

NRC INSPECTION MANUAL

INSPECTION PROCEDURE 64053

FIRE LOOP INSTALLATION

PROGRAM APPLICABILITY:

64053-01 INSPECTION OBJECTIVES

Ascertain whether field activities pertaining to the installation or modification of the fire loop are being accomplished in accordance with applicable codes, standards and licensee commitments.

64053-02 INSPECTION REQUIREMENTS

02.01 Review of Procedures. Ascertain whether specifications, drawings, work instructions and inspection procedures have been established that will assure the technical adequacy of the following activities pertaining to the outside fire loop. Ascertain whether these documents comply with licensee commitments.

- a. Procurement. Review the design and purchase specifications and drawings to assure that specific technical requirements and commitments contained in the SAR and NRR Safety Evaluation Report (if appropriate) have been translated into vendor purchase documents. Verify the following:
 - (1) Materials, such as pipes, pipe joints, mains, anchors, valves and clamps are as specified.
 - (2) Fire pump(s) and associated controls and wiring conform to NFPA 20 standards.
 - (3) Have the design and fabrication codes and standards (NFPA, AWWA, ANSI, ASME) requirements been identified or specified in procurement documents.
 - (4) Critical dimensions are specified. (Size and location of water supplies, size and location of all piping and the depth to which it is to be buried, etc.)
 - (5) Fire hydrants shall comply with NFPA or AWWA criteria.
- b. Receipt Inspection. Verify that receiving inspection instructions require inspections for damage, conformance to purchase specifications (including any special requirements), proper identification and verification that the proper supplier/vendor documentation is received.

- c. Storage. Verify that site storage procedures provide for proper identification, handling, cleanliness preservation, protection from adverse weather and other physical damage and quality control surveillance.
- d. Installation. Verify that work procedures provide adequate instructions for the following (if applicable):
 - (1) Installation work is to be done by fully experienced responsible persons.
 - (2) Control of rigging and handling to prevent damage to pipes, fittings, valves, and suitable equipment.
 - (3) Proper location of valves, hydrants, mains, etc.
 - (4) Fire pump installation complies with NFPA-20. Separation and protection are in accordance with SAR commitments and/or proposed Reg. Guide 1.120.
 - (5) Dimensional checks for levelness, alignment, clearances, etc.
 - (6) Proper restraints are provided for all tees, plugs, caps, bends and hydrant branches.
 - (7) Installation of hydrants in compliance with NFPA 24.
 - (8) Proper backfill.
 - (9) Water tank installation in accordance with NFPA 22 standards.
 - (10) Proper flushing and hydrostatic testing of the fire loop water piping.

02.02 Observation of Work and Work Activities

- a. Visually examine pipe, fittings, valves and hydrants prior to installation. (Sample size 2 length of pipe and one unit of each component) Plain ends shall be inspected with special attention, as these ends are most susceptible to damage. Verify that commitments in the SAR are being met in the following areas:
 - (1) Cleanliness.
 - (2) Configuration of loop and appurtenances relative to drawings.
 - (3) Obvious defects such as cracks and dents.
 - (4) Identification.
- b. Observe work activities or completed work during the installation of the fire loop. Verify the following items:
 - (1) Proper location and orientation.
 - (2) Anchors in proper place.
 - (3) No apparent damage done to fire loop components during installation.
 - (4) Ongoing work is being performed in accordance with approved procedures.
 - (5) Adequate QC inspection coverage.

02.03 Review of Records. Verify that the following quality assurance records indicate that applicable commitments have been met:

- a. Receiving inspection records. (Sample size at least 2)
- b. Shop fabrication records. (Sample size 2)
- c. Installation records. (Sample size one each if applicable)
 - (1) Leveling, alignment, clearances.
 - (2) Anchoring installation.
 - (3) Backfill and soil composition.
 - (4) Cleanliness.
 - (5) Flushing.
 - (6) Hydrostatic test.
 - (7) Fire pump full load operational and automatic starting tests.
- d. Nonconformance Reports.
- e. QA Audits.

64053-03 INSPECTION GUIDANCE

Applicable portions of the SAR should be reviewed to determine licensee commitments relative to construction and inspection requirements prior to review in this area.

Inspectors should be familiar with current, applicable NFPA codes.

- 2.b Inspector should sample size a sufficient quantity of items (1) to (5) to satisfy himself that licensee complies with his commitments.

Definition. A "Fire Loop" is a main water piping loop for fire protection usually feeding hydrants, standpipes and other fire protection systems and components. Fire loops are provided to permit feeding hydrants and other components and systems from at least 2 directions.

64053-04 REFERENCES

SAR, Chapters 9 and 17, including pertinent codes and standards.

Regulatory Guide 1.120, Fire Protection Guidelines for Nuclear Power Plants (out for comments).

NFPA, 20, 22 and 24, and other applicable referenced NFPA, AWWA, ANSI and ASTM codes.

Appendix A to Branch Technical Position APCS 9.5-1 "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976.

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