes that pass through walls or floors. (NFPA 20-96, Section 2-12)

- Floors shall be pitched for adequate drainage of escaping water away from critical equipment and the floor drain must discharge to a frost-free location. (NFPA 20-96, Section 2-7.6)

4.1.1.2 The inspector should review the Contractor's procedures and drawings for the construction of sprinkler systems and verify that the following DOE-STD-1066-99 and NFPA 13-96 requirements have been specified:

- Procedures and drawings assure that sprinklers have not been painted. (NFPA 13-96, Section 3-2.6.3)

- Procedures and drawings ensure that a supply of spare sprinklers, of each type used on site, (at least 6 for systems having less than 300 sprinklers, 12 for systems having 300 to 1000, and 24 for systems having over 1000 sprinklers, [NFPA 13-96, Section 3-2.9.3]) will be maintained on the premises (NFPA 13-96, Section 3-2.9.1) and a special sprinkler wrench is provided and kept in the cabinet for removal and installation of sprinklers. (NFPA 13-96, Section 3-2.9.2)

- Procedures and drawings ensure steel piping installed above ground is joined by threaded fittings or by fittings used with pipe having cut grooves, the minimum wall thickness will be in accordance with Schedule 30 pipe for sizes 8 inches and larger or Schedule 40 in sizes less than 8 inches for pressures up to 300 psi. (NFPA 13-96, Section 3-3.3)

- Procedures and drawings require all pipe be marked continuously along its length by the manufacturer so as to properly identify the type of pipe. (NFPA 13-96, Section 3-3.7)

- Procedures and drawings require all underground ferrous metal pipe to be lined. (NFPA 13-96, Section 3-4.4)

- Procedures and drawings require steel pipe with wall thickness less than Schedule 30, in sizes 8 inches or greater, or less than Schedule 40, in sizes less than 8 inches, not be joined with threaded fittings. (NFPA 13-96, Section 3-6.1.2)

- Procedures and drawings require the welding methods for pipe and fittings comply with the requirements of AWS B2.1, *Specification for Qualification of Welding Procedures and Welders for Piping and Tubing.* Verify procedures require a welding procedure be prepared and qualified by the contractor or fabricator and welders and welding operators be qualified in accordance with AWS B2.1 before welding is done. (NFPA 13-96, Sections 3-6.2.1 and 3-6.2.8.1)

- Procedures and drawings require no welding be conducted if there is impingement of rain, snow, sleet, or high wind on the weld area of the pipe product. (NFPA 13-96, Section 3-6.2.4)

- Procedures and drawings require welders or welding machine operators, upon completion of each weld, stamp an imprint of their identification into the side of the pipe adjacent to the weld; the Contractor maintains a certified record of the procedures used and the welders or welding machine operators employed by them, along with welding identification imprints; and the records show the date and results of procedure and performance qualification. (NFPA 13-96, Section 3-6.2.9)

- Procedures and drawings require the depth of cover for buried pipe, from the top of the buried pipe to finished grade, be not less than 1 foot below the frost level for the locality. (NFPA 13-96, Section 5-14.4.1.1)

- Procedures and drawings require pipes, valves, hydrants, and fittings be clean inside and inspected for damage when received and prior to installation; and bolted joints be checked for proper torquing of bolts and carefully inspected for cracks or other defects while suspended above the trench immediately before installation. (NFPA 13-94, Section 5-14.4.4) Verify procedures require all bolted joint accessories be cleaned and thoroughly coated with asphalt or other corrosion retarding material after installation. (NFPA 13-96, Section 5-14.4.5.2)

- Procedures and drawings require backfill be well tamped in layers under and around buried pipes and not contain ashes, cinders, refuse, organic matter, corrosive materials, rocks, or frozen earth. (NFPA 13-96, Section 5-14.4.6)

- Procedures and drawings for hanging, bracing, and restraining sprinkler system piping require holes for bolts not to exceed 1/16 inch greater than the bolt diameter and bolts be provided with a flat washer and nut (NFPA 13-96, Section 6-1.1.4); sprinkler piping be supported independent of ceiling sheathing (NFPA 13-94, Section 6-2.1.1); and the maximum distance between hangers not to exceed that specified in NFPA 13-96, Table 6-2.2.

- Procedures and drawings addressing installation of fire protection system restraints for piping and components require supports to resist longitudinal, lateral, and vertical seismic loads. (DOE-STD-1066-99, Section 7.3.2)

4.1.1.3 The inspector should review the Contractor's drawings and procedures for constructing standpipe, hydrant, and hose systems and verify the following requirements of DOE-STD-1066-99 and NFPA 14-96 have been specified.

- Procedure and drawings for piping installation require all main and sectional system control valves, including water supply control valves, have a sign indicating the portion of the system that is controlled by the valve and all control, drain, and test connection valves have a sign indicating their purpose. (NFPA 14-96, 4-2.8)

- Procedures and drawings for support of piping require standpipes be supported by attachments connected directly to the standpipe; standpipe supports be provided at the lowest possible level, at each alternate level above the lowest level, and at the top of the standpipe. (NFPA 14-96, 4-4.1)

- Procedures and drawings require horizontal piping from the standpipe to hose connections, that are more than 18 inches in length, be provided with hangers and hangers for horizontal piping be spaced at a maximum separation distance of 15 feet. (NFPA 14-96, 4-4.2)

- Procedures and drawings for the installation and maintenance of hydrants require hydrants be set on flat stones or concrete slab and be provided with small stones or equivalent placed about the drain to ensure drainage; and the center of a hose

outlet be not less than 18 inches above the final grade, or when located in a hose house, 12 inches above the floor. (NFPA 14-96, 4-5)

- Procedures and drawings require that hydrants be installed at intervals so hose runs from hydrants to all exterior portions of a protected building are no more than 300 feet and that hydrants are not closer than 40 feet to the buildings. (DOE-STD-1066-99, Section 6.2.5)

4.1.1.4 The inspector should review the Contractor's drawings and procedures for constructing fire service mains and verify the following requirements of DOE-STD-1066-99 and NFPA 24-95 have been specified: (NOTE: NFPA 24-95, Section 7-5.1, prescribes that above ground pipe and fittings comply with the applicable sections of Chapters 2 and 4 of NFPA 13, *Standard for the Installation of Sprinkler Systems*, addressing pipe, fittings, joining methods, hangers, and installation.)

- Procedures and drawings require post indicator valves be set so the top of the post will be 36 inches above the final grade and protected against mechanical damage. (NFPA 24-95, Sections 3-3.3 and 3-3.4)

- Procedures and drawings require identification signs be provided at each valve to indicate its function and what it controls. (NFPA 24-95, Section 3-6.1)

- Procedures and drawings require the depth of cover for buried pipe, from the top of the buried pipe to finished grade, be not less than 1 foot below the frost level for the locality. (NFPA 24-95, Section 8-1.1)

- Procedures and drawings require pipes, valves, hydrants, and fittings be clean inside and inspected for damage when received and, prior to installation, carefully inspected for cracks or other defects while suspended above the trench immediately before installation, and bolted joints be checked for proper torquing of bolts (NFPA 24-95, Sections 8-4.1and 8-4.2); the materials are not dropped, dumped, skidded or rolled against other pipe materials (NFPA 24-95, Section 8-4.2); and all bolted joint accessories be cleaned and thoroughly coated with asphalt or other corrosion retarding material after installation. (NFPA 24-95, Section 8-5.2)

- Drawings and procedures for backfilling of trenches require the backfill be well tamped in layers under and around pipes to prevent settlement or lateral movement, and contains no ashes, cinders, refuse, organic matter, or other corrosive materials (NFPA 24-95, Section 8-7.1), and rocks and frozen earth are not placed in trenches. (NFPA 24-95, Section 8-7.2)

- Procedures and drawings require, for hydrants, the hydrant be set on flat stones or concrete slabs (NFPA 24-95, Section 4-3.1); and the center of the hose outlet be not less than 18 inches above the final grade, or when located in a hose house, be not less than 12 inches above the floor. (NFPA 24-95, Section 4-3.3)

- Procedures and drawings require buried joints with steel pipe be field coated and wrapped after assembly (NFPA 24-95, Section 7-3), and buried steel fittings be coated, wrapped, and lined. (NFPA 24-95, Section 7-4)

- Procedures and drawings require all underground ferrous metal pipe to be lined. (NFPA 24-95, Section 7-2)

- Drawings and procedures require, for above ground piping, where corrosive conditions exist or the piping is exposed to weather, corrosion-resistant types of pipe, fittings, and hangers or protective corrosion-resistant coatings be used. (NFPA 24-95, Section 7-5.2.3)

- Procedures and drawings require fire water distribution systems are of the looped grid type providing two-way flow with sectional valving arranged to provide alternate water flow paths to any point in the system; sectional control valves are provided to limit the number of hydrants and individual sprinkler systems made inoperative during a single line break to a total of five; and dead end runs utilized as a single supply to fire hydrants do not exceed 300 feet. (DOE-STD-1066-99, Section 6.2.2)

- Procedures and drawings require control valves to be installed at maximum intervals of 1200 feet on main distribution loops, feeders, and all primary branches connected to these lines. (DOE-STD-1066-99, Section 6.2.3)

- Procedures and drawings require sprinkler system lead-ins to not be run under buildings except for the minimum distance possible and sprinkler system risers and alarm valves are located as close as practical to a building entry point. (DOE-STD-1066-99, Section 6.2.4)

4.1.1.5 The inspector should review the Contractor's drawings and procedures for constructing the fire protection system cable tray and wiring system and verify the following requirements of DOE-STD-1066-99 and NFPA 70-96 have been specified:

- Drawings and procedures require, where cable trays support individual conductors and where the conductors pass from one cable tray to another, or from a cable tray to raceways or to equipment where the conductors are terminated, the support distance between the cable trays and the equipment not exceed 6 feet and conductors are required to be secured to the cable tray(s) at the transition and be protected from physical damage by guarding or location. (NFPA 70-96, Section 318-6 (a))

- Drawings and procedures require each run of cable tray be installed before the installation of cables. (NFPA 70-96, Section 318-6(b))

- Drawings and procedures require supports be provided to prevent stress on cables where they enter raceways or other enclosures from cable tray systems. (NFPA 70-96, Section 318-6 (c))

- Drawings and procedures specify, when cables rated over 600 volts are installed in the same cable tray as cables rated 600 volts or less, the cables rated over 600 volts are required to be Type MC or the cables rated over 600 volts are separated from those rated 600 volts or less by a solid fixed barrier of a material compatible with the cable tray. (NFPA 70-96, Section 318-6 (f))

- Drawings and procedures require, in other than horizontal runs, cables be fastened securely to transverse members of the cable tray. (NFPA 70-96, Section 318-8(b))

- Drawings and procedures require all cut ends of rigid metal conduits be reamed or finished to remove rough edges. (NFPA 70-96, Section 346-8)

- Drawings and procedures require there not be more than the equivalent of four quarter bends (360 degrees total) between pull points. (NFPA 70-96, Section 346-11)

- Procedures and drawings require conduit be clearly and durably identified every 10 feet. (NFPA 70-96, Section 346-16)

- Drawings and procedures require conductors entering boxes, conduit bodies, or fittings be protected from abraision and the openings through which conductors enter must be adequately closed. (NFPA 70-96, Section 370-17)

- Procedures and drawings require, where multi-tiered cable trays are installed that represent a significant fire hazard, as determined by the Fire Hazard Analysis (FHA), fire protection/suppression protection. The inspector should establish (by field inspections and reviewing the FHA) whether multi-tiered cable tray installations had been analyzed and protected as required. (DOE-STD-1066-99, Section 11.3)

4.1.1.6 The inspector should review the Contractor's drawings and procedures for constructing the fire door systems and verify the following requirements of DOE-STD-1066-99 and NFPA 80-95 have been specified.

- Drawings and procedures require a closing device be installed and operable on every fire door (NFPA 80-95, Section 2-4.1.2), that closing device components be securely attached to doors and frames by steel screws or through bolts (NFPA 80-95, Section 2-4.1.3), and all closing device mechanisms be adjusted to overcome the resistance of the latch mechanism so positive latching is achieved on each door operation. (NFPA 80-95, Section 2-4.1.4)

- Drawings and procedures require all components of fire doors be installed in accordance with manufacturers' installation instructions. (NFPA 80-95, Section 2-5.2)

- Drawings and procedures require access doors to fire rated areas be self-latching and self-closing. (NFPA 80-95, Sections 11-1.2.1 and .2)

- Drawings and procedures require, where fire rated assemblies, such as walls or floor or roof ceilings, either partially of fully penetrated by pipes, ducts, conduits, raceways, or other such building elements, fire barrier penetration material be placed in and around the penetrations to maintain the fire resistance rating of the assembly. (DOE-STD-1066-99, Section 9.5.1)

- Procedures and drawings that require security, radiological, or other physical restrictions to prevent access to or egress from an area, should not prevent emergency egress in the event of a fire or related condition. (DOE-STD-1066-99, Section 10.2)

- Procedures and drawings require, when security hardware is installed on a fire door, modifications do not adversely affect the fire rating of the door, and such modifications have been installed in accordance with manufacturers' guidelines. (DOE-STD-1066-99, Section 10.5)

- Procedures and drawings require door openings into 2-hour rated filter plenum housings have a minimum 1½ hour minimum fire rating and door openings into 1-hour rated filter plenum housings have a ¾ hour minimum fire rating. (DOE-STD-1066-99, Section 14.4.1)

- Procedures and drawings require 1½ hour minimum fire rated dampers be utilized where ventilation ducts, not required to function as part of a confinement system, penetrate a 2-hour minimum fire rated structure or facility. (DOE-STD-1066-99, Section 14.4.2.1)

4.1.2 The inspector should review the Contractor's procedures and drawings providing for fire protection system construction to verify procedures provide for inspections to ensure work activities required to be verified and documented by the programs and procedures of paragraph 4.1.1, above, are accomplished as required by those documents and applicable NFPA standards.

4.1.3 No additional guidance is necessary.

4.2 Assessing the Implementation of the Contractor's Fire Protection System Construction Activities

The inspector should conduct the inspections required by this section to verify the attributes, identified in Sections 4.1.1.1 through 4.1.1.6, above, have been implemented by the Contractor in the conduct of that activity. Before performing field work observation inspections, the inspector should review DOE-STD-1066-99, the Contractor's drawings and procedures for accomplishing the particular construction activities planned for observation, and the NFPA standards, as specified above, applicable to the activity to be observed. During the field

observations, the inspector should carry a copy of the drawing(s), procedure(s) and the industry standard(s) pertinent to the planned observations.

During the field observations, the inspector should interview a sample of the craft and quality control (QC) personnel performing the observed activities. The interviews should focus on determining whether job and procedure knowledge is satisfactory. The names and job functions of those interviewed should be obtained for later use in verifying proper implementation of personnel qualification requirements, as specified in Sections 4.3 and 4.4, below.

4.2.1 The inspector should perform inspections in the field to verify the areas identified in Section 4.1.1 above, have been accomplished as required by the appropriate drawing or procedure governing the activity. In addition, the inspector should perform visual inspections in the field of completed installations to verify selected attributes from the next paragraph have been accomplished as identified.

Visual inspections generally should examine and verify the following, as applicable:

- Valve hand wheels are not missing
- Valves are in the required position and sealed, locked, or supervised, as required
- The equipment is accessible
- Appropriate wrenches are provided
- Appropriate identification is provided
- The equipment is free of external leaks and physical damage
- Gauges indicate within the normal range for the parameter being monitored
- The equipment is free of damaging corrosion
- Hoses and nozzles are free of damage and properly stowed
- Portable fire extinguishers are charged and the tag documents the completion of required fire department inspections
- Fire doors are not propped open and are in good physical condition
- Equipment hangers and supports are not damaged or loose
- Piping systems are in good condition, and free of leaks, mechanical damage, corrosion, and misalignment

- Alarm devices are free of physical damage
- Equipment power lights indicate properly and are not damaged
- Oil level sight glasses are not damaged and indicate in the normal range
- Area drains are free of obstructions that could prevent proper operation of equipment in the area served by each drain and the areas are free of material which could migrate over the drain under flooding conditions and block the drain.

4.2.1.1 No additional guidance is necessary.

4.2.1.2 No additional guidance is necessary.

4.2.1.3 No additional guidance is necessary.

4.2.1.4 No additional guidance is necessary.

4.2.1.5 No additional guidance is necessary.

4.2.1.6 No additional guidance is necessary.

4.3 Assessing the Implementation of the Contractor's Personnel Training and Qualification Program

The inspector should review the Contractor's procedures that specify the requirements for education, experience, training, and certification of craft and inspection personnel performing and verifying the activities inspected in Section 4.2, above. If not accomplished during performance of activities in Section 4.2, the inspector should interview and collect the names of at least the following personnel:

- Two crafts-persons performing fire protection system construction activities
- Two persons involved in fire protection system construction inspection and verification activities.

During the interviews, the inspector should verify the respective personnel are sufficiently knowledgeable of applicable procedural requirements.

The inspector also should examine the training and qualification records of the craft and QC personnel interviewed. The inspector should determine whether the records demonstrate conformance to the Contractor's requirements for personnel training, qualification, and certification.

4.4 Assessing the Contractor's Implementation of the Records System

The inspector should sample and examine the completed records that were generated during the fire protection activities observed in Section 4.2. This inspection should focus on verifying the records conform to applicable procedure and NFPA standard requirements.

The records for fire protection system construction and testing activities, and for the training and qualification of personnel, should be examined to verify approval by proper authority; storage and maintenance in accordance with procedural requirements; and the acceptable performance of the documented activity.

5.0 REFERENCES

DOE-STD-1066-99, *DOE Standard Fire Protection Design Criteria*, July 1999 (Superceding the 1997 Edition).

DOE G-440.1, *Implementation Guide for use with DOE Orders 420.1 and 440.1 Fire Safety Program*, 1995.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 1996 Edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 1996 Edition.

NFPA 20, *Standard for the Installation of Centrifugal Fire Pumps,* 1996 Edition.

NFPA 22, *Standard for Water Tanks for Private Fire Protection*, 1996 Edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and their Appurtenances*, 1995 Edition.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 1998 Edition.

NFPA 70, *National Electrical Code*, 1996 Edition.

NFPA 80, *Standard for Fire Doors and Fire Windows*, 1995 Edition.

NFPA 801, *Facilities Handling Radioactive Materials*, 1995 Edition.

Safety Requirements Document, BNFL-5193-SRD-01, Volumes I and II, Rev. 2 and 3, respectively, BNI, 1998 and 2000, respectively.

6.0 LIST OF TERMS

NFPA National Fire Protection Association

QC	quality control
SC	Safety Criteria
SRD	Safety Requirements Document
WTP	Waste Treatment Plant

Attachments: None