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50-336/90-14

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License No.

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Licensee:

Northeast Nuclear Energy Company

P.O. Box 270

Hartford, CT 06141-0270

Facility Name: Millstone Nuclear Power Station, Unit 2

Inspection at: Waterford, Connecticut

Dates:

July 12 - August 21, 1990

Reporting Inspector:

J. Scott Stewart, Project Engineer, Division of

Reactor Projects

Inspectors:

William J. Raymond, Senior Resident Inspector

Peter J. Habighorst, Resident Inspector

J. Scott Stewart, Project Engineer, Division of Reactor

Projects

R. Paolino, Senior Engineer, Division of Reactor Safety

Approved by:

Donald Mildaverhan Donald R. Haverkam, , Chief

Reactor Projects Section 4A Division of Reactor Projects

Inspection Summary:

Inspection on July 12 - August 21, 1990

Inspection Report No.

50-336/90-14

Areas Inspected: Routine NRC resident and specialist inspection of plant operations, maintenance/surveillance, safety assessment/quality verification, and employee concerns.

Results: See Executive Summary

Executive Summary

Plant Operations

Millstone Nuclear Power Station, Unit 2, operated at full power throughout the inspection period. No significant observations were identified.

Radiological Controls

Routine review in this area identified no noteworthy findings.

Surveillance and Maintenance

The unit continued to experience leakage in service water piping due to seawater induced corrosion. Major piping replacement is planned for the upcoming unit outage.

Security

Routine review in this area identified no noteworthy findings.

Engineering and Technical Support

A destructive examination of a boraflex coupon from the spent fuel pool (SFP) was conducted as part of the licensee's program to monitor the performance of SFP boraflex poison plates (see Section 2.5). The examination revealed erosion of the boraflex in the vicinity of the vent hole in the coupon. Plant engineering has scheduled additional testing and evaluation of the boraflex to ensure continued reliability.

Safety Assessment/Quality Verification

Routine review in this area identified no noteworthy findings.

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^{*} The NRC inspection manual inspection procedure (IP) or temporary instructions (TI) that was used as inspection guidance is listed for each applicable report section.

DETAILS

1.0 Summary of Facility Activities

The plant operated at full power throughout the inspection period. During the period, plant personnel were preparing for the Unit 2 outage, which will commence on September 15, 1990. One of the preparatory tasks completed was new fuel receipt and inspection. Major tasks scheduled for the outage include: replacement of the main service water header piping, moisture separator tube bundle replacement, and installation of reactor coolant system mid-loop level instrumentation.

NRC Activities

The inspection activities during this report period included 100 hours of inspection during both normal and backshift working hours. Inspection activities included plant operations, maintenance, security, and surveillance.

On July 25, the Millstone resident staff as well as a number of both regional and headquarters management and staff personnel conducted a public meeting to discuss NRC activities at the Millstone site. Approximately 15 members of the public as well as a number of local officials and Millstone staff attended the meeting.

2.0 Plant Operations

2.1 Control Room Observations

Control room instruments were observed for correlation between channels, proper functioning, and conformance with Technical Specifications. Alarm conditions in effect and alarms received in the control room were discussed with operators. The inspector periodically reviewed the night order log, tagout log, plant incident report (PIR) log, key log, and bypass jumper log. Each of the respective logs was discussed with operations department staff.

On July 25, the inspector determined that jumper bypass tag 2-90-17 on containment radiation monitor RM-8262 identified the condition of "leads lifted" when the leads to which the tag was attached appeared to be connected (RI-A-90-0118). The unit 2 shift supervisor was informed and prompt action was taken by the crew to verify that the tag was incorrect and that there were no immediate safety consequences. The shift supervisor promptly informed the Instrument and Controls department and action was taken to correct the deficiency. The tag in question was cleared and replaced with two jumper bypass tags which accurately reflected that the flow control valve in the system was disengaged from the valve controller and the controller was deenergized. The flow control valve had been in manual control for some time and the plant has instituted periodic checks to verify the

system flow. Initially, the flow control valve controller leads were lifted to disengage the flow control valve and tag 2-90-17 accurately reflected the condition. At a later date, the controller was deenergized and the controller leads were reattached, however, the tag was not updated to reflect this condition. Neither system operability nor personnel safety were affected by the discrepancy and this issue is considered closed.

No other discrepancies were noted.

2.2 Plant Tours

The inspector observed plant operations during regular and backshift tours of the following areas:

Control Room
Vital Switchgear Room
Turbine Building
Enclosure Building

Containment
Diesel Generator Room
Intake Structure
ESF Cubicles

During plant tours, logs and records were reviewed to ensure compliance with station procedures, to determine if entries were correctly made, and to verify correct communication and equipment status. No significant observations were noted.

During the inspection, a question was raised as to the ability of a penetration thru-wall fire barrier number A-4/T-1 to meet its requirement to prevent spread of a fire. An NRC regional specialist visiting the site on an unrelated in pection accompanied a utility engineer on a walkdown of the penetration. It was concluded that the penetration met the requirements for the given seal design. The penetration is filled with grout from the cable vault side and passes through a 12-inch thick concrete block wall using 2 inches of damming material. The seal design requires 8 inches of grout and 1 inch of damming material, hence, the minimum requirements were exceeded.

2.3 Stand-by Readiness of Engineered Safety Features System and System Walkdown

During the inspection period, two engineered safety feature (ESF) systems were reviewed to verify system operability. The systems reviewed were auxiliary feedwater and control room ventilation. The review included proper positioning of major flowpath valves, proper operation of indication and controls, and visual inspection for proper lubrication, cooling, and other conditions. References used were:

-- Final Safety Analysis Report

-- Plant instrument and piping diagrams (P&IDs) 25203-26005, and 25203-26027

-- Statior procedures (SP) 2609A/B, 2609F, and Engineering Proc. ure 21205

Additiona and checked included housekeeping in vicinity of the systems, evicine of unusual leakages or similar discrepancies, fire protection, and labeling. Both local and control room process parameters and indications were checked.

No significant observations were identified.

2.4 Moisture Separator Drain Tank Leak

The licensee noted steam and water leakage from a manhole cover of the 1A moisture separator reheater (MSR) drain tank on July 29 and trended the leak. After noting that the leak was getting worse, the licensee decided on July 30 to remove the 1A MSR drain tank from service to repair the cover. The inspector observed the leak in the turbine building, and noted, based on the location of the drain tank and the size of the leak, that there was no immediate impact on plant equipment or personnel safety. The licensee took prudent actions to shield equipment that might potentially be affected by the leak.

The inspector also witnessed operator actions from the control room on July 30 to isolate the drain tank. The second stage reheat for the "A" MSR is taken from the #2 steam generator(reference drawings 26002 sheet 3 and 26003, sheet 2). Plant procedures require that reheat to both MSRs be removed to maintain balanced temperatures to both sides of the low pressure turbines and thus avoid turbine damage that could occur if differential temperature exceeds 58 degrees F.

The drain tank was isolated using the moisture separator reheater operating procedure, OP 2317. The inspector noted that the operators observed the procedural cautions and followed the procedure sequence for the evolution. In particular, the inspector noted good operator actions to closely monitor the differential temperatures for the low pressure turbines. There was good communications and coordination between the control room operators and plant equipment operators while manipulating equipment. The inspector noted good direction of the crew by the shift supervisor and the supervisory control room operator and effective crew communication, as evidenced by confirmation of orders and actions.

The drain tank was repaired and returned to service on August 2. The inspector had no further questions.

2.5 Review of Plant Incident Reports (PIRs)

The plant incident reports (PIRs) listed below were reviewed during the inspection period to (i) determine the significance of the events; (ii) review the licensee's evaluation of the events; (iii) verify the licensee's response and corrective actions were

proper; and, (iv) verify that the licensee reported the events in accordance with applicable requirements, if required. The PIRs reviewed were: 90-62, Inadvertent Actuation of "B" Enclosure Building Filtration System (EBFS); 90-63, Inadvertent Actuation of "B" EBFS; 90-64, RM-9116, Fail-Low Alarm Set Low; 90-65, Violation of Waste Gas Discharge Permit; 90-66, Service Water Lube Water Pressure Switch Jumper; 90-67, "A" Service Water Header Leak; 90-68, Spent Fuel Pool Poison Coupon Degradation; 90-69, Biofouling of RBCCW Heat Exchanger; 90-70, Missed Quarry pH Surveillance; 90-71, Common Facility Battery Chargers; 90-72, #1 Steam Generator Level Reading Low; 90-73, MET Tower Wire Cut; and, 90-74, Enclosure Building Door Broken. The following PIR warranted inspector followup:

PIR 90-60 "Spent Fuel Pool Poison Coupon Degradation"

On July 27, the licensee performed a routine examination of boraflex coupons taken from the spent fuel pool (SFP). The coupons are provided to allow periodic surveillance of boraflex poison material used in maintaining SFP shutdown margin. The sampled coupons exhibited some degradation of the boraflex in the vicinity of the coupon vent hole. Further destructive examination of the coupons revealed the degradation to be largely limited to the vicinity of the vent hole. The licensee, on August 14, performed some additional visual examination of the boraflex material in the pool and determined that the degradation may be dependent upon irradiation induced gassing and flow erosion effects. Some additional testing was being performed at the end of the inspection period to more fully characterize the status of the SFP boraflex. The licensee has determined that SFP shutdown margin was not affected by degradation reflected in the coupons and no operational limits have been imposed. The licensee documented the boraflex degradation in a letter to the NRC dated August 7, 1990.

The inspector ad no further questions.

2.6 Posting and Control of Radiological Areas

During plant tours, contaminated, high airborne radiation, and high radiation areas were reviewed with respect to boundary identification, posting, locking requirements, and appropriate control points. No significant observations were noted.

2.7 Security

Selected aspects of site security, includir site access controls, personnel searches, personnel monitoring, placement of physical barriers, compensatory measures, guard force

staffing, and response to alarms and degraded conditions, were verified to be proper during inspection tours. No significant observations were noted.

3.0 Maintenance/Surveillance

3.1 Observation of Maintenance Activities

The inspector observed and reviewed selected portions of preventive and corrective maintenance to verify compliance with regulations, use of administrative and maintenance procedures, compliance with codes and standards, proper QA/QC involvement, use of bypass jumpers and safety tags, personnel protection, and equipment alignment and retest. The following activity was included:

-- AW090-07619 Service Water Piping Leak

On July 23, a leak of service water was charved originating from a coupling used to connect service water high point vent valve, 2-SW-100A, to the 8-inch service water header that supplies the "A" Diesel Generator. The leak repair involved replacing an eroded/corroded coupling and nipple. Because the leak was on safety related piping, a non-conformance report, 290-066, was issued. The inspector reviewed the work, discussed the repair with maintenance and engineering personnel, and inspected the jobsite.

No significant observations were identified.

3.2 Observation of Surveillance Activities

The inspector observed and reviewed portions of completed surveillance tests to assess performance in accordance with approved procedures and Limiting Conditions for Operation, removal and restoration of equipment, and deficiency review and resolution. The following tests were reviewed:

- -- SP 2404AC, Clear Liquid Radwaste Process Monitor RM 9049 Functional Test
- -- SP 2613B, Emergency Diesel Generator Functional Test

No significant observations were noted.

4.0 Safety Assessment/Quality Verification

4.1 Licensee Event Reports

(Closed) LER90-08, Missed Grab Sample of Unit 2 Stack Gas

With stack gaseous radiation monitor 8132B out of service, a grab sample is required every 12 hours. The missed sample was caused by a lack of communication between chemistry and operations personnel.

The inspector verified that the compensatory grab sample was obtained and analyzed and that the sample results were as expected.

This issue is closed.

4.2 Previously Identified Items

4.2.1 (Closed) TMI Item III.D.3.4.3: Control Room Habitability - Implement Modifications

The inspector verified that the licensee had procedures in place to ensure the correct performance of Technical Specification Surveillance Requirements 4.7.6.1. The procedures reviewed included SP-2609A,B "Control Room Ventilation Operability Test," SP-2609F "Control Room Ventilation System Filter Testing - Refuel," and Engineering Procedure 21205 "Control Room Inleakage Verification." The inspector also walked down the accessible portions of the control room ventilation system to verify equipment condition and as-built configuration to be in accordance with the applicable station drawing. This item is considered closed.

4.2.2 (Closed) TMI Item II.K.3.5: Automatic Trip of Reactor Coolant Pumps

NRC Generic Letter (GL) No. 86-06 stated the NRC's acceptance of the Combustion Engineering Owner's Group resolution of the reactor coolant pump automatic trip issue. The letter further requested additional site specific implementation information which the NRC staff would use to evaluate and close the site specific issues. The licensee responded to GL 86-06 in letters dated November 13, 1986, January 9, and June 15, 1987. The NRC Staff reviewed the plant specific implementation in a letter dated April 3, 1989, and found it acceptable subject to onsite verification.

The inspector reviewed the submittals listed above and verified implementation in a review of the following procedures;

- -- EOP 2525 "Standard Post-Trip Actions"
- -- EOP 2532 "Loss of Primary Coolant"
- -- EOP 2534 "Steam Generator Tube Rupture"
- -- EOP 2536 "Excess Steam Demand"
- -- EOP 2540 "Functional Recovery"
- -- EOP 2537 "Loss of All Feedwater"

This issue is considered closed.

5.0 Employee Concerns Inspection

5.1 Main Generator Transformer Link Removal

On October 26, 1989, the inspector received a concern about control of maintenance activities during removal of the main generator links on October 23, 1989. Specifically, the concern consisted of conflicting procedural steps or tagging sequence, red danger tags placed on wrong equipment, and a reversed equipment grounding sequence. The issue was turned-over to the licensee's nuclear safety concerns program.

The first issue involved conflicting procedural steps regarding tagging sequence. On March 30, 1990, the licensee revised MP 2720G3 to Revision 2 to clarify the tagging sequence within the procedure.

The licensee investigation of red tags hung on wrong equipment revealed the concern to be substantiated. The equipment grounding sequence was corrected by procedure MP 2720G3 Revision 2 on March 30, 1990. The revision distinguished between tags that are required to be hung as prerequisites and grounds that are installed as part of the procedure.

Inspector review of this matter determined that no plant safety issue existed. The inspector also concluded that no personnel safety issue existed, based on established safety practices and the resolution of deficiencies as part of the in-process work controls. This item is closed.

5.2 Surveillance Procedure Discrepancies

On November 8, 1989, the resident turned over to the licensee for investigation a procedural compliance issue concerning SP-2401E "Calibration of Excore to Incore Nuclear Instruments." The surveillance procedure implements the technical specification required surveillance 4.3.1.1.1. table 4.3-1, item 2a for the reactor protection system nuclear power trip function. The issue involved Change 6 to Revision 8 of SP-2401E and how the procedure was completed within procedural compliance guidelines prior to processing the change. The change consisted of two parts: (1) clarification on use of the plant computer to obtain in-core axial shape index data, and (2) rearrangement of a caution step prior to performance of the surveillance for reactor regulating control channels "X" and "Y."

Licensee evaluation determined that the calibration results between May - June 1989 were acceptable and that procedural adherence was not compromised.

Inspector review determined that procedure SP-2401E was successfully completed in the past without the enhancements made by Change 6, in that the required data were obtained from the computer. The inspector also verified the adequacy of past surveillances by independent calculation of the results.

The ispector reviewed other procedure changes to SP-2401E completed between May - July, 1989. Two changes (change 4) and (change 5) were processed on May 17 and July 19, and two procedure form changes were processed on May 17 and May 19. Based on review of the content and reason for these changes, no indication of licensee passivity in correcting procedure SP-2401E between May - July, 1989 was evident.

This item is closed.

5.3 Access Controls to QA Materials

On November 29, 1989, an issue involving access controls for the field storage locations within the Millstone 2 maintenance shop was turned over to the licensee for resolution. The issues involved procedural requirements for storage of QA materials to be in dedicated storage areas, with strage level requirements, and control of these areas under the cognizance of a field storage coordinator.

The unit maintenance department conducted a review of the QA field storage locations against station requirements. On December 1, the licensee issued non-conformance report (NCR) 289-212 to identify the need to control a dedicated locked area under an assigned field storage coordinator. A licensee maintenance department instruction 2-MPM-1.47 was approved to reinforce the actions under ACP-QA-4.02B and amplify the individual's responsibilities associated with the control of the areas. Authorized Work Order M2-89-13093 documented the corrective actions to change the locks on the storage cabinets and cages, and to post the locations with signs identifying them as QA storage areas, along with instructions to access the areas.

Licensee access controls for QA storage locations within the Millstone 2 maintenance shop were deficient, however, accountability of QA material was maintained through a material issue form and log book. The licensee's QA group performed a review of the inventory in the storage locations and identified no inadequacies. Adequate licensee corrective actions were noted upon notification of this issue.

The inspector noted that the failure to designate a field storage coordinator for materials in the Millstone 2 maintenance area was a violation of the requirements of ACP-QA-4.02B. There is no evidence that incorrect or deficient materials were used in the plant. Inspector review confirmed that no programmatic deficiency in

material control existed. Thus, the safety significance of the deficiencies was low. In accordance with the policy of 10 CFR Part 2, Appendix C, no violation will be issued since the matter has minor safety significance and actions to prevent recurrence are appropriate (50-336/90-14-01). This item is closed.

5.4 Fitness for Duty Review

The inspector reviewed one aspect of the licensee's program on fitness for duty in relationship to requirements prescribed in 10 CFR 26. The review focused on sample acquisition procedures in relationship to privacy rights of plant workers and licensee responsiveness to an employee inquiry regarding this matter.

The licensee implemented 10 CFR 26 Appendix A section 2.4(5) by requiring all selected individuals—store pocket contents in a locked container, with the individual in control of the key during the sample acquisition.

The inspector reviewed NUREG-1354, "Fitness for Duty in Nuclear Power Industry: Response to Public Comments," Section 18.0. The document describes the basis for NRC's conclusion that 10 CFR 26 will not infringe on a worker's constitutional right to privacy, beyond that already required in the screening process to work, at a nuclear plant, which include biennial medical examination for control room operators (10 CFR 55), security searches of all hand held items, background investigations of employees, and, psychological examinations per 10 CFR 73.

Inspector review of the licensee's sample acquisition procedures determined that the licensee has complied with the requirements of .0 CFR 26, Appendix A Section 2.4. in a manner that assures both sample integrity and worker privacy. The inspector concluded that the limensee was responsive to the employee inquiry in this matter. This issue is closed.

5.5 Emergency On-Call Status

On September 13, 1989 a question was raised as to whethe the emergency plan procedure was violated when a worker did not have a radiopager when assigned on-call status. The issue was referred to the licensee on November 8, 1989, and subsequently documented as turned over in inspection report 50-336/89-23. Licensee review indicated the issue was previously identified by an employee at a department meeting.

The on-call procedure is part of the emergency plan implementing procedure (EPIP) 4211. EPIP 4211 step 3.3 requires that, if a radiopager is inoperative, replacement pagers are available from the security shift supervisor at the south access point. Further, if an individual is unable to fulfill the responsibilities of the on-call

position, he should call the Millstone Unit 1 operations shift supervisor to transfer the duty. The licensee reemphasized the responsibilities of on-call personnel as specified in the applicable procedure.

The inspector reviewed the circumstances surrounding the employee's availability as an on-call responder on September 9, 1989. The worker was available to the control room via telephone for a two-hour period until a radiopager was obtained in accordance with EPIP 4211. Based on the guidance within procedure EPIP 4211, and re-emphasis of employee actions during on-call activities, the inspector concluded that emergency response capabilities were not compromised at the time of the concern was raised and EPIP 4211 was not violated. Licensee followup actions were appropriate. This item is closed.

5.6 Reactor Coolant Pump (RCP) Upper Guide Bearing RTD Deficiency

On August 21, 1989 the inspector received a concern regarding an improper resistance temperature detector (RTD) connection for a spare reactor coolant pump motor. Specifically, it was identified that the RTD was not soldered at the internal connector as specified in the vendors (General Electric) drawing 4004D1258KA.

On August 21, non-conformance report (NCR) 289-157 was written to disposition the deficiency. The RTD internal connection was soldered under authorized work order (AWO) M2-89-10114 and was visually verified by a licensee quality control inspector. The bearing shoe connection was not accessible and thus was not visually examined. The licensee verified both internal connections by a continuity check per AWO M2-89-10114.

After licensee disposition of the NCR, a question was raised whether: (1) the termination at the journal bearing shoe was acceptable; (2) the requirements of 10CFR21 were violated by the vendor or the licensee; and, (3) the deficiency would have been identified during previous RCP motor replacements.

The issue was turned over to the licensee on November 8, 1989 and documented in inspection report 50-336/89-23. The 'spector reviewed the licensee's resolution of concerns relating to a position of the NCR.

The termination at the journal bearing shoe is prior to the internal connection and is made by embedding the connector pins in epoxy. The licensee found that a continuity check of the RTD was appropriate to check the connection at the bearing shoe, since the connection pins are embedded in epoxy and held together in a solder connection. Conversely, if the solder were omitted there would be no physical means to hold the connector pins together.

The licensee noted that failure of the RTD connection would be self-disclosing on other reactor coolant pump motors. There is no safety significance if the bearing temperature indicator fails, because the lack of temperature indication would not directly cause the failure of a pump.

Northeast Utilities Service Company (NUSCO) Generation Facility Licensing reviewed the discrepancy with respect to 10CFR21 requirements and determined no report was required primarily because the temperature instrumentation for the RCP Motor is non-safety related. Inspector review determined that the licensee investigations and response to the NCR and subsequent issues were adequate.

The inspector verified in the licensee's Material Equipment Parts List (MEPL) evaluation CD*563 that the temperature sensors and connections for the RCP Motors are non-Quality Assurance category I. The defect in the connections do not constitute a substantial safety hazard as defined in 10CFR21.3(K). The usis is that the loss of RCP journal bearing temperature indication would not constitute a major reduction in the degree of protection provided to the public health and safety. The inspector concluded that there was no safety rignificance associated with the deficiency. The configuration of the journal bearing RTD connection was not in accordance with vendor specifications; however, appropriate licensee correct ve actions were noted. The inspector considers this issue closed and plans no further actions.

5.7 Concerns Referred to the Licensee for Resolution

The matters discussed in sections 5.1 through 5.6 above had been referred to the licensee for resolution through the Nuclear Safety Concerns (NRC) program. Inspector review found that the licensee's followup provided acceptable resolution of the issues.

On August 14, the inspector presented two additional concerns from an employee at Millstone station to licensee nuclear concerns program management for resolution. The first concern was that equipment tagging was deficient because 1) a blue tag was used when a red tag would have been appropriate, 2) the wrong breaker to the steam packing exhauster was tagged during preventative maintenance activities, and 3) a valve was manipulated by a work group outside the assigned tagging boundary during work on the instrument air system. The second concern was that an industrial safety hazard existed in the machine shop as identified in a load study.

No unsafe conditions were identified. Licensee actions to respond to these employee identified concerns will be reviewed on subsequent routine inspections.

6.0 Management Meetings

Periodic meetings were held with station management to discuss inspection findings during the inspection period. A summary of findings was also discussed at the conclusion of the inspection. No proprietary information was covered within the proper of the inspection. No written material was given to the licensee during the inspection period.