

Activity: Fire Protection Equipment

1.0 Purpose: This guideline provides a method to evaluate the process of fire protection equipment testing and maintainability.

2.0 Scope: This guideline has been developed for the review of the following fire protection equipment:

- Automatic Water Suppression Systems
- Manual Water Suppression Systems
- CO₂ Fire Protection Systems
- Halon Fire Protection Systems
- Fire Hose Stations
- Fire Protection Instrumentation
- Emergency Lighting
- Oil Collection Systems
- Portable Fire Fighting Equipment
- Personal Protective Equipment

3.0 References:

- 3.1 Site Specific Technical Specifications
- 3.2 Site Specific FSAR (Fire Protection Plan)
- 3.3 10CFR50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979"
- 3.4 NRC Inspection and Enforcement Manual, Chapter 64704, "Fire Protection/Prevention Program"
- 3.5 NFPA 803-1983

4.0 Guidelines

4.1 In preparation for and during the conduct of this surveillance:

- Obtain and review implementing procedures, instructions and drawings governing this activity.
- Prepare a guide or checklist using the selected items from this guideline.
- Review past surveys, audits, surveillances and other evaluations/ assessments.
- Ensure that checklists include, where applicable, actual observations of performance, general plant conditions, radiological work practices, housekeeping, work document controls and use, and safety practices.

NOTE: Refer to Guideline A.1, "General Quality Surveillance Guidance," for specific details on the attributes listed above.

4.2 Obtain and review the procedures which implement the Fire Protection Equipment Test Program.

4.3 Identify the relevant requirements to be examined using controlled plant procedures to evaluate program implementation. As a minimum, the requirements should take into account:

A. Frequency of Testing

- 1) Are tests selected for review performed at the intervals required by the site specific Technical Specifications or Fire Protection Plan?

B. Automatic and Manual Water Suppression Systems

- 1) Are water suppression systems demonstrated operable by verifying alignment to the fire pumps as required?
- 2) Are testable valves in the flow paths cycled as required?
- 3) Are spray headers inspected to verify integrity?
- 4) Are fire mains flushed as required?
- 5) Are flow tests performed as required by the Fire Protection Handbook?
- 6) Are system functional tests performed which includes simulated automatic actuation of systems throughout its operating sequence and do fire pumps start sequentially, develop design pressure and flow and maintain fire system design pressure?

- 7) Are fire pump diesel engines verified operable by verifying fuel storage day tank levels?
- 8) Is diesel fuel tested for viscosity, water content and sediment?
- 9) Is the diesel engine inspected per the manufacturer's instructions?
- 10) Are the diesel engine batteries inspected for electrolyte level, overall battery voltage and specific gravity as required?

C. CO₂ Systems

- 1) Are CO₂ bottles or tank(s) inspected for weight/volume and pressure?
- 2) Are CO₂ systems actuated both automatically and manually to verify operation?

D. Halon Fire Protection Systems

- 1) Are Halon storage bottles/tanks inspected for weight/volume and pressure?
- 2) Are Halon systems actuated both automatically and manually to verify operation?

E. Fire Hose Stations

- 1) Are fire hose stations inspected to verify that all required equipment is at the station?
- 2) Are fire hoses removed and inspected for degraded gaskets and couplings as required?
- 3) Is each hose station valve opened periodically to verify valve operability and flow?
- 4) Are hoses hydrostatically tested at a predetermined pressure?

F. Fire Protection Instrumentation

- 1) Are fire detection Instruments demonstrated operable by a channel functional test as required?
- 2) Are NFPA Code 72D Class A Supervised Circuits associated with the detector alarms of each required fire detection instrument demonstrated operable as required?

- 3) Are non-supervised circuits between local panels demonstrated operable as required?

G. Emergency Lighting

- 1) Is the Emergency Lighting System inspected for:
 - a. Working condition
 - b. Correct placement
 - c. Battery life (Appendix R lights)

H. Oil Collection Systems

- 1) Have the reactor coolant pumps been equipped with an oil collection system?
- 2) Is the oil collection system capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the RCP lube oil system?

I. Portable Fire Fighting Equipment

- 1) Are fire extinguishers inspected for:
 - a. Weight (as required)
 - b. Pressure (as required)
 - c. Operable pressure gauges
 - d. Movability (wheeled carts)
 - e. Intact seals.
 - f. Correct service dates.
- 2) Are fire extinguishers:
 - a) Identified
 - b) Unobstructed.
 - c) Placed as required by the site-specific fire plan.

J. Personnel Protective Equipment

1. Are SCBAs inspected for:
 - a) Full bottles.
 - b) Functioning gauges.

- c) Worn or degraded parts.
 - d) Functioning regulators.
 - e) Cleanliness.
 - f) Visibility through the face mask.
2. Are spare bottles inspected to verify air pressure and functioning gauges?
 3. Does turnout clothing meet the requirements of NFPA 803-1983?

5.0 Other Guidelines for Consideration

4.1 See Chapter 1, "General Quality Surveillance Guidance."