

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

Region I

Report No. 50-245/80-06  
50-336/80-04  
50-245  
Docket No. 50-336  
DPR-21  
License No. 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: March 30 thru May 3, 1980

Inspectors: J. T. Shedlosky 5/28/80  
J. T. Shedlosky, Sr. Resident Inspector date signed  
J. P. Zimmerman 5/28/80  
R. P. Zimmerman, Resident Inspector date signed  
T. Foley 6/4/80  
T. Foley, Reactor Inspector, March 18-25, 1980 date signed  
Approved by: R. R. Keimig 6-3-80  
R. R. Keimig, Chief, Reactor Projects date signed  
Section No. 1, RO&NS Branch

Inspection Summary:

Inspection on March 30 thru May 3, 1980 (Combined Report Nos. 50-245/80-06 and 50-336/80-04)

Areas Inspected: Routine, onsite, regular and backshift inspection by two resident inspectors and one regional based inspector (78.5 hours, Unit 1; 131.5 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 of pipe supports; surveillance testing; calibration; maintenance; core power distribution limits; and reporting to the NRC.

Results: Of the 11 areas inspected, no items of noncompliance were identified in 8 areas; three apparent items of noncompliance were found in three areas (Infraction-failure to wear dosimetry in accordance with H.P. procedures, paragraph 4; Deficiency-failure to meet snubber surveillance requirements, paragraph 9; Infraction-failure to comply with security procedures, paragraph 3).

Region I Form 12  
(Rev. April 77)

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## 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. Mroczka, 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 of Units 1 and 2 throughout the reporting period. Activities in progress at Unit 1 included routine power operation and preparation for a segmented test rod fuel shipment; at Unit 2, activities included routine power operation and recovery from reactor trips on 4/29 and 4/30.

#### 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. Proper posting of radiation and high radiation areas was reviewed in addition to verifying procedural requirements for wearing of appropriate personnel monitoring devices in the above areas. One item of noncompliance was identified concerning failure to wear required personal dosimetry, and is discussed in paragraph 4.

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 was examined. Equipment conditions were consistent with information in plant control logs.

h. Instrument Channels

Instrument channel checks recorded on routine logs were reviewed. 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. Reactor Trip - Unit 2

At 0352 hours April 29, Millstone Unit 2 experienced a reactor trip from about 90% power due to low level No. 1 steam generator.

The reactor had been operating at 100%; primary and secondary parameters were normal for that power level. At 0250 hours, April 29, the control room operators noted that pressurizer pressure had decreased to 2238 psia from the normal 2260 psia. The operators concluded that a pressurizer spray valve had stuck part way open. Pressurizer back up heaters were energized. When pressure had returned to normal, an attempt was made to clear a suspected buildup of boron from the spray valve stem by cycling the valves manually. At 0330 hours pressurizer pressure began to decrease. At that time all back up heaters were energized. Spray valve position is not indicated in the control room; the operators concluded that a valve was stuck open, and that they could not control the pressure decrease. A load reduction was commenced. The steam generator level control system did not adequately compensate for the shrink in level during the power reduction. A reactor trip occurred at 0352 hours from 90% power due to low level No. 1 steam generator. The pressurizer pressure reduction was terminated by securing two of the reactor coolant pumps. The reactor was made critical at 1755 hours, April 29, with the "A" pressurizer spray valve isolated.

Investigation, during a subsequent outage, determined that the "A" spray valve seat had loosened, keeping the valve open.

At 0654 hours, April 30, a reactor trip occurred from 17% power on low level No. 1 steam generator. A plant startup was in progress and the control room operators had shifted feeding the steam generator from the feedwater regulating bypass valve to the main feedwater regulating valve. Level was not properly maintained. The reactor was made critical at 1017 hours. There were no unacceptable conditions identified.

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PUBLIC DISCLOSURE, IS INTENTIONALLY LEFT BLANK.

#### 4. Observation of H.P. Procedures Implementation

During a tour of the Unit 1 Reactor Building on April 23, 1980, the inspector observed a plant employee working on the fourth floor in an area with radiation levels of approximately 2 millirems per hour without any personal dosimetry. Upon questioning the individual, it became apparent that his dosimetry was accidentally left on his jacket outside of the Reactor Building. The plant employee stated that he took off his jacket just prior to entry into the Reactor Building approximately five minutes earlier. The individual was escorted to the Unit 1 Health Physics Office where a radiation exposure investigation was conducted as well as retrieval of the individual's dosimetry. As a result of the exposure investigation, one millirem was attributed to the individual's exposure record.

Failure to wear personal dosimetry as required, represents an item of noncompliance, at the Infraction level, with Technical Specification 6.8.1, and Health Physics Procedure - 901, Revision 6.

A memorandum from the Station Superintendent to normal distribution, dated May 8, 1980, addressed the April 24, 1980, occurrence and discussed proper use of personnel dosimetry.

#### 5. 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	-	3/30 through 5/3/80
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.

## 6. 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 1

--- CRD Accumulator 14-15 replaced due to leakage by the piston.

### Unit 2

--- RPS Trip Circuit Breaker #7 failed to reclose during surveillance testing.

--- Pressurizer Spray Valve malfunction - stuck open.

--- Feedwater Regulating Valve #1 - scored air cylinder.

## 7. 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

80-05, (Updated Report), Inspection by the licensee of the two Core Spray Subsystem A admission valves revealed that the valve motor-to-valve operator bolts were loose; however, it was determined that the valves would operate if required to do so. Ny-Loc cap screws were installed in the admission valve motor-to-operator bolt holes to prevent vibration induced loosening. Licensee inspection of the B subsystem revealed no degraded conditions.

80-06, One of four drywell pressure switches, PIS-1620D, was found valved out of service. The switch in question is arranged in two redundant logic subsystems to provide one of the permissive signals to the Automatic Pressure Relief Valves for automatic blowdown. The switches in the redundant logic subsystem remained operable. With the cause of the occurrence believed to have been failure to reopen the instrument stop valve at the conclusion of routine surveillance, the Instrument and Controls Department now requires a second technician to verify system restoration following the surveillance test.

Unit 2

80-08, The IBM 1800 plant computer was shutdown to replace a faulty analog input driver card (IBM part number S-15-TCU). With the plant computer out of service, the pulse counting position indication system was inoperable. Operations continued per Technical Specifications requirements.

80-09, The "A" auxiliary feed pump was removed from service due to excessive leaking from the gland packing. The gland was repacked and returned to operable status.

80-10, During routine surveillance testing, CEA 29 position indication became erratic. Position indication was verified by the top limit switch and pulse counting system. The cable/connector assembly was replaced and the reed switch position indication was returned to service.

80-11, Following a full power plant trip, two broken saddle clamp bolts were found on hydraulic snubber hanger 490008 on the main steam piping to the high pressure turbine. Following a second full power trip, an additional clamp bolt was found broken on hydraulic snubber hanger 490002. The cause of the bolt failures was fatigue cracking due to high vibration levels and bolt shear on the plant trips. A UT inspection conducted by the licensee of bolting on the steam leads showed no evidence of cracking.



Licensee review is ongoing to reduce main steam piping vibration levels and/or modify the hanger configuration to reduce fatigue loadings. The inspector will continue to follow licensee actions to prevent recurrence.

80-12, A hydraulic snubber on hanger 490001, main steam lead to the high pressure turbine, had no visible fluid level. The snubber was replaced and all similar snubbers were inspected with satisfactory results.

80-13, Dropped CEA due to failure of the timer module in the coil power programmer.

80-14, Failure of the Control Room Air Conditioning "A" exhaust fan motor bearings.

80-15, Repeated event; Condensate Storage Tank (CST) level below Technical Specification required level. Following a reactor trip, the Gland Seal Header relief stuck open which required main condenser vacuum to be broken and the Auxiliary Feedwater System to be utilized.

80-16, Instrument drift of the Channel A Low Steam Generator Pressure Bypass setpoint.

#### 8. Review of Radioactive Material Shipments

The inspector reviewed the activities concerning the shipment of segmented test fuel rod sections and fuel assembly hardware to the General Electric Company, Vallecitos Nuclear Center, in Pleasanton, California, on April 30. The inspector took independent radiation readings of the Model 1600 cask when loaded on the transportation trailer. The inspector observed the surveys for removable surface contamination. Additionally, the inspector verified the completion of the administrative requirements prior to shipment including the presence of a trained driver and escort, the availability of mobile communication equipment, personal knowledge of the shipment Routing Plan and placement of seals on cask fire shield. This shipment departed the site at 1400 hours, April 30 with a State Police escort.

The inspector also observed portions of a radioactive waste solidification on April 21.

There were no unacceptable conditions identified.

#### 9. Pipe Support and Restraint Surveillance Program

The inspector reviewed the following documents to determine whether the licensee's procedures and programs are technically adequate and are in accordance with Technical Specifications:

- Millstone Unit No. 2 "Operability Evaluation of the Safety Related Hydraulic Snubbers", PA-78-721, Rev. 0 dated August 13, 1979.
- Surveillance Procedure 2733A, "Hydraulic Snubber Inspection", Revision 0, and completed data of May 10, 1979, for all snubbers, and completed data of January through December 1979 for snubbers without ethylene propylene seals.
- Surveillance Procedure 2733 B, "Hydraulic Snubber Functional Test", Revision 0, and data completed March 28, 1979.
- Draft procedure M.P. 2721 V, "Hydraulic Snubber Piston Setting Verification".
- Northeast Utilities letter to S. Scace from J. Crockett dated June 7, 1979.

a. Surveillance Testing

Technical Specification 4.7.8.1 requires that snubbers with seals fabricated from material other than ethylene propylene or other material demonstrated to be compatible with the environment, must be inspected on a 31 day interval. The inspector reviewed the results of these inspections performed by the licensee. The inspection for November 1979 was apparently not performed, and the unit commenced operations on December 4, 1979, without having verified operability of snubbers 413082 and 490031. This is an item of noncompliance categorized as a deficiency. (50-336/80-04-01)

The inspector reviewed a draft of Maintenance Procedure 2721 V "Hydraulic Snubber Piston Setting Verification", and commented to the licensee's representative that the procedure should incorporate a statement that if a snubber is found at either the fully extended or the fully contracted position, an evaluation should be performed to determine whether the piping to which the snubber is attached, has been overstressed.

The inspector also noted in the review of Surveillance Procedure 2733B, "Hydraulic Snubber Functional Test", that operators are required to record the ambient temperature. The data sheets associated with SP 2733B revealed that the operators are recording the words "ambient temperature" instead of the actual numerical value. The licensee representative stated that the operators would be reinstructed and a change to clarify the intent of the procedure would be considered.

The inspector had no further questions in this area.

b. Observations of Pipe Supports

The inspector toured the Auxiliary Building. Observations were made of the safety related systems piping and supports. The inspector independently examined a random sample of hangers, brackets, clamps, base supports, snubbers and other support components. The inspector observed the following:

- adequacy of hydraulic fluid levels
- piston and reservoir vents were clear
- nuts, bolts, washers and fasteners were properly installed
- snubbers were correctly oriented
- no observed deterioration or corrosion
- piston rod positions conformed to recorded data
- spring hangers showed acceptable position indication
- cracks, or other detrimental indications, were not observed

The inspector observed the following:

- snubber 507004 on HPSI header "A" stop valve appeared to be misorientated such that the fluid level could uncover the cylinder fill line
- snubber 427115 on the RBCCW system had paint on the piston
- strut assembly 450019 has nails in the cotter pin slots to hold the clevis pin in place; the clevis pin has excessive corrosion

The licensee's representative stated that these items would be corrected. The above items will be reviewed in a future NRC inspection (50-336/80-04-02).

10. Environmental Qualification of Class IE Equipment - Unit 2

To aid in the NRC review of the response to NRC Bulletin 79-01B, Environmental Qualification of Class IE Equipment, the inspector performed extensive reviews of the plant equipment, design documents and operating procedures. From this review, lists of safety related components were developed. This information was categorized as follows:

- Components which operate automatically on a Safety Injection Actuation Signal - 64 items
- Components which operate automatically on an Enclosure Building Filtration System Actuation Signal - 20 items
- Components which operate automatically on a Recirculation Actuation Signal - 8 items
- Components which operate automatically on a Containment Spray Actuation Signal - 4 items
- Components which operate on a Containment Isolation Actuation Signal - 10 items
- Post incident hydrogen control and monitoring - 17 items
- Control Room Atmosphere Control - 8 items
- Components used to mitigate a steam line rupture - 37 items
- Components used for post incident Boron Precipitation Control - 2 items
- Components used for control and monitoring of Shutdown Cooling - 19 items
- Post Loss of Coolant Incident Monitoring - 81 items

This information will be used during the NRC review of the licensee action taken on Bulletin 79-01B.

There were no unacceptable conditions identified.

#### 11. Jet Pump Operability - Unit 1

In response to NRC Bulletin 80-07, "BWR Jet Pump Assembly Failure", procedure SP80-1-15, "Jet Pump Operability" was implemented on April 18. The Bulletin required that the following characteristics be compared to established baseline data:

1. Recirculation pump speed and flow.
2. Total core flow and power.
3. Diffuser to lower plenum differential pressure for individual jet pumps.

The inspector reviewed Revision 0, Change 3, of above referenced procedure dated April 24. The inspector's comments have been incorporated in a revised procedure SP 638.1, "Jet Pump Check",

a daily surveillance, Revision 3, dated May 7, 1980. This procedure implemented the surveillance requirements as stated in Bulletin 80-07. In addition, the normalized flow for each jet pump is calculated and plotted daily. The records of normalized jet pump flow allows greater sensitivity to abnormalities in flow. The inspector reviewed records of the daily surveillance.

There were no unacceptable conditions identified.

12. 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 and Environmental Technical Specification 5.6.1 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 reports were reviewed by the inspector:

--- Monthly Operating Report - March, 1980.

--- Monthly Operating Report - April, 1980.

13. 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.