

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-423/85-34

Docket No. 50-423

License No. CPPR-113 Priority - Category B

Licensee: Northeast Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06101

Facility Name: Millstone Nuclear Energy Station, Unit 3

Inspection At: Waterford, Connecticut

Inspection Conducted: July 8-12, 1985

Inspectors:

Peter H. Phelan
P. H. Phelan, Reactor Engineer

8/29/85
date

Peter H. Phelan for
R. J. Polino, Lead Reactor Engineer

8/29/85
date

Approved by:

C. J. Anderson
C. J. Anderson, Chief
Plant Systems Section, DRS

8/29/85
date

Inspection Summary: Inspection on July 8-12, 1985 (Inspection No. 50-423/85-24)

Areas Inspected: Routine, unannounced inspection of activities relating to the installation of safety-related electrical/instrumentation components and associated circuits, quality control documentation and licensee action on previous inspection findings. The inspection involved 68 inspection hours on site by two region based inspectors.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

1.1 Northeast Utilities Service Company (NUSCo)

B. Olsen, I&C Engineer
B. Lepper, Electrical Engineer

1.2 Northeast Nuclear Energy Company (NNECo)

* J. O. Grockett, Superintendent
* K. W. Gray, Jr., Staff Assistant
* L. J. Nadeau, Assistant Project Engineer
* J. S. Nicosia, EEQ Engineer
R. Fraser, Assistant I&C Supervisor
M. Brown, I&C Supervisor
B. Enguch, Assistant Supervisor
J. Goodier, Instrumentation Specialist
L. Chiarizia, I&C Engineer
J. Chiloyan, Project Engineer

1.3 Stone & Webster Engineering Corporation (S&W)

* G. J. Basileco, Engineer
* J. A. Capozzoli, Supervisor of Construction Services
* C. A. Kuhns, Assistant QA Program Administrator
* M. R. Mathews, Assistant Superintendent-FQC
* P. A. Nelson, Lead Electrical Engineer
* W. Von, Senior FQC Engineer
B. Smith, I&C Engineer
N. Piccolo, Sr. Electrical Designer
D. Dakers, Structural Engineer
B. Martin, Electrical Engineer

1.4 Westinghouse

M. Brothers, Process Control Engineer

1.5 U.S. Nuclear Regulatory Commission (USNRC)

* T. Rebelowski, Sr. Resident

* denotes personnel present at exit interview.

2.0 Facility Tour

- 2.1 The inspectors observed work activities in progress, completed work and plant status in several areas of the plant during a general inspection of the site. The inspectors examined work items for obvious defects or noncompliance with NRC requirements or licensee commitments. Particular note was taken regarding the presence of quality control personnel and indications of quality control activities through visual evidence such as inspection records, nonconformance and acceptance tags.

Specific work activities of completed work observed by the inspectors included installation of instruments, routing of instrument cables and instrument tubing, and installation of cable trays and conduit.

- 2.2 During the facility tour and in the company of licensee representatives, the inspector noted that the effluent sample lines used to extract a representative air sample for the Effluent Radiation Monitors Nos. 3CMS*RE22A&B and 3HVR*RE19A&B in the Auxiliary Building, elevation 71' 0" consisted of 3/4" stainless steel tubing with several 90 degree fittings at the point of entry to the effluent Radiation Monitor sample chamber. Specification M-624, page 1-35, line 30.34 states in part, that: "All piping, tubing, valves and fittings must comply with ---- Specification No. 2472.800-943, Stone and Webster Instrumentation Installation --." Specification No. 2472.800-943, page 2B1-7, line 5.20 states, in part, that: "All tubing installations connecting radiation monitors containing gaseous samples to their sample source and return points shall contain tube bends with a minimum bend radius of nine tube diameters". Construction drawings Nos. EK-515006 and EK-515003 approved for construction on December 20, 1984 call for the use of 90 degree Parker-Hannifin fittings instead of the nine tube diameter radius specified in Specification No. 2472.800-943. Quality Control Inspection Report (QCIR) No. 5A00631 accepts the Radiation Monitor 3HVR*RE19A&B installation based on compliance with the construction drawing EK-515003. This item is unresolved pending determination of the applicability of the 2472.800-943 specification for tube bend minimum bend radius of nine tube diameters to the 90 degree Parker-Hannifin fittings (423/85-34-01).

3.0 Licensee Action on Previously Identified Items

3.1 (Closed) Unresolved Item No. 84-23-02 pertaining to the over fill of cable tray 3TC401P.

The inspector reviewed NETM, Rev. 1, Structural Design Criteria for Category I Cable Tray Supports. The procedure requires that each cable tray be analyzed with respect to cable loading prior to and after building turnover. Cable trays are required to be kept below 50% full to provide adequate assurance that the actual weight of the cables and the tray does not exceed the design basis of their supports. In respect to tray 3TC401P where the actual weight, 42.63 #/ft, exceeded the design basis, 42.50 #/ft, an analysis shall be performed to determine if the supports are adequate. In addition, one month prior to scheduled building turnover an Electrical Physical Designer (EPD) will notify the Cable Tray Verification Coordinator (CTVC) of any cable being added or changed. At this time any trays which are found to be over loaded will be provided with additional supports or modifications. This item is closed.

3.2 (Closed) Unresolved Item No. 84-23-04 pertaining to intercell connections on the safety related batteries without the manufacturers recommended insulating material.

The inspector reviewed Engineering & Design Coordination Report (E&DCR) No. T-E-05027 to assess the licensee's corrective action to resolve this issue. Inserting the cable insulation within the lug shank and crimping the lug connection stiffens the connection and protects the wire from the corrosive effects of the battery room atmosphere. E&DCR No. T-E-05027 calls for the installation of type WCSF-100N Raychem Heat Shrink Tubing Cover on all affected battery intercell cable connections. This item is closed.

3.3 (Open) Unresolved Item No. 84-23-01 pertaining to the violation for failure to follow procedures.

The inspector was provided a copy of the letter sent to the NRC in Region I, dated April 19, 1985, concerning the violation in Inspection Report No. 50-423/84-23. The letter contained a condition, response and corrective and preventive action associated with the two examples which made up the one violation.

The response to the black cable entering electrical penetration No. F3V, which was not appropriately color coded, was found to be adequate. The licensee inspected all penetrations for similar examples, but found no further problems. This was an isolated case and no further corrective action is required.

The response to unsupported cables coming from cable tray 3TC0010 to cable trays 3TC0020 and 3TC0080 was not adequately addressed. The response addressed cables that were unsupported in the vertical position, where as, the violation was for cables unsupported in the horizontal position. Further information is required from the licensee before this item can be fully closed. This item remains open.

4.0 Instrumentation (Components/Systems) Work Observation

The inspector observed work performance, completed work and partially completed work of activities relating to the installation of instrumentation and controls associated with pressure, level, flow and radiation monitoring to ascertain whether the installation was performed in accordance with applicable procedures, FSAR and licensee commitments.

4.1 Items examined for this determination include:

- Pressurizer level transmitter No. 3RCS*LT461, located in the Containment Building,
- Pressurizer pressure transmitter No. 3RCS*PT471, located in the Containment Building
- Accumulator level transmitter No. 3SIL-LT954, located in the Containment Building, elevation-2',
- Accumulator pressure transmitter No. 3SIL-PT965, located in the Containment Building, elevation-2',
- Compont Cooling Flow Transmitter No. 3CCP-FT178B, located in the Containment Building, elevation 4'-6",
- Process Radiation Monitor No. HVR11-1.2 located in Auxiliary Building, elevation 66'-6",
- Steam Generator Level transmitter No. 3FWS*L1529A, located on the Auxiliary Shutdown Panel,
- RCS Pressure Transmitter No. 3RC5*P1405B located on Auxiliary Shutdown Panel,
- Drawing No. 2472.710-292-545, Rev. 2, Feedwater System Steam Generator,
- Drawing No. 12179-EK-501099, Containment Structure,
- Drawing No. 12179-LP-382717, Safety injection level transmitter piping,
- Drawing No. 12179-FSK-6-1B, Flow Diagram Feedwater, and
- Drawing No. 12179-EK-501162, Containment Structure.

4.2 No violations were identified.

5.0 Instrumentation (Component/System) --- QA Record Review

The inspector reviewed pertinent work and quality records for safety related instrumentation and control installations to ascertain whether the records meet established procedures and whether the records reflect work accomplished consistent with NRC requirements and licensee commitments in the area of receipt inspection, procurement, installation and quality control inspections.

5.1 Items examined for this determination include:

- Spec. No. 2472.800-943, Instrumentation, Installation, Piping & Tubing, Rev. 10, Feb. 12, 1985,
- Spec. No. 2472.110-611, Instr. Valves & Manifold Valve Assembly, Rev. 2, Jan. 28, 1983,
- J.O. No. 12179, Technical Requirements for Manifold Valve Assemblies, June 9, 1978,
- Purchase Spec. No. 2472.510-662, Electronic Pressure and Differential Pressure Transmitters -Cat. I., July 2, 1982,
- Purchase Order No. 2472.510.662. Electronic Pressure and Differential Pressure Transmitters, March 23, 1982,
- Nonconformance/Deviation Report No. 8898 July 24, 1984,
- Certification of Compliance for LT461 and PT 965, November 9, 1982,
- Quality Assurance Report No. M31066200C1, September 23, 1982,
- Product Quality Certification, P.O. No. 2472.510-662, September 23, 1982,
- Certification of Compliance P. O. No. 388007, September 22, 1982,
- S&W QAIR No. I5A00875, May 31, 1985,
- S&W E&DCR No. P-T-5631, April 27, 1983,
- S&W Material Receiving Report, P. O. No. 2400.000.001, April 12, 1985,
- Westinghouse Quality Release, P. O. No. 2400.000-001, March 26, 1985,
- S&W QAIR No. E5A51583, April 20, 1985,
- Westinghouse, Change Notice Order No. HR-30927 AR6/N, August 25, 1975,
- Specification No. M-624, addendum 3, dated June 21, 1984, for all Radiation Monitors including the Containment High-Range Monitor, Particulate/Gas Monitor, In-Line Liquid/Gas Monitor and Area Monitors,
- Containment High-Range Monitor Qualification Report No. 51654-1 (Wyle) dated May 18, 1984,
- Containment High-Range Monitor MI cable Qualification test critique (Kraman) dated December 1984,
- Meeting Notes of Conference, M. Kaman Company office, held on July 10-11, 1984, to discuss methodology of Kamman's Qualification Program and status of qualification effort. (Ltr. No. NES-36057),
- Qualification of Model KDI-1000 High Range Containment Area Radiation Detector and Mineral Insulated (MI) cable system, Report No. 460036-001 Revision A, and
- Generic Qualification Test Report Action Lab Report No. 16683-1.

5.2 In reviewing the above documents the inspector noted that:

- (a) The Activation Energy constant (ev) of the limiting material (Silicon Rubber) used in determining the qualified life for the Kaman detector assembly differs between test labs. Wyle Report No. 57654 page 7 (revision A) uses an activation Energy of 1.86 ev for Silicon Rubber and Acton Report No. 16683-1 page 8-5 uses an Activation Energy of 0.91 ev for Silicon Rubber. Though the qualified life in either case is in excess of 40 years, the inspector requested clarification on the use of different activation Energy constant for the same limiting material (Silicon Rubber). This item is unresolved pending NRC review of license evaluation. (423/85-34-02)
- (b) The Kaman mineral-insulated (MI) cable assembly is not qualified for the LOCA environment. Acton Environmental Testing Corporation Report NO. 16683-1 page 10-10 contains notations which state that: "Based on the above results the item described in Section 4-0 has satisfied the requirements with the exception of operability during the LOCA test ---. However, due to a failure of the coax mineral insulated cables inside the test chamber during the LOCA Test, operability of the ion chamber was not demonstrated during the LOCA event." Notes from a conference held in the Kaman Company office on July 10-11, 1984 (Ltr. No. NES-36057) indicate problems in qualifying MI cable assembly. Discussions included material design problems which resulted in failure of 1983 Qualification type tests. Kaman MI cable Qualification Test Critique dated December 11, 1984, discussed additional failures and methods for a connector to achieve hermetic seal. However, none of the methods discussed have been tested in the LOCA environment. The Qualification Report No. 460U36-001 Revision A referenced in the MI cable Qualification Critique describes in detail the Qualification Plan, however, it contains no test data or test results to indicate MI cable assembly is qualified in a LOCA environment. This item is unresolved pending NRC review of qualifying test data for the MI Cable/Connector assembly. (423/85-34-03)
- (c) Sensitivity data for the effluent monitors was not available for review. Regulatory Guide 1.21 Item C.3 requires that effluent monitors demonstrate compliance with Technical Specification and/or 10 CFR Part 20, Appendix B effluent limits. Discussions with the licensee indicate this information was not supplied by the manufacturer of the effluent Radiation Monitors.

This item is unresolved pending NRC review of equipment sensitivity data for effluent Radiation Monitor which demonstrate compliance with 10 CFR Part 20, Appendix B effluent limits. (423/85-34-04)

6.0 Instrumentation (Cables/Terminations) --- Work Observation

The inspector observed work performance, partially completed work and completed work pertaining to the installation of instrument cable and termination to determine whether the requirements of applicable specifications, instructions and procedures are being met in areas relating to material qualification, type, size, routing termination and separation.

6.1 Items examined for this determination include:

- Instrument cable 3CCPBX278 routing and termination from transmitter 3CCP*PT178B to instrument panel 3CES*IPNL119
- Instrument cable 3RMSNOX-408 routing and termination from detector 3HVR*RE10A1 to micro-computer cabinet 3HVR*RIY10A
- Instrument cable 3FWSAOX205 routing and termination from transmitter 3FWS*LT529A to instrument panel 3CES*IPNL122
- Instrument Loop Calibration Report (ILCR) No. 3HCR-010A, Rev. 1 April 30, 1985
- ILCR No. 3FWS-529A, Rev. 2, April 18, 1985
- ILCR No. 3CCP-178B, Rev. 2, Jan. 19, 1985
- Spec No. 2400.000-350, Electrical Installation, Rev. 8 May 30, 1985
- S&W Cable Pull Ticket (CPT) for cable 3FWSAOX205 dated Oct. 10, 1984.
- S&W Conductor Termination Sheet (CTS) for cable 3FWSAOX205.
- S&W CPT, for cable 3RMSNOX021 dated March 13, 1985
- S&W CTS, for cable 3CCPBX277 dated Jan. 29, 1985
- S&W CTS, for cable 3CCPBX277 dated April 17, 1984.

6.2 No violations were identified.

7.0 Instrumentation (Cables & Terminations) --- QA Record Review

The inspector reviewed pertinent work and quality records relative to safety related instrument cables, including terminations and associated hardware, to ascertain whether the records meet established procedures and whether the records reflect completed work consistent with NRC requirements and licensee commitments in the area of receipt inspection, material certification, and installation and quality control inspection.

7.1 Items examined for this determination include:

- S&W QAIR No. E4A65485, July 28, 1984, Cable Installation-General
- S&W QAIR No. E4A6661, Sept. 8, 1984, Cable Terminations and Connections-General
- S&W E&DCR No. F-E-43360, July 10, 1985
- Cable No. 3CCPBX277 pull ticket dated Sept. 9, 1984
- Cable No. 3RMSNOX021 pull ticket dated March 13, 1985
- Cable No. 3FWSAOX205 pull ticket dated Oct. 10, 1984

7.2 No violations were identified.

8.0 Unresolved Items

8.1 Unresolved items are matters about which more information is needed to determine whether it is acceptable or a violation. Unresolved items are discussed in paragraphs 5.2(a), 5.2(b) and 5.2(c).

9.0 Exit Meeting

The inspector met with the licensee and construction representatives at the conclusion of the inspection on July 12, 1985, at the construction site. The inspector summarized the findings of the inspection and the licensee acknowledged the inspectors comments.

The licensee was informed that the paragraph on proprietary information would no longer appear in the cover letter and that the manual chapter places responsibility upon the licensee to inform the inspectors that material provided during this inspection is proprietary and is to be omitted from the report. There was none.

At no time during the inspection was written material provided to the licensee by the inspector.