

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-245/80-03  
50-336/80-02  
Docket No. 50-245  
50-336  
License No. DPR-21  
DPR-65 Priority -- Category C  
Licensee: Northeast Nuclear Energy Company  
P. O. Box 270  
Hartford, Connecticut 06101

Facility Name: Millstone Nuclear Power Station, Units 1 & 2

Inspection at: Waterford, Connecticut 06385

Inspection conducted: February 1 thru February 29, 1980

Inspectors: J. T. Shedlosky, Sr. Resident Inspector 4/4/80  
R. P. Zimmerman, Resident Inspector 4/4/80  
date signed date signed

Approved by: C. R. Keimig / for 4/16/80  
R. R. Keimig, Chief, Reactor Projects 4/16/80  
Section No. 1, RO&NS Branch date signed date signed

Inspection Summary:

Inspection on February 1 thru February 29, 1980 (Combined Report Nos. 50-245/80-03 and 50-336/80-02)

Areas Inspected: Routine, onsite regular and backshift inspection by two resident inspectors (122 hours, Unit 1; 84 hours, Unit 2). Areas inspected included the control rooms and the accessible portions of the Unit 1 reactor, turbine, radioactive waste, gas turbine generator, and intake buildings; the Unit 2 enclosure, auxiliary, turbine and intake buildings; and the condensate polishing facility; radiation protection; physical security; fire protection; plant operating records; surveillance testing; calibration; maintenance; core power distribution limits; and reporting to the NRC.

Results: No items of noncompliance were identified during this inspection.

## DETAILS

### 1. Persons Contacted

The below listed technical and supervisory level personnel were among those contacted:

J. M. Black, Superintendent, Unit 3  
P. Callaghan, Unit 1 Maintenance Supervisor  
F. Dacimo, Quality Services Supervisor  
E. C. Farrell, Superintendent, Unit 2  
J. Bangasser, Station Security Supervisor  
H. Haynes, Unit 2 Instrumentation and Control Supervisor  
R. Herbert, Superintendent, Unit 1  
J. Kelly, Unit 2 Operations Supervisor  
E. J. Mrocza, Superintendent, Plant Services  
J. F. Opeka, Station Superintendent  
V. Papadopoli, Quality Assurance Supervisor  
R. Place, Unit 2 Maintenance Supervisor  
P. Przekop, Unit 1 Engineering Supervisor  
W. Romberg, Unit 1 Operations Supervisor  
S. Scace, Unit 2 Engineering Supervisor  
F. Teeple, Unit 1 Instrumentation and Control Supervisor

### 2. Review of Plant Operation - Plant Inspections

The inspector reviewed plant operations through direct inspection and observation during routine power operation of Units 1 and 2, and reduced power operation for Unit 1 at 40% power in accordance with Technical Specification requirements with the Isolation Condenser System out of service.

During this inspection, activities in progress at Unit 1 included power operations and modifications to isolation condenser and core spray system pipe restraints; at Unit 2 activities included routine full power operations, recovery from reactor trips on 2/15, 2/26 and 2/27 and the replacement of the B-charging pump.

#### a. Instrumentation

Control room process instruments were observed for correlation between channels and for conformance with Technical Specification requirements. No unacceptable conditions were identified.

b. Annunciator Alarms

The inspector observed various alarm conditions which had been received and acknowledged. These conditions were discussed with shift personnel who were knowledgeable of the alarms and actions required. During plant inspections, the inspector observed the condition of equipment associated with various alarms. No unacceptable conditions were identified.

c. Shift Manning

The operating shifts were observed to be staffed to meet the operating requirements of Technical Specifications, Section 6, both to the number and type of licenses. Control room and shift manning were observed to be in conformance with Technical Specifications and site administrative procedures.

d. Radiation Protection Controls

Radiation protection control areas were inspected. Radiation Work Permits in use were reviewed, and compliance with those documents, as to protective clothing and required monitoring instruments, was inspected. There were no unacceptable conditions identified.

e. Plant Housekeeping Controls

Storage of material and components was observed with respect to prevention of fire and safety hazards. Plant housekeeping was evaluated with respect to controlling the spread of surface and airborne contamination. There were no unacceptable conditions identified.

f. Fire Protection/Prevention

The inspector examined the condition of selected pieces of fire fighting equipment. Combustible materials were being controlled and were not found near vital areas. Selected cable penetrations were examined and fire barriers were found intact. Cable trays were clear of debris.

g. Control of Equipment

During plant inspections, selected equipment under safety tag control were examined. Equipment conditions were consistent with information in plant control logs.

#### h. Instrument Channels

Instrument channel checks were reviewed on routine logs. An independent comparison was made of selected instruments. No unacceptable conditions were identified.

#### i. Equipment Lineups

The inspector examined the breaker position on all switchgear and motor control centers in accessible portions of the plant. Equipment conditions were found in conformance with Technical Specifications and operating requirements.

- j. A reactor trip occurred at 1353 hours during reactor protective system surveillance testing on 2/15. That testing was to result in a series of selective trips of pairs of trip circuit breakers, but not to result in a reactor trip. Following the trip and reset of breakers number 2 and 6, a trip signal was initiated to breakers number 3 and 7. However, breaker number 2 reopened 500 milliseconds prior to breakers number 3 and 7 tripping. This resulted in a turbine trip and reactor trip. Prior to a reactor startup, breaker number 2 was tested extensively with acceptable results. It is suspected that prior to the scram, the breaker reclosed but its mechanical trip mechanism did not fully reset.

A reactor trip occurred at 1207 hours on 2/26. The trip resulted when a technician caused a fault in switchyard protective circuitry. That fault resulted in a load reject when main transformer output breakers opened.

A reactor trip occurred on 2/27 at 0538 hours from 20% power during a plant startup when the number 1 steam generator feedwater regulating valve stuck shut. An investigation determined that the valve malfunctioned due to a buildup of copper on the operating surfaces. The copper had eroded from feedwater heaters and collected in throttling areas of the valve. The valve and operator were rebuilt.

### 3. Review of Plant Operations - Logs and Records

During the inspection period, the inspector reviewed operating logs and records covering the inspection time period against Technical Specifications and Administrative Procedure Requirements. Included in the review were:

Shift Supervisor's Log	- daily during control room surveillance
Plant Incident Reports	- 2/1 through 2/29/80
Jumper and Lifted Leads Log	- all active entries

Maintenance Requests and Job Orders	- all active entries
Construction Work Permits	- all active entries
Safety Tag Log	- all active entries
Plant Recorder Traces	- daily during control room surveillance
Plant Process Computer Printed Output	- daily during control room surveillance
Night Orders	- daily during control room surveillance

The logs and records were reviewed to verify that entries are properly made; entries involving abnormal conditions provide sufficient detail to communicate equipment status, deficiencies, corrective action restoration and testing; records are being reviewed by management; operating orders do not conflict with the Technical Specifications; logs and incident reports detail no violations of Technical Specification or reporting requirements; logs and records are maintained in accordance with Technical Specification and Administrative Control Procedure requirements.

Several entries in these logs were the subject of additional review and discussion with licensee personnel. No unacceptable conditions were identified.

#### 4. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (245/79-02-04): RWCU System Pipe Cracks. The inspector reviewed ultrasonic test records, verifying the completion of testing of all weld joints committed to by the licensee.

(Closed) Unresolved Item (245/79-02-05): Metallurgical Analysis of RWCU System Pipe Cracking. The inspector reviewed General Electric Report NEDE-25148, the laboratory examination results for the cleanup return line. The report identified the cause of failure to be intergranular stress corrosion cracking. During the Fall, 1980 refueling outage, the licensee plans to reroute the cleanup return line to the Feedwater System, outside of the primary pressure boundary.

(Closed) Unresolved Item (245/79-13-01): Safety Relief Valve Electropneumatic System Replacement. The inspector verified that PDCR 1-123-78, Safety/Relief Valve Topworks Replacement, received PORC approval at meeting 79-34.

(Closed) Unresolved Item (245/79-24-01): Logging Reactor Power. Procedure SP-1051 has been revised to allow reactor power to be logged in either percent or megawatts electric.

(Closed) Unresolved Item (245/79-24-02): Independent Data Review. Procedure SP-690B has been revised requiring Shift Supervisor independent verification of the data supplied by the Reactor Engineer.

(Closed) Unresolved Item (79-24-04): Heat Balance Calculation. Procedure RE-1002 has been revised to allow the operator the option of obtaining a computer printout hard copy of the calculation rather than filling out data form RE-1002-1.

(Closed) Unresolved Item (79-24-05): Determining Control Rod Notch Insertion. Procedure SP-1045 has been revised requiring notch insertion to be calculated by subtracting the sum of rod positions from the total number of notches.

5. Isolation Condenser Steam Line Containment Penetration Pipe Restraint Modification - Unit 1.

During this inspection period, a design change to the isolation condenser steam line containment penetration (X-10A) pipe restraint was completed. That restraint was modified when it was determined that the minimum design safety factor was not satisfied for all possible loading conditions. This item and the licensee's actions was also addressed in IE Inspection Reports 50-245/80-01 and 80-02. On January 4, 1980, the licensee declared the Isolation Condenser inoperable and removed it from standby service. Reactor power was then limited to 40%.

During the removal of four (4) of fifteen (15) concrete expansion bolts in the floor slab at the 82.75 foot elevation in the area of containment penetration X-10A, several pieces of cut reinforcing steel were discovered. In order to insure that the floor would provide proper support for the X-10A restraint, the concrete in the two (2) foot thick slab in the area of the restraint base plate was excavated on 1/27. Twenty (20) pieces of reinforcing steel were found to have been cut or scalloped during plant construction. To allow the repair of the reinforcing steel, five (5) additional expansion bolts were removed and shear plates added to the restraint base plate. The reinforcing steel was repaired in accordance with Welding Procedures W300B, "General Procedure for Welding Rebar", Revision 3, dated 1/28/80; W90E, "Technique Sheet - Double Vee Butt", Revision C, dated 1/28/80 and W90S, "Technique Sheet - Single U, Rebar Repair", Revision 1, dated 1/28/80. The floor excavation was repaired in accordance with Special Procedure 80-1-5, "Concrete Repair Procedure for Penetration X-10A Anchor", Revision 0, dated 1/28/80.

When the reinforcing steel was exposed it was observed that the as built conditions of three (3) mats of crossed number eight (8) reinforcing steel on twelve (12) inch centers did not implement the requirements of design drawing S-187811, Revision 1, of number eleven (11) bar on six (6) inch centers at the bottom and number eight (8) and eleven (11) bars alternately at the top on six (6) inch centers. Because of this finding, additional "kicker beams" were installed from the top of the 82.75 foot elevation floor slab to the containment wall. This design took minimum credit for concrete strength.

An analysis of the as built condition of the floor slab of the plant's architect engineer resulted in the determination that it was not capable of withstanding the maximum design pipe break.

IE Inspection Report 50-245/80-02 has documented the licensee's commitments relating to additional investigations and information on the design errors of the high energy pipe restraints; cut reinforcing steel; and improper placement of reinforcing steel. Additionally, the licensee will document the basis for providing assurance that other Class I structures will perform their design functions. The isolation condenser was returned to service on February 11.

No additional unresolved items are documented on this event in this report.

#### 6. Licensee Event Reports (LER's)

The inspector reviewed the following LER's to verify that the details of the event were clearly reported, including the accuracy of the description of cause and adequacy of corrective action. The inspector determined whether further information was required, and whether generic implications were involved. The inspector also verified that the reporting requirements of Technical Specifications and Station Administrative and Operating Procedures had been met, that appropriate corrective action had been taken, that the event was reviewed by the Plant Operations Review Committee, and that the continued operation of the facility was conducted within the Technical Specification limits.

##### Unit 1

80-01, Recirculation pump speed mismatch resulting from a pump speed runback to 78%. Operations personnel locked up the pump speed changer and took manual control. An investigation did not reveal any component failure within the speed control system. The licensee has attributed the problem to a temporary loss of the feedback signal or saturation of an electronic component.

80-02, The Nuclear Steam System Supplier discovered an error in the determination of Maximum Average Planar Linear Heat Generation Rates based on the capacity of Emergency Core Cooling Systems. The licensee's corrective actions included resetting the Automatic Depressurization Timer to 45 seconds from 120 seconds.

80-03, The operation in a degraded mode when the Isolation Condenser system was removed from standby service. The system was isolated on January 4 at 0345 hours after the investigation of the structural integrity of the pipe support on the isolation condenser system steam supply line at containment penetration X-10A. That investigation raised concern over the capacity of the support to withstand the design loads of a pipe break accident.

80-04, Setpoint drift of one of sixteen main steam line high flow differential pressure switches.

#### Unit 2

79-07, (Updated report), Inaccurate chlorine gas detection system calibration due to faulty calibration gas.

80-01, Turbine driven auxiliary feedwater pump inoperable due to failure of turbine bearings. This was detected during ISI testing.

80-02, Excessive valve packing leakage from HPSI header isolation valve. The valve was repaired to reduce ECCS system leakage.

80-03, Containment air temperature exceeded 120°F due to the temperature control valve of the RBCCW heat exchangers incorrectly set high.

### 7. Review of Periodic and Special Reports

Upon receipt, periodic and special reports submitted by the licensee pursuant to Technical Specification 6.9.1 and 6.9.2 were reviewed by the inspector. This review included the following considerations: the report includes the information required to be reported by NRC requirements; test results and/or supporting information are consistent with design predictions and performance specifications; planned corrective action is adequate for resolution of identified problems; determination whether any information in the report should be classified as an abnormal occurrence; and the validity of reported information. Within the scope of the above, the following periodic report was reviewed by the inspector:

-- Monthly Operating Report - January, 1980

### 8. Plant Maintenance

During the inspection period, the inspector frequently observed various



maintenance and problem investigation activities. The inspector reviewed these activities to verify compliance with regulatory requirements, including those stated in the Technical Specifications; compliance with the administrative and maintenance procedures; compliance with applicable codes and standards; required QA/QC involvement; proper use of safety tags; proper equipment alignment and use of jumpers; personnel qualifications; radiological controls for worker protection; fire protection; retest requirements and ascertain reportability as required by Technical Specifications. The following activities were included during this review:

#### Unit I

- Modification to Isolation Condenser steam supply line penetration pipe support.
- Repair of reinforcing steel in floor slab at 82.75 foot elevation in the area of containment penetration X-10A.
- Repair of motor operator of 1-MW-96A, Emergency Condensate Transfer pump discharge valve.
- Replacement of the A Service Water Pump Bushing.
- Inspection of the Emergency Condensate Transfer Pump to investigate broad band flow noise.
- Repair and modification of Core Spray "A" pipe and Low Pressure Coolant Injection test return pipe supports.
- Modification to Core Spray "A" keep fill system.
- Resetting of Automatic Depressurization System Timers 287-104 A and B from 120 to 45 seconds.

#### Unit II

- Rework of Safety Injection Tank Relief Valve 2-SI-466.
- Installation of Vent Line from Diesel Generator Lube Oil Cooler to Crank Case Vent (Modification was removed).
- Recalibration of RPS, "B"-Reactor Coolant Pump Speed Sensing Network.

--- Trouble investigation of Trip Circuit Breaker number 2.

--- Repair of the number 1 steam generator feedwater regulating valve.

9. Exit Interview

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