143

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

FEB 0 1 1992

[redacted]

Dear [redacted]

I am responding to the concerns that you provided to us on September 5, 1991, asserting that the Millstone Unit 2 on-site safety committee, that is the Plant Operations Review Committee (PORC), did a superficial review of a revision to procedure MP2719F, Diesel Generator Governor Calibration.

The PORC assigns working level subcommittees to do the detailed review of procedure revisions such as MP2719F. As a result, the PORC relies upon a subcommittee presentation. Our inspection did identify some problems associated with the PORC approval process, as illustrated by errors discovered later by technicians. However the errors in procedure MF2719F had minimal safety significance and were corrected by NU. Therefore, we have concluded that the review by both the full PORC and the subcommittee was appropriate and not superficial, as you asserted. No further action is planned by the NRC in this specific matter, and we consider this concern to be resolved. We will, however, be following the quality of and revisions to procedures, and the effectiveness of the Millstone PORC, as part of our future inspections. Our followup inspections of the diesel troubleshooting and the PORC approval of procedure MP2719F are attached for your information.

We appreciate you informing us of your concerns and feel that we have been responsive. Should you have any additional questions regarding these matters, please call me collect at (215) 337-5225.

Sincerely,

for Edward Wenzinger, Chief
Reactor Projects Branch 4

Attachments: (1) Excerpts from NRC Inspection Report 50-336/91-20 (Detail 6.1).
(2) Excerpts from NRC Inspection Report 50-336/91-29 (Detail 7.1).

T/133

bcc /w encl:
Allegation File: RI-91-A-0242-3
E. Conner's files
W. Raymond/T. Shedlosky
Contractor's office files (Meeker)

concurrences:

RI:DRP	RI:DRP	RI:DRP
Barkley	Kelly	Wenzinger
/ /	/ /	/ /

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475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

NOV 0 6 1991

Docket No. 50-336

Mr. John F. Opeka
Executive Vice President-Nuclear
Northeast Nuclear Energy Company
P.O. Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Opeka:

Subject: Millstone Unit 2 Inspection 91-20

This refers to the routine safety inspection conducted by Mr. P. Habighorst of this office on August 15 through September 28, 1991, for Millstone Unit 2 in Waterford, CT. The preliminary findings were discussed with Mr. J. S. Keenan and other members of your staff at the conclusion of the inspection.

Areas examined during the inspection are described in the enclosed report. Within these areas, the inspection focused on issues important to public health and safety, and consisted of performance observations of ongoing activities, independent verification of safety system status and design configuration, interviews with personnel, and review of records.

Overall operation of the facility continued to be satisfactory. Several activities associated with the emergency diesel generators were reviewed. We found that conservative assessments were made regarding diesel performance while operating in the parallel mode, and prompt actions were taken when diesel operability was questioned. Maintenance for the inoperable diesels was well controlled, and troubleshooting received strong support by engineering personnel and technical consultants. However, it appears that the vibration monitoring program could be upgraded to increase its effectiveness as a diagnostic tool for diesel performance trends, and consideration should be given to less frequent "cold" starts of the engines per vendor recommendations.

Your cooperation with us is appreciated.

Sincerely,

Edward C. Wenzinger

Edward C. Wenzinger, Chief
Projects Branch No. 4
Division of Reactor Projects

Enclosure: NRC Inspection Rep. 50-336/91-20

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U.S. NUCLEAR REGULATORY COMMISSION
REGION 1

Report/ Docket No.:	50-336/91-20
License No.:	DPR-65
Licensee:	Northeast Nuclear Energy Company P. O. Box 270 Hartford, CT 06141-0270
Facility Name:	Millstone Nuclear Power Station, Unit 2
Inspection at:	Waterford, CT
Dates:	August 15 - September 28, 1991
Inspectors:	P. J. Habighorst, Resident Inspector, Unit 2 E. L. Conners, Reactor Licensing/Risk Engineer, DRP A. E. Finkel, Senior Reactor Engineer, DRS W. H. Baunack, Senior Reactor Engineer, DRS G. S. Vissing, Project Manager, NRR/PDI-4 W. J. Raymond, Senior Resident Inspector

Approved by: Eugene M. Kelly, Chief, Reactor Projects Section 4A — Date: 11/1/91

Scope: Routine NRC resident inspection of plant operations, radiological controls, maintenance, surveillance, licensee self-assessment, and periodic reports.

Routine review of plant operations was conducted during normal working hours and periods of backshifts (evening shifts) and deep backshifts (weekends, holidays, and midnight shifts). Inspection coverage was provided for 25 hours during backshifts and 19 hours during deep backshifts.

Results: See Executive Summary

1991, have been received on site, and are awaiting calibration prior to being stored in the FSSA. In addition, the Engineering Department stated that the subject gauges were not required by 10 CFR 50, Appendix R, but were requested by Operations to confirm adequate safe shutdown system alignments.

The inspector reviewed Procedure AOP 2579AA, purchase order documentation, and a May 6, 1991 licensee memorandum on this issue. The new gauges are currently stored in the instrument shop, the fire shutdown storage panel, and the equipment boxes in Fire Area 2D, 4160 volt switchgear room (off the turbine deck). The inspector concluded that these spare gauges are an enhancement that is not required for the Appendix R program. The Appendix R program depends on the manual alignment of pump discharge valves specified by procedure AOP 2579AA.

6.0 ENGINEERING/TECHNICAL SUPPORT (IP 37700, 37828, 92701, 93702)

6.1 Emergency Diesel Generator Troubleshooting

Background

The inspection scope was to review NNECOs actions to address the root cause for EDG load oscillations causing both engines to be declared inoperable on August 23, and the failure of the outboard generator bearing on the "A" EDG on August 24. Inspection consisted of observation of maintenance activities, a review of post-maintenance testing, a review of vendor recommendations, discussions with cognizant engineering and maintenance personnel, and observations of Plant Operations Review Committee meetings associated with root cause determination acceptance.

The governor for the EDGs are Woodward model EGB-10C with an EG-A electronic control unit. The assembly consists of a control box, speed setting potentiometer, and a hydraulic actuator. NNECO's initial actions to identify the cause of the load oscillations focused on the EDG governor system. The governor operations were reviewed based on plant parameter changes during the load oscillations. The monitored parameters that varied were the kilowatt and ampere values.

Troubleshooting

The initial troubleshooting plan was to perform a 24 hour endurance run of the "A" EDG to reproduce the load oscillations with special monitoring instrumentation attached to various points on the governor assembly. During the endurance run, the kilowatt loading was varied between 1300 and 2750 in accordance with the test plan. Approximately 15 hours into the surveillance, the outboard generator bearing temperature rose rapidly above the setpoint, and operators secured the engine. The initial troubleshooting did not reproduce any load oscillations.

The troubleshooting activities were expanded to include: monitoring of the EG-A governor inputs and output response during operation; a review of fuel rack position demand from the hydraulic actuator; sampling of the hydraulic fluid; an evaluation of the cable connections between the EG-A to the EGB-10C actuator; monitoring the output of the motor-operator potentiometer; a review of the external affects from recent plant modifications, industry experience, vendor testing of the installed governors; and, operation of the fuel ejectors.

In addition to governor troubleshooting activities, the outboard generator bearings on both EDGs were disassembled and the clearance between the bearing race and closure was measured. NNECO also re-evaluated the minimum oil level settings, reviewed the preventative maintenance program to replace the oil, completed alignment verifications, and consulted with the bearing vendor to identify the cause of the bearing failure.

Root Cause Determination

NNECO attributed the EDG load oscillations to intermittent failures of the Woodward governor EG-A electronic control unit for both EDGs. This conclusion was supported by noting that the "droop" potentiometer on the EG-A control unit varied in resistance values without a demanded change. Variations in the "droop" potentiometer were reflected in load swings on the EDGs during troubleshooting. In addition, small amounts of foreign material were identified in the actuator hydraulic fluid. However, no other anomalies were identified.

The cause for the outboard generator bearing failure was attributed to insufficient lubrication. The basis was that the reference oil mark was below the vendor recommendation, and an [illegible] installed gasket between the bearing spacer ring and outer bearing closure did not allow full migration of oil within the reservoir. The end result was that the bearing oil replacement did not remove all bearing oil, and the volume of oil within the reservoir was below vendor recommendations.

The inspector noted that governor installation and calibration were conducted per procedure MP 2719F, Diesel Generator Governor Calibration. This procedure had undergone a significant revision and was approved by the plant operations review committee (PORC) subcommittee which included the Woodward Governor representative. Revisions to this procedure included instructions for governor installation and removal, initial setup and calibration of the mechanical governor, and revised governor acceptance criteria which reduced allowable engine droop. Inspector review of MP 2719F revealed that appropriate controls in accordance with ACP 2.06, Jumper Lifted Lead and Bypass Controls, were provided for installation and removal of a DC voltmeter used during testing.

On September 4, 1991, during testing conducted at no load conditions, generator output frequency decreased from 60 to 57 Hz when a microprocessor recorder used for testing was disconnected. Investigation of this anomaly revealed that the impedance of the recorder decreased from 200 Mohms to 60 Mohms when turned off. NNECO personnel theorized that the decreased impedance caused the speed control mechanism, which the test equipment

was tied into, to decrease generator speed. NNECO personnel verified their theory by replicating the diesel slowdown event the following day, September 5. Following the slowdown test, NNECO personnel disconnected the recorder, restarted the diesel and verified that diesel generator droop settings remained the same. This test ensured that the recorder's impedance did not affect the original governor settings which were made with the recorder installed. The inspector considered the NNECO investigation of the anomalous diesel performance to be appropriate.

Corrective Actions

NNECO replaced and calibrated the governor assemblies for both EDGs, and performed both an operational run and an in-service test to replicate the integrated loss-of-normal power surveillance. NNECO actions comprehensively addressed the cause for EDG load oscillations and generator bearing failures; however, the actions did not identify the root cause of either failure. Appropriate operability decisions were made. The surveillances were satisfactorily performed and the EDGs were declared operable on September 8, 1991. The outboard bearing for the "A" EDG was replaced, maintenance procedure MP2720E3 was revised to incorporate alignment dimensions, modifications were made to the oil level reference marks, and the gaskets were replaced between the bearing spacer ring and outer enclosure.

6.2 Service Water System Biofouling Protection

A review was conducted of the licensee's program to protect the Unit 2 service water system from biofouling. Other actions taken to control erosion corrosion in the system were not reviewed.

Background and Biofouling Controls

The service water pumps take their suction from the circulating water bays downstream of the traveling screens. Biofouling is controlled in several ways. One way is the daily introduction of sodium hypochlorite for one half hour through four injection points at the intake to each bay. The injected sodium hypochlorite disperses throughout the entire bay and is transported by the circulating water pump flow past the service water pump suction through the main condenser back out through the circulating water discharge to Long Island Sound. An additional technique employed to control biofouling in the condenser circulating water bays is the introduction of heated circulating water into the bays by a "mussel cooking" operation. This operation is performed approximately six times per year and is conducted using an approved procedure which specifies appropriate temperatures and times necessary to control biofouling. The mussel cooking procedure was conducted during January, April, July, and August of this year. The effectiveness of these methods to control biofouling is verified by periodic diver inspections after the "mussel cooking" operation of the bays. The inspections of the circulation water bays have identified no unacceptable biofouling conditions.

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JAN 13 1992

Docket No. 50-336

Mr. John F. Opeka
Executive Vice President - Nuclear
Northeast Nuclear Energy Company
P.O. Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Opeka:

Subject: NRC Region I Inspection Report No. 50-336/91-29

Mr. J. T. Shedlosky and others of this office conducted a special safety inspection from October 21 through December 16, 1991, at the Millstone Nuclear Station Unit 2, Waterford, Connecticut. The inspection results are documented in the enclosed report. They were discussed with Mr. J. S. Keenan and other members of your staff at the conclusion of the inspection.

Areas examined during the inspection are described in the enclosed report. Within these areas, the inspection focused on issues brought to you by the NRC. Our independent review evaluated your performance in complying with regulatory requirements important to public and worker health and safety. This review consisted of performance observations of ongoing activities, discussions with personnel, and review of records.

Our overall assessment was that NNECO's performance was acceptable. Areas were identified which needed improvement. The enclosed inspection report notes a number of issues on which your staff agreed to provide a response to the NRC. Except where required for response to violations, the response to the NRC can be made in communications with the resident inspectors.

A violation is discussed in the enclosed Notice which you are required to respond to and, in preparing your response, you should follow the instructions in the Notice. The violation involves multiple examples of individually minor problems with procedure compliance.

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In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room. The responses directed by this letter are not subjected to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, Public Law No. 96.511.

Your cooperation with us is appreciated.

Sincerely,

Edward C. Wenzinger

Edward C. Wenzinger, Chief
Projects Branch No. 4
Division of Reactor Projects

Enclosures:
1. Notice of Violation
2. NRC Region I Inspection Report No. 50-336/91-29

cc w/ enclosures:
W. D. Romberg, Vice President, Nuclear Operations
D. O. Nordquist, Director of Quality Services
R. M. Kacich, Manager, Nuclear Licensing
[illegible], Nuclear Station Director, Millstone
J. S. Keenan, Nuclear Unit Director, Millstone Unit 2
Gerald Garfield, Esquire
Nicholas Reynolds, Esquire
K. Abraham, PAO (2)
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
State of Connecticut SLO Designee

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No.: 50-336/91-29

License No.: DRP-65

Licensee: Northeast Nuclear Energy Company
P.O. Box 270
Hartford, CT 06141-0270

Facility: Millstone Nuclear Power Station, Unit 2

Location: Waterford, Connecticut

Inspection Dates: October 21 - December 16, 1991

Inspectors: T. R. Fredette, Consultant, AMSEC/SAIC
T. G. Humphrey, Consultant, EG&G, INEL
C. M. Meeker, Consultant, COMEX/SAIC
P. L. Reagan, Consultant, COMEX SAIC
E. L. Conner, Reactor Licensing/Risk Engineer,
Technical Support Section, DRP

Supervisor: J. T. Shedlosky, Senior Allegation Coordinator,
Reactor Projects Section No. 4A
Division of Reactor Projects

Approved by: E C Wenzinger for
Eugene Kelly, Chief
Reactor Projects Section 4A
Division of Reactor Projects

1/13/92
Date

Scope: Special inspection of concerns brought to the licensee by the NRC. This report is a continuation of the special inspection described in NRC Inspection Report 50-245/91-23 and 50-336/91-27. It included the observations and evaluations during conduct of surveillance and calibration activities and review for adequacy of maintenance procedures and procedure control issues.

Inspection Results: See Executive Summary

concern. It was noted, however, that both revision 5 and revision 6 of the subject procedure contained erroneous figure numbers. The inspector concluded that NNECO should implement a more effective procedure change, review, and validation process.

7.0 PROCEDURE CONTROL

Several concerns were expressed to the NRC regarding procedure issues, specifically problems with procedure adequacy and accuracy, implementation and compliance, and the procedure review and revision process.

7.1 Inadequate Review of Procedures by the PORC

Two concerns were expressed regarding the adequacy of PORC reviews, especially reviews of plant procedure revisions and their impact on operations and safety. Procedures that had recently undergone PORC review were later found to have deficiencies that should have been identified through the PORC process.

Assessment

These concerns centered around I&C surveillance procedures SP2404AW (RBCCW Radiation Monitor calibration) and SP2404AI (Steam Generator Blowdown Radiation Monitor functional test), and maintenance procedure MP2719F (Diesel Generator Governor installation and calibration). These procedures had all been recently revised and had been the subject of PORC reviews.

The two I&C surveillance procedures were revised to conform to the format of the new procedure Writer's Guide and to incorporate previously approved changes. Reviews of these revisions were conducted, and Revision 2 of both of these procedures was approved at PORC meeting 2-91-101 on July 31, 1991. These procedures were later found to be deficient in that procedural steps for SP2404AW did not match the procedure data sheet and detector sensitivity calculations for the RBCCW radiation monitor (RM 6038) could not be performed. In addition, SP2404AI specified erroneous annunciator window numbers to be checked in certain procedure steps, and the procedure data sheet specified inaccurate alarm setpoint tolerances.

The inspector reviewed the meeting minutes from PORC meeting 2-91-101 and found that the minutes provided only the most general description of the reason for procedure revisions to the two surveillance procedures. The licensee later took the appropriate corrective action in response to the deficiencies identified for these surveillance procedures. Revision 3 of SP2404AW was presented at PORC meeting 2-91-130 by the I&C Manager. This revision added detail and clarification to several procedure steps to allow proper performance of the procedure. Additionally, changes were issued to SP2404AI to provide minor step corrections and eliminate alarm tolerance discrepancies. These changes were approved by PORC meetings

The revisions to MP2719F were more extensive, entailing additional procedure instructions for the removal and installation of the diesel generator governor, upgrading instructions for setting and recording generator "droop," conformance to the Procedure Writing Guide and adding a new calibration data sheet. All of these changes were documented in the PORC meeting (2-91-125) minutes. The changes were developed and reviewed by an MP2 engineering/ maintenance sub-committee prior to presentation at the PORC meeting. The PORC members approved the procedure revision based on the sub-committee presentation.

The PORC actions are governed by ACP-QA-1.04, "Plant Operations Review Committee", Rev. 28. This document specifies action regarding procedure review and the documentation of meeting minutes, the content of which should include, as a minimum:

> "Details of specific PORC review and/or dispositioning of items...."

ACP-QA-1.04 states that the items will include procedure reviews. The inspector determined through review of selected PORC meeting minutes and discussions with plant staff and PORC members that in many cases involving procedure revisions, the PORC based final approval of procedure changes is based on the presentation given by a procedure sponsor or sub-committee. The sub-committee generally consists of personnel with the necessary system or equipment expertise to conduct a thorough review of procedure revision background, scope and impact prior to PORC presentation.

The actions of the sub-committee and PORC with regard to the procedures identified as part of [illegible] of minimal safety significance. However, the inspector determined that sub-committee evaluations of the procedure revisions were apparently not conducted in a consistently thorough manner. As a result, technicians were later able to identify discrepancies in the content of some of the procedures.

Conclusion

The concerns expressed relative to the two surveillance procedures appeared to be valid. Although NNECO took the appropriate corrective action in response to the procedure revision problems identified, the mechanism established for developing and reviewing plant procedure revisions appeared to function in an inconsistent manner. While the PORC must adhere to procedure review from the standpoint of safety and environmental impact and rely on the detailed expertise of sub-committee members with regard to actual equipment impact, the PORC is ultimately responsible for the approved procedure. The results of this inspection indicates that improvement is needed in the way NNECO complies with the intent of the PORC procedure. The inconsistencies found in the documentation of PORC processes (meeting minutes) would become more and more significant if flaws present in procedures and procedure revisions are not discovered at the plant worker level.