

**INSPECTION TECHNICAL PROCEDURE**

**I-136**

**INSPECTION OF FIRE PROTECTION ADMINISTRATIVE CONTROLS**

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## Table of Contents

1.0	PURPOSE .....	1
2.0	OBJECTIVES .....	1
3.0	INSPECTION REQUIREMENTS .....	2
3.1	Assessing the Adequacy of the Contractor's Programs and Implementing Procedures .....	2
3.2	Assessing the Implementation of the Contractor's Fire Protection Activities .....	2
3.3	Assessing the Implementation of the Contractor's Personnel Training and Qualification Program .....	2
3.4	Assessing the Contractor's Implementation of the Records System .....	2
4.0	INSPECTION GUIDANCE .....	3
4.1	Assessing the Adequacy of the Contractor's Construction Implementing Procedures .....	3
4.2	Assessing the Implementation of the Contractor's Fire Protection Activities .....	6
4.3	Assessing the Implementation of the Contractor's Personnel Training and Qualification Program .....	8
4.4	Assessing the Contractor's Implementations of the Records System .....	8
5.0	REFERENCES .....	9
6.0	LIST OF TERMS .....	9

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# **INSPECTION TECHNICAL PROCEDURE I-136, REV. 0**

## **INSPECTION OF FIRE PROTECTION ADMINISTRATIVE CONTROLS**

### **1.0 PURPOSE**

This inspection procedure provides guidance in assessing the Contractor's administrative controls governing the fire protection program and implementation activities. This guidance is based on the requirements set forth in the Safety Requirements Document (SRD).

This procedure assesses the adequacy and effectiveness of the following:

- The fire prevention program; fire emergency plan; fire emergency organization administrative controls; and administrative controls governing hot work, fire protection impairments, and flammable and combustible liquids and gases
- Implementation activities for those administrative controls
- Training and qualification of personnel
- System of records.

### **2.0 OBJECTIVES**

This inspection procedure verifies the Contractor has established and implemented effective programs for fire prevention, identification and correction of fire protection system impairments, and fire emergency response in structures important-to-safety at the River Protection Project Waste Treatment Plant. 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 the above commitments are implemented effectively.

This inspection procedure is designed to be used 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**

#### **3.1 Assessing the Adequacy of the Contractor's Programs and Implementing Procedures**

- 3.1.1 The inspector should verify the Contractor has established an acceptable fire prevention program (SRD Safety Criteria (SC) 4.5-12, 13, and 14), fire emergency organization and plan (SRD SC 4.5-15), pre-fire plan (SRD SC 4.5-22), controls governing hot work (SRD SC 4.5-23) and programs for the identification and correction of fire protection system impairments (SRD SC 4.5-16 and 19) and established procedures (SRD SC 4.5-19) for implementing the program requirements describing the administrative controls and work processes. (SRD SC 4.5-12, 4.5-13, 4.5-14, 4.5-15, 4.5-16, 4.5-17, 4.5-18, 4.5-19, 4.5-21, 4.5-22, and 4.5-23)
- 3.1.2 The inspector should verify the procedures provide for inspections to ensure work activities required to be verified and documented, by the programs and procedures of paragraph 3.1.1, above, are accomplished as required by those documents and applicable National Fire Protection Association (NFPA) standards. (SRD SC 4.5-15, 18, and 19)
- 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 Activities**

The inspector should verify the work implementing the fire protection administrative controls is being accomplished under controlled conditions in accordance with the applicable NFPA standard requirements and the Contractor's approved procedures.

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

The inspector should verify the craft and inspection and testing personnel involved in the performance of activities implementing the requirements of the programs being inspected are trained and qualified, as required by the applicable NFPA standards and Contractor 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 activities are as specified by NFPA standards and approved procedures, reviewed for accuracy and assurance 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**

4.1.1 The inspector should review the following areas, as identified:

4.1.1.1 Review the Contractor's Fire Prevention Program to verify the program adequately addresses the attributes identified below (NFPA 801-95, Section 2-4).

In particular, procedures for the following types of activities should be reviewed to ensure they include the requirements of the NFPA 801-95 and the specific elements described below.

- Fire safety information for all employees and Contractors, including familiarization with fire prevention procedures, emergency alarms, and procedures for reporting a fire. Determine how personnel will be kept informed of fire protection features, capabilities, and alarms as construction proceeds.
- Documented facility inspections conducted at least monthly, including provisions for remedial action to correct conditions that increase fire hazards. Determine how and whether inspection plans will consider the status and stage of construction implementation.
- A description of general housekeeping practices and the control of transient combustibles.
- Control of flammable and combustible liquids and gases in accordance with NFPA 30 (Flammable and Combustible Liquids Code), and NFPA 55 (Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders).
- Control of ignition sources, including, but not limited to, grinding, welding, and cutting in accordance with NFPA 51B (Standard for Fire Prevention in Use of Cutting and Welding Processes).
- Fire reports, including an investigation and a statement on the corrective action to be taken as required by NFPA 901 (Uniform Coding for Fire Protection).
- The restriction of smoking to properly designated and supervised areas of the facility.

4.1.1.2 Review the fire emergency plan to verify a written emergency plan has been developed and includes the following attributes (NFPA 801-95, Chapter 2, Section 2-7 and 2-8):

- Response to fire alarms and fire systems' supervisory alarms.
- Notification of personnel identified in the plan.

- Evacuation, from the fire area, of personnel not directly involved in fire-fighting activities.
- Coordination with security forces, radiation protection personnel, and other designated personnel for the admission of the Hanford Fire Department and other emergency response agencies.
- Requirements for periodic drills and exercises to verify the adequacy of the fire emergency plan, including practice sessions coordinated around previously developed emergency scenarios particular to the facility.
- Fire prevention surveillance and fire watches.
- Requirements to review and revise the fire protection plan to maintain the plan current with the stage of construction and the construction activities in progress.

4.1.1.3 Review the pre-fire plan and verify the plan provides for, as required by SRD SC 4.5-22, assigning individual and alternate responsibilities to a fire alarm or call; assessing the situation; suppressing incipient fires; assembling the emergency service organization; notifying the Hanford Fire Department; personnel evacuation; orderly shut down of processes; safeguarding and control of radioactive and hazardous material; the locations of the fire department compatible connections and fire-fighting equipment (portable fire extinguishers, automatic suppression systems, sectional valves, standpipes, hydrants, and hoses); identification of areas of concentrations of combustibles; storage of flammable and combustible liquids; and areas where use of water for fire-fighting is restricted.

The Hanford site fire department should have aided in the development of the plan and should be given a familiarizing tour of the facility at least once a year.

4.1.1.4 Review the controls governing hot work, such as cutting, welding, grinding, and soldering. Verify hot work permits are issued for hot work operations conducted in or near the facility and the hot work permit documents the applicable fire prevention and protection requirements (such as availability of fire fighting equipment, non-combustible covers and blankets, and fire watches) that must be implemented before hot work operations. Verify the hot work permit indicates the dates authorized for hot work; identifies the object on which hot work is to be performed; provides for and requires documentation of a pre-work inspection; identifies precautions for cutting and welding; provides for authorizing authority signature and approval; and is kept on file until completion of the hot work operations. (SRD SC 4.5-23) Verify the hot work procedural controls provide for the following:

- Fire watches must be provided during hot work activities and continue for at least 30 minutes after the completion of hot work. Verify the controls require the fire watch be trained in their responsibilities and duties and in the use of fire extinguishing equipment. Verify that the controls provide for specifying and requiring fire fighting equipment in the fire watch possession.

- Verify the controls assure the hot work area does not contain flammable liquids, gases, lint or dust. Flammable combustibles must be shielded from sparks, slag, or heat; and openings in walls, floors or ducts in the hot work area must be tightly covered to prevent passage of sparks to adjacent combustible areas.
- Verify the controls require a documented pre-inspection of the hot work site to assure fire watches are assigned, equipped and trained; fire extinguishers are available and operable; floors are clean and free of combustibles; openings are protected; and the area is either clear of combustibles or the combustibles are protected from ignition.

4.1.1.5 Review the controls established to ensure compensatory controls for activities which may result in the impairment of fire prevention/mitigation features (SRD SC 4.5-19). Verify, in the area of impairments, the following measures have been implemented as required by NFPA 801-95, Chapter 2, Section 2-6:

- A written procedure has been established to address impairments to fire protection systems and includes the identification and tracking of impaired equipment, identification of personnel to be notified, and determination of needed fire protection and prevention measures. The procedure must provide for emergency impairments and planned impairments. The controls for emergency impairments should ensure: the area containing the impairment is isolated and controlled for access; the notification of the Hanford Fire Department and shift supervision or management; the impaired system or component is properly tagged out of service; and the determination and implementation of measures to compensate for the impairment (usually the posting of fire watches).
- Measures ensure impairments to fire protection systems shall be as short as practicable and that if an impairment is planned, all necessary parts and personnel shall be assembled prior to removing the protection system from service. If an unplanned impairment occurs, measures shall ensure the repair work for fire protection system restoration is expedited.
- Measures provide for a procedure specified restoration program which ensures once repairs are completed: the sequence of steps to restore the impairment to service are specified, accomplished and verified by responsible personnel; tests shall be conducted to ensure proper operation and restoration of full fire protection equipment capabilities, including placing all alarms and detection devices in service; verification all portable fire extinguishers are in place and fully charged; hose lines have been returned to racks or reels; and all parties, previously notified of the impairment, are advised.

4.1.1.6 Review the controls governing the handling and storage of combustible and flammable liquids (NFPA 30) and gases (NFPA 55) and verify the requirements of NFPA 801-95, Chapter 5, Sections 5-1.2 and 5-1.3 have been referenced and required.

4.1.1.7 Review the controls governing the provision of emergency lighting for the means of access and egress and verify the requirements of NFPA 101 have been referenced as required and emergency lighting has been required for critical operations areas, as required by NFPA 801-95, Chapter 3, Section 3-11. In addition, verify the following from NFPA 101, Section 4-5.3, and Chapter 7:

- The requirement that two means of egress have been provided, as a minimum, in every building, structure, or section where occupants may be endangered while attempting to use a single means of egress that may be blocked by fire or smoke.
- All doors swing in the direction of travel and fire doors (usually two hour rated doors) have proper markings and certification tags and must not be blocked open.
- All means of egress from all parts of buildings shall remain free and unobstructed, without locks or fastenings preventing free escape.
- The requirement that every exit be clearly visible or the route to the exit be conspicuously identified, arranged, and marked so the way to a place of safety is clearly indicated.
- Emergency lighting provisions exist for designated stairs, aisles, ramps, and passageways leading to an exit.
- Where the maintenance of illumination depends upon changing from one energy source to another, a delay of not more than 10 seconds has been accomplished.

4.1.2 Review the Contractor's procedures providing for inspections to ensure the work activities and requirements of Section 4.1.1, above, are verified to conform to the applicable NFPA requirements.

4.1.3 No additional guidance is necessary.

## **4.2 Assessing the Implementation of the Contractor's Fire Protection Activities**

The inspector should conduct the inspections required by this section to verify the attributes identified in Sections 4.1.1.1 through 4.1.1.7, above, have been implemented by the Contractor in the conduct of that activity. Before performing work observation inspections in the field, the inspector should review the Contractor's procedures for accomplishing the particular fire protection administrative control of the activities planned for observation and the NFPA standards, as specified in Section 4.1.1, above, applicable to the activity to be observed. During the field observations, the inspector should carry a copy of the 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 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 the following inspections in the field to verify the areas identified:

4.2.1.1 Perform the following verifications:

- Verify, through discussions with employees in various organizations and job functions and by review of training records, fire safety information has been provided, including familiarization with fire prevention procedures, emergency alarms, and procedures for reporting a fire.
- Verify, by review of documentation and discussion with employees performing inspections, facility inspections have been conducted at least monthly and discrepant conditions have been, or will be, remedied.
- Verify, by touring the facility, housekeeping and control of combustibles conforms to procedural requirements. Verify portable gas storage cylinders are stored in areas designated for such storage and are secured in a manner required by procedures to prevent damage to the cylinder nozzle and control valve.
- Verify, by review of fire report documentation, the fire reports provide information from the fire investigation and corrective action.
- Verify, by touring the facility, smoking has been restricted to designated and supervised areas of the facility.

4.2.1.2 Regarding the provisions of the fire emergency plan, perform the following verifications:

- Following a fire alarm, or system supervisory alarm, verify the response is as specified by the emergency plan and that personnel had been notified as required.
- Personnel not directly involved in fire response activities had been evacuated from the area and coordination with security forces and radiation protection personnel had been accomplished for the admission of the Hanford Fire Department and other emergency response agencies.
- By review of documentation, verify periodic fire drills have been developed around previously developed facility emergency scenarios and held as required regarding participation and frequency.
- By review of training documentation, verify personnel responsible for the use and operation of fire protection equipment had been trained as required and been provided with refresher training at least annually.

4.2.1.3 No additional guidance is necessary.

4.2.1.4 Inspect one activity involving hot work and a hot work permit. Verify the requirements of Section 4.1.1.4, above, have been accomplished.

4.2.1.5 Examine at least one fire protection system impairment and verify the requirements of Section 4.1.1.5, above, have been accomplished.

4.2.1.6 No additional guidance is necessary.

4.2.1.7 Tour the facility and verify, by selective examination, the attributes of Section 4.1.1.7, above, have been accomplished. Review records to ensure the emergency lighting requirements of NFPA 101, Section 7-9, as identified in Section 4.1.1.7, above, have been achieved.

### **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 activities
- Two personnel involved in fire protection system 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 quality control 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 commitments, applicable procedures, 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 they were approved by the proper authority; stored and maintained in accordance with procedural requirements; and indicated 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*, September 30, 1995.

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

NFPA 30, *Flammable and Combustible Liquids Code*, 1996 Edition.

NFPA 51B, *Standard for Fire Prevention in Use of Cutting and Welding Processes*, 1998 Edition.

NFPA 55, *Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders*, 1998 Edition.

NFPA 901, *Uniform Coding for Fire Protection*, 1998 Edition.

NFPA 101, *Life Safety Code*, 1997 Edition.

*Integrated Safety Management Plan (ISMP)*, 24590-WTP-ISMP-ESH-01-001, Rev. 1, Bechtel National, Inc., 2002.

*Quality Assurance Manual (QAM)*, 24590-WTP-QAM-QA-01-001, Rev. 0a, Bechtel National, Inc., 2002.

*Safety Requirements Document (SRD)*, Volume I, 24590-WTP-SRD-ESH-01-001-01, Rev. 0, Volume 2, 24590-WTP-SRD-ESH-01-001-02, Rev 0d, Bechtel National, Inc., 2002.

## 6.0 LIST OF TERMS

NFPA	National Fire Protection Association
SC	Safety Criteria
SRD	Safety Requirements Document

Attachments: None

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