

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
NEW ENGLAND WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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February 10, 1993

Docket No. 50-336
B14363

Re: 10CFR2.201

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Reply to Notice of Violation
Inspection Report 50-336/92-22

In a letter dated January 11, 1993,⁽¹⁾ the NRC Staff transmitted its Notice of Violation (NOV) relating to NRC Inspection Report No. 50-336/92-22. The report discussed the results of several NRC Staff inspections resulting from the July 6, 1992, partial loss of normal power event. Based on the results of the Staff's inspections, two apparent violations were identified. The first concerns 10CFR50 Appendix B requirements regarding translation of plant design change record (PDCR) implementation into the work order package. Attachment 1 to this letter provides the Northeast Nuclear Energy Company (NNECO) response to the first apparent violation, on behalf of Millstone Unit No. 2, pursuant to the provisions of 10CFR2.201. The second apparent violation, failure to promptly correct conditions adverse to quality, is being considered for escalated enforcement. Accordingly, no response is provided in this submittal.

Discussion

On July 6, 1992, at 9:46 a.m., with the reactor core off-loaded to the spent fuel pool (SFP), a partial loss of normal power (LNP) occurred during preparations for the replacement of the vital inverters. This event caused an automatic start of an emergency diesel generator (EDG) which failed to sequence start the safety-related loads. The event was discussed in detail in the January 11, 1993,⁽²⁾ NRC Inspection Report.

The partial LNP occurred when operations personnel de-energized the two 'B' train engineered safeguards features actuation system (ESAS) sensor cabinets in support of the vital inverter modification. This action satisfied the

(1) M. W. Hodges letter to J. F. Opeka, "Nuclear Regulatory Commission Inspection Report No. 50-336/92-22 Millstone Unit 2," dated January 11, 1993.

(2) Ibid

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two-out-of-four logic required to generate a safety bus undervoltage signal and initiated the ESAS/LNP actuations. Accordingly, safeguards actuation signals were sent by the energized actuation cabinet (No. 5) to the 'A' train safety-related equipment. The 4.16 kV emergency bus 24C was de-energized; the 'A' emergency diesel generator (EDG) started and closed onto bus 24C; and EDG sequencing of safety-related loads was initiated. The automatic sequencing of the large safety loads did not continue as designed because the sustained undervoltage trip signal from the de-energized ESAS sensor cabinets was repeatedly unblocked by the operation of the automatic test insertion (ATI) circuit.

Self Assessment/Shutdown Risk Initiatives

As a result of this LNP event, a multidiscipline, ten person task force was assembled and charged with the determination of root cause, lessons learned/improvements, and effectiveness of shutdown risk management initiatives. Attachment 1 to this letter provides the reply to the apparent violation, which includes the results of the root cause assessment.

Additionally, Bechtel and Combustion Engineering (CE) Nuclear Services were contracted to perform independent engineering reviews. The Bechtel review verified that the diesel sequencer was not prone to any other loss of power or ATI interaction failure mechanisms. The CE hazards analysis verified that there were no other significant mechanical system abnormalities (e.g., Sump Recirculation Actuation System) created by the loss of a single 125 volt DC bus.

Prior to the Millstone Unit No. 2 refuel outage, NNECO's in-house Probabilistic Risk Assessment (PRA) group was requested to perform an independent risk assessment of the refuel outage. The assessment was qualitative in nature and used PRA techniques to assess the highest risk conditions based on available information at the time of the review (available schedules had not explicitly identified the simultaneous replacement of two inverters). The conclusion was made in an internal memorandum, dated May 19, 1992, that significant emphasis had been placed on shutdown risk management. Building a graphical representation, a "Relative Risk Profile" was developed for the Millstone Unit No. 2 refuel outage. That profile was subsequently modified, as discussed in a memorandum dated June 17, 1992. Attachment 2 provides a copy of that revised relative risk profile.

Also, prior to the Millstone Unit No. 2 outage, NNECO personnel developed Millstone Administrative Policy (MAP) 2.45B, "Millstone Unit No. 2 Outage Risk Management Program—1992 Refueling Outage." The NRC Staff acknowledged NNECO's shutdown risk efforts in Inspection Report 50-336/92-17, dated August 26, 1992.⁽³⁾

(3) J. P. Larr letter to J. F. Opeka, "Nuclear Regulatory Commission Inspection of Unit 2, Generator Replacement, NRC Region I Inspection Report No. 50-336/92-17," dated August 26, 1992.

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The following is an excerpt from that inspection report:

"Actions were taken to reduce risk, based on the independent risk assessment. The development of an administrative policy [MAP 2.15B] to address shutdown risk was a positive approach for reducing shutdown risk. The licensee has taken a number of positive initiatives to reduce the shutdown risk during the replacement of the steam generators."

Subsequent to the Millstone Unit No. 2 outage, another self-assessment was undertaken to implement the initiative by the Nuclear Management and Resources Council (NUMARC) 91-06, "Guidelines for Industry Actions to Assess Shutdown Management." Copies of this document have been reviewed by various NRC Staff. More recently, Millstone Administrative Control Procedure (ACP) 3.38, "Shutdown Risk Management Program," has been approved which addresses the subject on a programmatic basis.

Conclusion

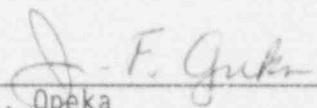
NNECO does not contest the first apparent violation and agrees with the Staff's conclusion that the safety significance of the result of the first apparent violation was low.

The second apparent violation will be addressed separately from this letter, based on discussions with NRC Region I Staff.

If you have any questions regarding information contained herein, please contact us.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



J. F. Opeka
Executive Vice President

cc: T. T. Martin, Region I Administrator
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2,
and 3

Docket No. 50-336
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Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Reply to a Notice of Violation

Inspection Report 50-336/92-22

February 1993

Millstone Nuclear Power Station Unit No. 2
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Inspection Report 50-336/92-22

Restatement of Violation

As a result of the inspection conducted on July 6-24, 1992, and in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1992), the following violation was identified:

10 CFR Part 50, Appendix B, Criteria III and V, require that activities affecting quality shall be prescribed by documented instructions which correctly translate the plant design. These activities shall be accomplished in accordance with these instructions.

The implementation plan of Plant Design Change Record (PDCR) No. 2-123-91 required that vital inverters No. 2 and 6 be replaced simultaneously, and vital inverter No. 4 thereafter.

Contrary to the above, on July 6, 1992, the implementation plan of PDCR No. 2-123-91 was not translated correctly into work order M2-92-06984. Consequently, vital inverters No. 2 and No. 4 and associated static switches were removed from service simultaneously, resulting in a loss of normal power to the plant.

This is a Severity Level IV Violation (Supplement I).

1. Reason for Violation

The primary root cause was program failure - insufficient planning, in that a breakdown in the work planning system allowed breakers to be tagged open despite requirements to the contrary in PDCR 2-123-91 implementation plan. The change in planned sequence of inverter removal evolved over several steps based on the constraints imposed by the physical inverter locations that dictated that inverter 4 be removed first, followed by inverter 2.

A secondary root cause was program failure - procedure deficiencies - lack of detail, in that neither of the two procedures applicable to the situation contained any caution or warning concerning the potential hazard of securing two or more ESAS sensor cabinets at the same time.

2. Corrective Steps Taken and Results Achieved

Administrative Control Procedure, ACP-QA-2.02C, "Work Orders," has been revised to now require changes in work scope to be reviewed by the department(s) which originally reviewed the work order.

Outage PDCR modifications will be completed as soon as practical prior to the start of the outage to provide time for detailed planning, scheduling, and integrated review of potential impacts on safety. To support this decision, the responsibility for preparation of all design changes has been given to one group — the Project Services Department (PSD). This responsibility becomes effective for Millstone Unit No. 2 in March 1993.

The applicable operating procedures have been revised to add appropriate warnings concerning the consequences of deenergizing ESAS cabinets. The Preventive Maintenance Management System (PMMS) data bases for inverters and ESAS cabinets have been updated to warn of the potential consequences of inappropriate deenergization of inverters or ESAS cabinets. This PMMS warning is automatically printed on any automated work order (AWO) associated with these components.

3. Corrective Steps That Will Be Taken To Avoid Further Violations

A review team concept, called the "Shutdown Safety Review Team," will be used in future outages to fully evaluate evolutions with high-risk potential. The team members will be selected in accordance with the requirements of procedure ACP-3.38, "Shutdown Risk Management Program." Members will have plant system knowledge and operational experience to provide an in-depth review of all aspects of an evolution. The use of such a team will provide the support needed to probe a given job deeply enough to uncover any subtle problems. The goal is for improved safety during an outage period. Following any initial reviews and initial scheduling for the planned sequence of activities, any changes to the schedule or the activities will require a full review by this same group.

The implementation of the System Engineer concept will also help avoid a recurrence. The initial steps have been taken on this program, with approval and issue of the System Engineer manual and the initial hiring of additional engineering staff. This effort will be continued over the next few years, with an estimated final date of full staffing in 1995. The shift in responsibility of plant design change to the PSD will also enable the plant engineering staff to better focus on plant operational concerns for all plant conditions - outages and power operation.

4. Date When Full Compliance Will Be Achieved

The effective date for transfer of all plant design change responsibility to the PSD is March 1993.

The estimated date of formation of the outage work review team is November 1993, based on the next refueling outage scheduled start for Millstone Unit No. 2 of May 1994.

The estimated date for a fully implemented System Engineer Program is December 31, 1995.

5. Generic Implications

The corrective actions described above will be applicable to the three Millstone Units. The Haddam Neck Plant will review this issue and take actions as appropriate. The dates of implementation for the other units may vary.

Attachment 2

Millstone Nuclear Power Station, Unit No. 2

Cycle 11 Refueling (SGRP)

1992 Outage Risk Profile

February 1993

MILLSTONE UNIT 2
CYCLE 11 REFUELING (SGRP)
1992
OUTAGE RISK PROFILE

DAD
6/16/92
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