U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-423/84-14

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 Power Station, Unit 3

Inspection at: Waterford, Connecticut

Inspection Conducted: August 19 to September 29, 1984

Inspectors: Thadeus A. Rebelowski — Nov 20, 1984
T. A. Rebelowski, Senior Resident Inspector — date signed

D. R. Lipinski — Nov 20, 1984
D. Lipinski, Resident Inspector — date signed

J. Robertson, Reactor Engineer — date signed

Approved by: E. McCabe — 12/7/84
E. McCabe, Chief, Reactor Projects Section 3B, DPRP — date signed

Inspection Summary: Inspection 50-423/84-14 (8/19/84 - 9/29/84)

Areas Inspected: Routine resident (94 hours) and region-based (20 hours) inspection of preoperational testing, open NRC items, in-core thermocouple replacements, the structural settlement monitoring program, procedures, diesel fuel storage, licensee/contractor self-audits, reports of potentially significant deficiencies, and ACRS items. No unacceptable conditions were identified.

DETAILS

1. Persons Contacted

Northeast Utilities Service Company (NUSCO)

J. O. Crockett, Superintendent - Unit 3
K. W. Gray, Jr., Staff Assistant - CQA
M. D. Hess, Assistant Startup Supervisor - NNECO
J. S. Harris, Startup Supervisor - Unit 3
R. E. Lefebvre, Project Staff Engineer
D. O. Miller, Jr., Manager, Startup Services
S. Orefice, Project Engineer
S. Toth, Superintendent - New Site Construction

Stone & Webster Corporation (S&W)

A. A. Dasenbrock, Resident Manager
G. G. Turner, Superintendent, Field Quality Assurance
W. H. Vos, Senior Engineer, Field Quality Control

Other members of the licensee staff and operating personnel were contacted during the course of the inspection.

2. Licensee Action On Previous Inspection Findings

(Closed) Unresolved Item (423/83-10-05) and Inspector Follow Item (423/83-13-01). The concerns identified fit up anomalies on Incore Thermocouples. See paragraph 4 of this report. These items are closed.

3. Plant Tours

During the report period, plant inspections were conducted by regional and resident inspectors. Areas inspected included the Containment Building, Control Building, Auxiliary Radwaste, Steam Valve and Feed Water Areas, Engineered Safeguard Facilities and Training Building.

Observations:

- A Hypot test of RCP-1B motor was witnessed during the application of 4 thru 9 MV. The cables were simultaneously tested. The Generic Procedures and Tables were available at the test areas.

- All loop stop and bypass valves observed were properly protected from the environment and heaters were energized.

- Repairs to the trunnion on the service water line to the air conditioning unit heat exchangers were witnessed. Ring fits were in progress - SWP 15 6A-6-3.

- The dye penetrant test on the pressurizer safety valve discharge line joint RCS 516 FW 10-1 was witnessed. The area where material was removed appeared to exhibit unsatisfactory indications at the conclusion of the test. The licensee is to continue repairs. Checks of the developer, cleaner and dye penetrant were satisfactory.

No deficiencies were identifed during these tours.

4. Incore Thermocouple Replacements

Reference: Unresolved Item 423/83-10-05
Inspector Follow Item 423/83-13-01

The licensee's Architect/Engineer, after completion of the installation of thermocouple tubing fittings at the reactor head, identified anomalies of the conversion fittings in that perpendicularity was not maintained on thermocouples R-10, R-6, L-8, E-4 and C-6.

The licensee's replacement of the damaged thermocouples was accomplished during this reporting period.

The inspector reviewed the procedure and observed the installation of new thermocouples.

- Procedure Review and Observation of Insertion of Core Thermocouples

The Incore Thermocouple Insertion Procedure, Rev. 1, a Westinghouse written document, included the required thermocouple preparations prior to insertion, insertion tool requirements, the preloading and post inspection of the thermocouples.

Observations included verification that the licensee was meeting all precautions and initial conditions prior to thermocouple insertion. Briefing of personnel prior to execution of the work order and discussions with trade personnel verified that they were knowledgeable of their respective duties. The test data was recorded and found satisfactory.

Additional documentation to verify successful IEEE test completion reports and the purchase order were not on site, but were documented by risk release reports. These items will be verified at a subsequent inspection. (IFI 423/84-14-04) Items 423/83-10-05 and 423/83-13-01 are closed.

5. Structure Settlement Monitoring Program

The NRC report, 84-06, documented concerns on the method of plotting structure settlement on the Architect/Engineer's turnover of buildings to the licensee. Present monitoring is performed by the Architect/Engineer in accordance with FCP No. 107, Settlement Monitoring. The following concerns have been reviewed:

a. There is no established criteria for maximum settlement. The licensee stated that all data is analyzed by the Architect/Engineer's Geotechnical Department since the original settlement calculation and curves are in this department. This concern is closed.

b. Calibrations of instruments are not recorded on data sheets. The licensee's Architect/Engineer instruments are checked per FCP No. 103. The inspector verified calibration records of optical tooling used to monitor building settlement and found no discrepancies. This concern is closed.

c. The data sheets appear to preclude the analysis of overall movement. The licensee has documented in the FSAR, Table 2.5.4-60, plots of settlement of major Category 1 structures. The updated FSAR indicated no discrepancies.

d. The data for relative movement between structures is not addressed. Table 2.5.4-14 can be used to calculate relative movement of structures. The licensee has taken the total structural settlement as the predominate means of monitoring relative movement. This concern is resolved.

The licensee is developing a procedure to continue settlement monitoring during operation. The procedure will use existing benchmarks and will include criteria for settlements which, if exceeded, will require engineering review. This procedure will be reviewed during the startup program. Item 423/84-06-01 is closed. Item IFI 423/84-14-06 is assigned to track development of the settlement monitoring program for operation.

6. Observations of Spent Fuel Rack Assemblies

During a previous inspection period, observation of fuel rack storage in the field and individual cell funnel entrances anomalies were inspected. Repairs to cell funnel entrances were to be performed when racks were moved to the spent fuel building (SFB).

The inspector observed that fuel racks were transferred to the SFB and repairs to funnel entrances were in progress. Proper weld procedures were in the area, and repairs of the cracked box weld and tears in the corners of funnel entrances were acceptable. Spent fuel racks awaiting repairs or transfer to the spent fuel pool were stored and protected against physical damage. No concerns were identified. Item 83-22-01 is closed.

7. Procedure Review

The licensee is preparing operating procedures to address natural events. Two draft procedures, AOP 3569 - Severe Weather, and AOP 3570 - Earthquakes, were reviewed. The guidelines provided failed to address:

a. Requesting additional personnel at the station to aid in securing and monitoring the effects of severe weather conditions (AOP 3568, 3569).

b. Check lists of a general nature should complement the procedures. The check lists would identify specific areas and components rather than "check plant" type of instructions (AOP 3568, 3569).

c. The procedure does not address the hold on maintenance to redundant components or the early restoration of "out of service" equipment in order to have a maximum amount of available operable components.

d. The listing of tank levels and pressures requires additional review and the inclusion of typical areas such as the integrity of the CO_2 Storage Tank, EOC day tank, jacking coolant surge, and component cooling surge. Also, the areas of lube oil storage (possible fire hazards) should be considered for inclusion in the procedure (AOP 3570).

e. A review of the need for additional surveillance testing of the Emergency Diesel Generators or placing units on line should be considered.

The above items were discussed with the procedure coordinator and the author of the procedures. Additional review prior to implementation of the operational procedures is included in the NRC prefuel loading review (IFI 84-14-07).

8. Diesel Fuel Storage Tanks

A tour of two diesel storage tanks that are in structures below but adjacent to the Emergency Diesel Generator Enclosures was conducted and the following concerns were addressed to the licensee:

a. The diesel oil transfer pump motors are to be verified as explosion-proof. The area is unventilated and not a normal part of operator rounds when in operation, and leakage at mechanical oil piping flanges could atomize and be ignited by other than a explosion-proof motor.

b. Tank saddle hold down bolt nuts are not uniform in that some have two nuts, with one at less than 50% engagement.

c. There appears to be minimal or no lighting in the tank area. In addition, no pit sump alarms for the tank storage area were observed. Openings in the wall where the assigned ventilation ducts were to be installed were not sealed. Channel racks for instrumentation were not properly set.

The question of the licensee's ability to sample storage tanks for determining specification requirements without compromising the cleanliness of the stored oil was raised.

These items require the licensee's review in order to determine a resolution of the inspector's concerns. This is inspector follow item 423/84-14-05.

During this tour, the inspector witnessed an air flush of fuel discharge piping from the storage to the day tank. Examination of the day tank after the flush was satisfactory. The NRC Preoperational Test Program will address the Emergency Diesel Generator testing in subsequent inspections.

9. Architect/Licensee Self-Audits

The inspector reviewed the licensee's ongoing self-audit program. Areas reviewed included:

- Insulation Installation and Inspection
- Placing and Testing Concrete/Reinforcing Steel Testing
- Magnetic Particle Examination
- Liquid Penetrant Examination
- Radiographic Examination
- HVAC System Installation and Inspection
- Housekeeping
- Material/Equipment Storage and Preventive Maintenance
- Document Control
- Instrumentation Installation and Inspection

The findings were well documented and the immediate corrective action on identified concerns were noted. The inspector has no further questions on this audit review.

10. Licensee Report Of Potential Significant Deficiencies (10 CFR 50.55(e))

- Potential Deficiency in Westinghouse Process Control Cabinets (SD-59)

The licensee reported on September 19, 1984, a potential significant deficiency in that wiring installed inside the Process Control Cabinets was not in conformance with applicable field change instructions. The licensee has initiated an inventory program to identify and verify that all internal wiring is terminated correctly. This item remains open. (423/84-00-10)

11. ACRS Meeting - August 28, 29, 1984

Regional management and the senior resident inspector attended the full committee ACRS meetings. A number of questions were presented by the

committee that could encompass preoperational and startup programs. Regional management has listed the following areas for licensee review and inspector follow up:

a. Preoperational and Startup Areas

1. Assess whether preop/startup testing establishes equipment operability during the maximum overvoltage condition.

2. The emergency operating procedures were stated by the licensee to be integrated with the SPDS. Verification of the seismic qualification of the SPDS and significant factors necessary to maintain that qualification.

3. Verification that vital DC batteries are properly secured in the racks and have the required separation between cells.

4. Confirmation that the remote shutdown panel testing verifies the ability to perform that function with a total loss of the control room, cable spreading room, and the instrument rack room.

5. Verification of procedural control over remote shutdown interference from maloperating equipment (e.g. blocking PORVs, de-energizing MOVs).

6. Determination whether the electrical test program is sufficiently stringent to show that adequate AC power can be supplied for degraded voltage and ill-timed equipment response conditions.

7. Review of the effect of sprinkler system on important equipment which appears to be only drip-proof (e.g. diesel room equipment).

8. Observation of carbon dioxide system testing in the cable spreading room and the verification that carbon dioxide flow into potentially occupied spaces is adequately safeguarded against.

9. Reexamination of the potential incorporation and testing of a loss of cooling water trip of the diesels.

10. Review the licensee's determination of whether a 24-hour light/no-load diesel run followed by full load pickup in one minute is to be accomplished.

11. Verification that the PSS identified critical operator actions are incorporated into operating/emergency procedures as stated by the licensee.

12. Verification of the suitability of diesel air starting moisture removal provisions.

The above items are identified as IFI 423/84-14-01 (a-1 thru a-12).

b. Administrative Areas

1. Verification of implementation of any overtime restrictions to which the licensee commits for personnel other than his operating shifts.

2. Identification by the licensee that the operators are knowledgeable of equipment and indicators that could be relied upon in the response to a small earthquake (less than the SSE).

3. Verification of the existence and appropriateness of procedures for responding to fouled traveling screens and the consequent loss of service water.

4. Verification that the ATWS rule published in the Federal Register on 6/26/84 and the "AMSAC" system the licensee said would be installed to comply with that rule are in place.

5. Implementing of the final NRR resolution to the licensee's plan to integrate his STA function into the operating staff as it eliminates a "third-party" look.

6. Verification that each operating shift is to have senior licensed operators with hot commercial operating experience.

7. Verification that operators would know the consequences of putting water on specific equipment incident to fire fighting.

The above items are identified as IFI 423/84-14-02 (b-1 thru b-7).

c. Construction Areas

1. Verification of the need for additional "as-built" inspections, and when and how the licensee will address design verification concerns.

2. Presentation of the method by which full identification of previous NDE inadequacies throughout the industry are factored into the ISI program for MNS-3 before ASME code coverage is provided.

3. Field check of NRR's item on high strength bolt adequacy as to whether it is presently assured for the installed bolting.

The above items are identified as IFI 423/84-14-03 (c-1 thru c-3).

12. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection.