



Northeast
Nuclear Energy

Rope Ferry Rd. (Route 156), Waterford, CT 06385

Millstone Nuclear Power Station
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385-0128
(860) 447-1791
Fax (860) 444-4277

The Northeast Utilities System

OCT 8 1998

Docket No. 50-336

B17438

Re: 10 CFR 2.201

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

Millstone Nuclear Power Station Unit No. 2
Reply to a Notice of Violation
ICAVP Tier 3 Change Processes
Nuclear Regulatory Commission Inspection Report 50-336/98-201

By letter dated August 12, 1998⁽¹⁾, the Nuclear Regulatory Commission Special Projects Office transmitted the results of Inspection Report 50-336/98-201. The inspection was part of a broader Nuclear Regulatory Commission (NRC) activity directed at verifying the effectiveness of Northeast Nuclear Energy Company's (NNECO) Configuration Management Program. The letter included a Notice of Violation (NOV) citing eight areas where NNECO's activities were not in compliance with NRC regulations.

In a letter dated September 14, 1998⁽²⁾, NNECO requested additional time (until October 8, 1998) to provide a reply to the Notice of Violation.

Since shutting Unit 2 down in 1996, and as indicated by the corrective actions for ACR 07007, NNECO has taken comprehensive steps to restore the design and licensing bases and to ensure that change processes effectively maintain the design and licensing bases. The Configuration Management Project (CMP) is a key element of this effort. It is explicitly directed at aligning plant configuration, procedures and practices with the current design and licensing bases. NNECO has also devoted attention to significantly upgrade the programs, procedures and processes that are necessary to assure effective design control and configuration management in the future including the processes designed to implement the requirements of 10 CFR 50.59 and 10 CFR 50.71(e).

100105

- (1) E. V. Imbro letter to M. L. Bowling, "NOTICE OF VIOLATION AND INDEPENDENT CORRECTIVE ACTION VERIFICATION PROGRAM TIER 3 SPECIAL INSPECTION OF MILLSTONE UNIT 2 (NRC INSPECTION REPORT NO. 50-336/98-201)," dated August 12, 1998.
- (2) M. L. Bowling letter to the NRC, "REQUEST FOR ADDITIONAL TIME TO RESPOND TO A NOTICE OF VIOLATION," dated September 14, 1998.

9810200032 981008
PDR ADOCK 05000336
G PDR

Many of the examples in this inspection report address shortcomings that occurred prior to this recovery. Current modifications and design changes are being developed based on higher standards for performing safety evaluations and improved procedures, such as RAC 12, "Safety Evaluation Screens and Safety Evaluations." The low safety significance of these findings and the corrective actions already taken provide the confidence that CMP has been effective.

The inspection report also provided examples where NNECO failed to meet the requirements of 10 CFR 50.59 by making changes to P&ID drawings that are in the FSAR without performing a safety evaluation, and by referencing a generic safety evaluation that did not bound the change being made. NNECO has determined that the common cause for these examples was an organizational misinterpretation of what constituted a change to the FSAR.

The standards and expectations for conduct of safe operation, including performance of Safety Evaluations and Safety Evaluation Screens, have been revised since the cited issues occurred. RAC 12 "Safety Evaluations Screens and Safety Evaluations," became effective March 1, 1998, and improved training, which includes what constitutes a change to the FSAR, has increased the overall quality of safety evaluation screens and safety evaluations. Interim initiatives in Engineering have been undertaken to improve the quality of the documentation. These include the Quality Review Board, Configuration Management training, and the Engineering Review Board which all serve to enforce management expectations.

NNECO has also established an Engineering Assurance Group to evaluate design and configuration control activities in order to improve the quality of both engineering products and processes. This organization is monitoring and trending the effectiveness of configuration management related corrective actions. Multi-discipline unit configuration teams have also been established to coach and mentor the units and support organizations on configuration management related issues. The teams also provide feedback on processes and procedures. All of these initiatives are a central part of the recovery effort.

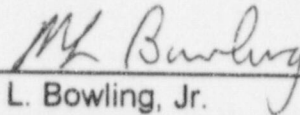
In the broadest context, NNECO has taken decisive corrective action to establish and sustain effective leadership with high standards to address long-standing weaknesses in Key Issues including Configuration Management, Regulatory Compliance, and Safety Conscious Work Environment as a measure of the robustness of NNECO's corrective actions. Resolving and preventing recurrence of issues such as those cited by the NRC in this category is also central to Millstone Unit No. 2's recovery effort.

NNECO's commitments associated with this submittal are contained in Attachment 1. Attachment 2 provides NNECO's response to the NOV items pursuant to the provisions of 10 CFR 2.201. Attachment 3 provides a list of items contained in the inspection report that are not necessarily regulatory commitments but are actions that will be completed.

Should you have any questions regarding the information contained herein, please contact Mr. Ravindra G. Joshi at (860) 440-2080.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



Martin L. Bowling, Jr.
Recovery Officer - Technical Services

Attachments (3)

cc: H. J. Miller, Region I Administrator
W. D. Lanning, Director, Millstone Inspections,
D. G. McDonald, Jr., NRC Senior Project Manager, Millstone Unit No. 2
D. P. Beaulieu, Senior Resident Inspector, Millstone Unit No. 2
E. V. Imbro, Director, Millstone ICAVP Inspections
P. S. Koltay, Branch Chief, ICAVP Oversight
J. P. Durr, Chief, Inspections Branch, Millstone Inspections
W. M. Dean, Director, Millstone Project Directorate
S. Dembek, NRC Project Manager, Millstone Unit No. 1

Docket No. 50-336
B17438

Attachment 1

Millstone Nuclear Power Station, Unit No. 2
NNECO Commitments

October 1998

List of Regulatory Commitments

The following table identifies those actions committed to by NNECO in this document. Please notify the Manager - Millstone Unit No. 2 Regulatory Compliance of any questions regarding this document or any associated regulatory commitments.

Commitment Number	Description	Committed Date or Outage
B17438.01	Revise the IST Program designating valves 2-CS-16.1A&B, 2-CS-14A&B, 2-SI-659 & 2-SI-660, 2-SI-460, 2-CS-050, and 2-CS-051 as periodically leak tested valves.	Completed
B17438.02	NNECO will evaluate the need to leak test 2-CS-13.1A&B. Leak testing will be performed on 2-CS-13.1A&B or the basis for not testing will be documented.	Prior to Entry into Mode 4
B17438.03	NNECO will overhaul P5B and P5C, inspect columns and spiders for degradation, evaluate and summarize results, determine type of corrosion and recommend repair/replacement as required. A failure mechanism determination will be performed following inspection of P5B and P5C pump columns as to the need for inspection of P5A.	Prior to Entry into Mode 4
B17438.04	The washers on the 'B' RBCCW heat exchanger will be replaced.	Prior to Entry into Mode 4
B17438.05	Three relief valves, 2-RB-303A, 2-RB-303B, and 2-RB-303C, will be reworked to change the relief setpoint from 165 psig to 150 psig.	Prior to Entry into Mode 4
B17438.06	A formal calculation will be prepared to determine the available fault current at the respective breakers.	Prior to Entry into Mode 4
B17438.07	A review will be conducted to identify safety evaluation screens with a similar deficiency. The generic safety evaluation for minor changes to P&IDs will then be revised to clearly include these types of changes. The associated technical evaluation and safety evaluation screen will also be revised accordingly.	Prior to Entry into Mode 4

Commitment Number	Description	Committed Date or Outage
B17438.08	Control Room nameplates, associated with RG 1.97, will be modified to conform to the updated labeling requirements of specification SP-EE-261.	Prior to Entry into Mode 4
B17438.09	An engineering evaluation, pertaining to EMI/RFI emissions, will be performed per specification SP-M2-IC-1010 prior to the replacement ICCMS being released to Operations.	Prior to Entry into Mode 4
B17438.10	The three non-quality assurance bushings will be replaced with safety related parts or full qualification will otherwise be restored under Appendix B requirements.	Prior to Entry into Mode 4
B17438.11	A calculation, which will evaluate the adequacy of the alternate sources for inverters INV3 and INV4 (Voltage Drop for the 120 VAC Vital System), will be completed and a short circuit calculation will be prepared to verify that the transformers do not adversely impact the 120 VAC Vital Distribution System.	Prior to Entry into Mode 4
B17438.12	A calculation will be prepared to document the basis for the available fault current on the 120V Vital System.	Prior to Entry into Mode 4

Docket No. 50-336
B17438

Attachment 2

Millstone Nuclear Power Station, Unit No. 2

Response to Notice of Violation
Nuclear Regulatory Commission Inspection Report 50-336/98-201

October 1998

Nuclear Regulatory Commission Violation "A" (50-336/98-201-01)

Restatement of the Violation 201-01, A.1

- A. 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," states, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in the applicable design documents.

Millstone Unit 2 Technical Specification 6.13, "Systems Integrity," requires that, "The licensee shall implement a program to reduce leakage from systems outside containment that would, or could, contain highly radioactive fluids during a serious transient, or accident, to as low as practical levels."

10 CFR 50.55a, "Codes and Standards," Section (f), "Inservice Testing Requirements," requires that such valves be included in the ASME Section XI, inservice testing requirements (IST) leak testing program.

ASME Section XI, Article IWW-2200(a) classified such valves as Category A valves (i.e., "valves for which seat leakage is limited to a specified maximum amount in the closed position of fulfillment of their function.") Paragraph IWW-3421 required that such "Category A valves shall be leak tested...in a manner that demonstrates functionally adequate seat tightness..." (i.e., at a rate less than that which would cause the design-basis offsite or control room accident dose limits to be exceeded).

Contrary to the above, two examples were identified where the licensee was not performing leakage testing of safety-related valves in systems that could contain highly radioactive fluids during an accident are:

One of the examples was:

- (1) ECCS containment sump isolation valves, 2-CS-16.1A&B, were not surveillance leakage tested per the above stated requirements. Additionally, two modifications requiring disassembly were performed on these valves and no post-modifications leakage testing was performed.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

The IST Program did not identify the subject valves as valves requiring leak testing in accordance with ASME XI, Article IWW. The reason is attributed to not correctly interpreting the design leak function of the valves.

Corrective Actions and Results Achieved

Valves 2-CS-16.1A&B have been satisfactorily leak tested.

It has been determined that there are no similar valves or generic implications since no other valves have a similar credited function to isolate potentially radioactive fluid when assuming an ECCS passive component failure during long term cooling (i.e. HPSI pump seal leak).

Corrective Actions to Avoid Future Violations

The Inservice Testing (IST) Program has been revised designating valves 2-CS-16.1A&B as periodically leak tested valves. The program revision includes a description of the design leak function of the valves.

An IST surveillance procedure will be written to periodically test valves 2-CS-16.1A&B.

NNECO has established an Engineering Assurance Group to evaluate design and configuration control activities in order to improve the quality of both engineering products and processes. This organization monitors and trends the effectiveness of configuration management related corrective actions. Multi-discipline unit configuration teams are coaching and mentoring the units and support organizations on configuration management related issues. The teams also provide feedback on processes and procedures. All of these initiatives are a central part of the recovery effort. Also, engineering standards have been raised that will prevent future violations

Date When Full Compliance Will Be Achieved

NNECO is currently in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Violation "A" (50-336/98-201-01)

Restatement of the Violation 201-01, A.2

- A. 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," states, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in the applicable design documents.

Contrary to the above:

- (2) ECCS suction isolation valves from the refueling water storage tank (RWST), 2-CS-14A&B and 2-CS-13.1A&B, were not surveillance leakage tested per the above stated requirements.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

This violation is the result of inadequate review and evaluation of NRC Information Notice 91-56, "Potential Radioactive Leakage to Tank Vented," that was issued on September 19, 1991. NNECO incorrectly concluded in January 1993 that the valves did not have to be leak tested. As a result the subject valves were not included in the IST Program.

Corrective Actions and Results Achieved

Valves 2-CS-14A&B have been satisfactorily leak tested.

An evaluation was performed identifying all other potential leak paths back to the RWST. There were 4 additional leak paths identified which included the HPSI recirculation line valves 2-SI-659 & 2-SI-660, the Containment Recirculation test line valve 2-SI-460, Containment Spray Header "B" to SIS Test Header line valve 2-CS-050, and Containment Spray Header "A" to SIS Test Header line valve 2-CS-051.

Each of the 4 leak path valves were leak tested satisfactorily.

Corrective Actions to Avoid Future Violations

The IST Program has been revised designating valves 2-CS-14A&B, 2-SI-659 & 2-SI-660, 2-SI-460, 2-CS-050, and 2-CS-051 as periodically leak tested valves.

The IST surveillance procedure has been revised to include periodic leakage testing of valves 2-CS-14A&B.

An IST surveillance procedure will be written to periodically leak test the additional valves that were identified in the evaluation as having potential leak paths back to the RWST prior to RFO 13.

NNECO will evaluate the need to test 2-CS-13.1A&B. Leak testing will be performed or the basis for not testing will be documented prior to entry into Mode 4 from the current shutdown.

Also, engineering standards have been raised that will prevent future violations.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown when leak testing for 2-CS-13.1A&B is complete or the basis for not testing has been documented and approved.

Nuclear Regulatory Commission Violation "B" (50-336/98-201-02)

Restatement of the Violation 201-02, B.1

- B. 10 CFR Part 50, Criterion XVI, "Corrective Action," states, in part, that, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected." It also requires that, "In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

Section 1.1 of Station Procedure NGP3.05, "Nonconformance Reports", requires that, "The NCR is used to document and disposition nonconforming, materials, parts, components or services..."

Contrary to the above:

- (1) The licensee failed to adequately determine the root cause of the corrosion of the 316 L stainless steel material of service water pump P5C's column in several cases over a period of several years and, therefore, failed to take appropriate corrective actions to preclude repetition.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

This violation is an example of the broader "weak corrective action program" issue that existed at Millstone and which NNECO has acknowledged. Previous corrective action programs (Plant Incident Reports, NCRs) did not have mechanisms in place to identify adverse trends and develop appropriate root causes for those trends unless issues were considered significant failures. Issues similar to that identified in NCR 291-164, "Corrosion of Service Water Pump P5C Columns" were not recognized as repeat failures and thus appropriate corrective actions were not identified.

Corrective Actions and Results Achieved

The "A" Service Water pump (P5A) columns were completely coated with ARCOR S-30 epoxy coating in February, 1996. The "B" Service Water pump (P5B) columns were visually inspected and determined to not require coating in February 1993.

The "C" Service Water pump (P5C) columns were completely coated with Belzona S-Metal epoxy in January 1993. The pump was removed and upper column disassembled in January 1994. The coatings appeared to be in good condition. Evidence of corrosion at the bearing support spiders was not noted.

A failure mechanism determination will be performed following inspection of P5B and P5C pump columns as to the need for inspection of P5A. NNECO will overhaul P5B and P5C, inspect columns and spiders for degradation, evaluate and summarize results, determine type of corrosion and recommend repair/replacement as required. These actions will be completed prior to entry into Mode 4 from the current shutdown.

Corrective Actions to Avoid Future Violation

The NCR process has been incorporated into Procedure RP4, "Corrective Action Program," which provides a process for identifying, trending, and determining corrective action to prevent reoccurrence for issues similar to that identified in NCR 291-164. Specifically, the multiple NCRs identifying corrosion on the Service Water pump columns would now be identified as an adverse trend and per the guidelines of RP4 would have resulted in a failure mechanism determination of the corrosion, mechanism and identification of appropriate corrective actions.

Since the time of this deficiency, a new corrective action program has been implemented and new leadership has significantly raised expectations and standards, resulting in correction of historical programmatic deficiencies.

Date When Full Compliance Will Be Achieved

NNECO is currently in compliance with 10 CFR Part 50, Criterion XVI, "Corrective Action."

The deficiency associated with the pump column inspection and described in this violation will be resolved prior to entry into Mode 4 from the current shutdown.

Nuclear Regulatory Commission Notice of Violation B (50-336/201-02)

Restatement of the Violation 201-02, B.2

- B. 10 CFR Part 50, Criterion XVI, "Corrective Action," states, in part, that, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected." It also requires that, "In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

Section 1.1 of Station Procedure NGP3.05, "Nonconformance Reports", requires that, "The NCR is used to document and disposition nonconforming, materials, parts, components or services..."

Contrary to the above:

- (2) While conducting maintenance activities on the "A" reactor building component cooling water (RBCCW) heat exchanger in February 1998, the licensee identified, but failed to take prompt corrective action and issue a nonconformance report (NCR) to formally identify that incorrect washers of various sizes and materials were installed on the "C" RBCCW heat exchanger head during previous maintenance activities.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

While performing work on the 'A' Reactor Building Closed Cooling Water (RBCCW) Heat Exchanger on November 25, 1997, it was determined that the channel head cover fastener washers were concave (mismatched washers were not noted at this time). The washer problem was noted in the automated work order (AWO), requesting that they be replaced. During the close-out of the AWO, an AWO request was submitted to replace the washers on February 6, 1998.

During this inspection, it was documented that there were mismatched washers (size and material) used on the "B" and "C" RBCCW heat exchanger channel head bolting. NNECO also documented the loss of configuration control on the RBCCW heat exchanger channel head cover fastener washers.

NGP 3.05 states "The NCR is used to document and disposition nonconforming materials, parts, components or services to prevent their inadvertent use of installation in the field. NCRs may be written against any of the following:

- non conforming conditions in the field
- non conforming conditions associated with procurement"

NGP 3.05 also states, "NCRs should be generated to document and disposition field conditions which deviate from design requirements or inspection allowable and require engineering disposition."

Due to the somewhat conflicting wording in the procedure and the Maintenance Department's interpretation of that procedure (a field condition which deviated from design, but did not require engineering disposition), it was concluded that a CR provided adequate documentation to address the condition.

Corrective Action and Results Achieved

AWOs have been changed or initiated, and approved to replace the washers on each RBCCW heat exchanger. The washers on the "A" and "C" RBCCW heat exchangers have been replaced. The washers on the "B" RBCCW heat exchanger will be replaced prior to entry into Mode 4 from the current shutdown.

Millstone Unit 2 Maintenance personnel have been briefed on this issue. Unit 2 Maintenance Management reinforced their expectations for initiating condition reports.

Corrective Actions to Avoid Future Violation

Station Procedure RP-4, "Corrective Action Program," has been revised to incorporate the NCR process into the Condition Report process. The NCR process in the revised RP-4 will include a "nonconformance" definition that is based on NRC Generic Letter 91-18. Additionally a condition identified in a Condition Report that may be a nonconformance will be required to be identified as such and be evaluated by engineering in order to determine if the condition meets the definition of a nonconformance. Actions to correct the non-conformance will be identified and implemented.

Date When Full Compliance Will Be Achieved

Millstone Unit 2 will be in full compliance prior to entry into Mode 4 from the current shutdown by replacing the washers on the 'B' RBCCW heat exchanger.

Nuclear Regulatory Commission Notice of Violation B (50-336/201-02)

Restatement of the Violation 201-02, B.3

- B. 10 CFR Part 50, Criterion XVI, "Corrective Action," states, in part, that, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected." It also requires that, "In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

Section 1.1 of Station Procedure NGP3.05, "Nonconformance Reports", requires that, "The NCR is used to document and disposition nonconforming, materials, parts, components or services..."

Contrary to the above:

- (3) The licensee installed a bypass jumper to the alarm contacts to prevent control room nuisance alarms without attempting to determine the root cause of the ground fault alarms. The reason for the jumper device was to eliminate the alarm. The alarm originated in the non-1 E section of the alternate power supply to safety-related panel VA-40.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

On October 7, 1992, Bypass Jumper 2-92-157 was installed to remove the AC Ground Fault alarm from the Common Alarm for Inverter 4. The alarm on Inverter 4 was constantly in alarm due to the presence of grounds on the alternate source, panel VR-21. Because the ground fault was in the alarm condition, the common alarm for Inverter 4, located on Control Room panel CO8, was in alarm and could not be cleared. This prevented monitoring other alarms from the Inverter. Therefore, to permit monitoring of Inverter 4, a jumper was installed for the ground alarm on panel VR-21.

Due to lack of documentation of troubleshooting prior to installing the bypass jumper, NNECO failed to formally identify the cause of the ground fault alarms. This historical (1992) violation was the result of low standards and inadequate work practices at Millstone.

Corrective Actions and Results Achieved

No documentation exists to substantiate our troubleshooting efforts that were conducted at the time. Radiation monitors, not electrically isolated from the inverter, were found to be the source of the ground. Corrective actions to resolve the grounds were developed, a bypass jumper was installed, plant modifications were implemented, and the bypass jumper was subsequently removed. The cause of the alarm was resolved.

Corrective Actions to Avoid Future Violations

NNECO has developed, enhanced and implemented procedures to better document reporting, investigating and correcting conditions that are identified. U2 WC 1, "Unit 2 Work Control Process," Attachment 5, "Troubleshooting;" Attachment 5.1, "Troubleshooting Plan;" and Attachment 5.2, "Troubleshooting Guideline," have been developed and implemented. Procedure RP-4, "Corrective Action Program," has been developed, enhanced and implemented to provide a mechanism to identify an adverse condition, investigate the condition, provide the appropriate corrective actions and raise the standards for resolving issues.

Date When Full Compliance Will Be Achieved

NNECO is in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Violation "C" (50-336/98-201-03)

Restatement of the Violation 201-03, C

- C. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires that, "Measures shall be established to assure that the applicable regulatory requirements and the design basis...are correctly translated into specifications, drawings, procedures, and instructions."

ASME Code Section VIII, Article UG-134, "Pressure Setting of Pressure Relief Devices," (a), states, in part, "When a single pressure relieving device is used, it shall be set to operate at a pressure not exceeding the maximum allowable working pressure of the vessel [the design pressure]."

Contrary to the above, the design requirements of Section VIII, Article UG-134(a), for pressure relief devices, were not correctly translated into the design for the RBCCW heat exchangers' relief valves' setpoints. The Code required that the relief valves' setpoints be no higher than the design pressure of 150 psig. The licensee incorrectly raised the setpoints to 165 psig.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

The individual using the code interpretation in the subject design change and an Engineering technical evaluation failed to recognize that each relief valve was applied only to the component it protected. The RBCCW system is vented to atmosphere and is protected by a surge system. This leaves the relief valves as component devices and there is only one per component, requiring use of the single pressure relieving device section of the code.

The RBCCW thermal relief valves for the RBCCW heat exchangers had historically experienced actuation during pump swaps, releasing water into the room on the -25 foot 6 inch elevation. These relief valves are required to relieve pressure build up in the heat exchanger during times when the heat exchanger is out of service and during other system operations. The overpressure is caused by the standing head from approximately 120 feet of water and the pump start up head created when bringing a second RBCCW pump on line with one already running, exceeding the operating pressure of the system, which is limited by the design pressure rating for the RBCCW heat exchangers at 150 psig. These thermal relief valves are mounted on 3/4" lines on the shell side of the RBCCW heat exchanger. Thermal relief valves are set at the required pressure that could be caused by external heating (fire in the room). The pressure setting is dictated by the ASME Code Section VIII Part UG-134 (a) as the maximum operating pressure for the component (150 psig). However, the design

change allowed setting the relief valves at 165 psig based on section UG-134 (b), which was not appropriate for use.

Corrective Actions and Results Achieved

Three RBCCW relief valves, 2-RB-303A, 2-RB-303B, and 2-RB-303C, will be reworked to change the relief setpoint from 165 psig to 150 psig as required by ASME code Section VIII for pressure vessels. The setpoints of certain relief valves that were replaced under the same DCR will remain at 165 psig since the components that they protect are rated for the higher pressures.

In addition, this design change was revised to specify a 150 psig setpoint for twenty-five (25) other relief valves in the RBCCW system which will be replaced with new soft seat relief valves.

Corrective Actions to Avoid Future Violations

There was no immediate corrective action to address the 'personnel error' aspects of this issue. However, a self-assessment was performed subsequent to this incident, which identified the need to review packages that were prepared by offsite engineers to assess turnover effectiveness. An assignment associated with this issue includes a review of the technical accuracy of the package. In addition, the project Quality Review Board has been established as an interim measure subsequent to this incident. One of the functions of the board is to review the quality and technical accuracy of modification packages. This is an interim measure to enhance design document quality.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown by completing the required relief valve setpoint changes on the appropriate valves.

Nuclear Regulatory Commission Violation "D" (50-336/98-201-04)

Restatement of the Violation 201-04, D

D. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that, "Measures shall be established to assure that the applicable regulatory requirements and the design basis...are correctly translated into specifications, drawings, procedures, and instructions." It further states, in part, that, "Design changes, including field changes, shall be subjected to the design control measures commensurate with those applied to the original design. . . ."

Contrary to the above, the licensee performed changes to the design of the P-41 "B" and "C" high pressure safety injection (HPSI) pump seals without performing updates of the associated design drawings.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

This historic discrepant condition occurred as a result of personnel error; i.e., the lack of attention to detail, which resulted in a loss of configuration control.

The discrepant condition(s) identified were inaccurate drawings for the 'B' and 'C' HPSI Pump Seals O-Rings. PDCR 2-147-92 was written to replace Teflon O-rings in the mechanical shaft seals of all three of the HPSI pumps P-41A, P-41B, & P-41C with EPDM material. In March 1994, at the time of PDCR closure, only the 'A' HPSI pump seals had been replaced. Since the PDCR was approved for all three pumps, but only the 'A' HPSI pump was completed, it was determined that DCN DM2-S-102-94, which was to update drawing 25203-29168, Sheet 10 for the 'A' HPSI Pump seal, should also include a note on the drawing that either (the old or new) seal material was acceptable until the pump underwent its next overhaul. When the 'B' and the 'C' HPSI pumps were next overhauled, and the seal O-rings replaced, a DCN would then be initiated to update the drawings again. This drawing update was apparently done for the 'C' HPSI Pump in September 1995, but not for the 'B' HPSI Pump when the seal O-rings were replaced with EPDM material in August 1996.

Corrective Actions and Results Achieved

These historical drawing deficiencies have been corrected. These and other similar drawing deficiencies previously identified have resulted from historical long-standing programmatic deficiencies. The issue of drawings not reflecting plant field conditions was globally addressed in ACR 08761. A corrective action specified to address conditions identified in ACR 08761 was to correct drawing discrepancies via a DCN as

they are identified.

Corrective Actions to Avoid Future Violations

Since the time of this deficiency, new leadership has significantly raised expectations and standards, resulting in correction of historical programmatic deficiencies. One area specifically addressed has been in strengthening the design control process.

Changes to the review and approval process as described in the DCM are much more stringent than processes that existed at the time of this event. The more stringent process will minimize similar violations in the future.

Date When Full Compliance Will Be Achieved

NNECO is currently in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Violation "E" (50-336/98-201-05)

Restatement of the Violation 201-05, E.1

- E. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, "The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews...." It further states, in part, that "design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design...."

Contrary to the above:

- (1) The licensee failed to properly control the design and verification of pipe support calculation M2505194-01649-C2, Rev. 0, since Attachments were not properly signed by the individuals who performed and checked the calculation.

NNECO's Response

NNECO agrees with the cited violation, but does not believe this particular example supports the cited violation.

Reason for the Violation

The observed inconsistency noted above is acceptable since Chapter 5 of the Design Control Manual indicates that the Independent Review signoff on the Calculation Cover Sheet provides compliance with the design input verification process described in Chapter 4 and Design Inputs listed in Chapter 4, Attachment 1. The calculation of concern clearly shows that the Independent Reviewer completed a 'full' review (i.e., all Attachments).

In the case of this specific calculation and consistent with the support calculations for the RWST System, the support analysis was divided amongst different analytical groups; i.e., baseplate, support structure, integrated welded attachments, etc., with the intent of assembling the final calculation for a 'full' independent review. In addition, since the stress analysis was performed using an integrated model (i.e., pipe and supports analyzed simultaneously) some of the attachments included in the support calculation were taken directly from the stress analysis and thus may not contain signatures of the preparer and checker.

NNECO believes that no violation occurred associated with this specific calculation and that no corrective action is required. However, NNECO has reviewed the remaining examples E.2 through E.5, and agrees that those examples support this cited violation.

Corrective Actions and Results Achieved

The DCM Working Group reviewed this issue (with pipe support calculation M2505194-01649-C2, Rev. 0) to determine if the verification process for calculations with multiple parts should be strengthened. The review concluded that no changes were required to the DCM as a result of this concern.

Corrective Actions to Avoid Future Violations

No additional corrective actions are required.

Date When Full Compliance Will Be Achieved

NNECO is in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Violation "E" (50-336/98-201-05)

Restatement of the Violation 201-05, E.2

- E. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, "The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews..." It further states, in part, that "design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design...."

Contrary to the above:

- (2) The resolution of Generic Letter (GL) 87-02/USI A-46 at Millstone Unit 2 is provided by the "Generic Implementation (GIP) for Seismic Verification of Nuclear Plant Equipment," or GIP procedure. Contrary to the GIP requirements, cantilevered spans for cable trays Z25AA10 and Z24AA10 located in the containment building exceeded the maximum permissible spans and, therefore, should have been identified as outlier to the GIP and evaluated accordingly.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

The reason for this historical violation is a personnel error, which occurred during original installation as a result of failing to install the cable tray in accordance with the governing specification and drawings, and failure to verify installed field conditions.

Corrective Actions and Results Achieved

An Engineering calculation was performed which documented that the specific gap identified for the existing cable trays cantilevered lengths are acceptable. No modifications are required.

A search of original documents was made and additional examples have not been found to date. Extensive walkdowns were performed in support of the USI A-46 program and no similar conditions were found. As a result of these walkdowns, this appears to be an isolated incident.

Corrective Actions to Avoid Future Violations

Since the personnel error noted in this example occurred during original installation of the cable tray, there is no need to provide coaching or counseling. Also, engineering standards have been raised that will prevent future violations.

Changes to the review and approval process as described in the DCM are much more stringent than processes that existed during original installation. The more stringent process will minimize similar violations in the future.

Date When Full Compliance Will Be Achieved

NNECO is in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Violation "E" (50-336/98-201-05)

Restatement of the Violation 201-05, E.3

E. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, "The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews...." It further states, in part, that "design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design...."

Contrary to the above:

(3) The licensee failed to provide documented objective evidence to support the technical basis of Engineering Evaluation M2-EV-96-0061, Rev. 0, page 3 of 3, performed in support of Design Change Notice (DCN) No. DM2-00-1466-96. No specific reference to the calculation that would support the statement on page 3 of 3, "Fault current available over the entire length of the power circuit is adequate to actuate the trip element of any breaker with an instantaneous trip setting up to, and including, the HI setting," was included. Also, the statement that "Coordination reviews of 480-vac MCC circuits and upstream devices are based upon the largest breaker installed in the MCC...." was not referenced to the relevant coordination study. Section 6.0, "References," did not include any coordination study or calculations.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

Due to low standards and expectations, personnel error contributed to the failure to provide basis documentation to support conclusions and resulted in an inadequate technical evaluation. The individual who prepared Engineering Evaluation M2-EV-96-0061, Rev. 0, informally calculated the fault current by conservatively assuming the MCC with minimum available fault current (highest source impedance) was connected to the load feeder cable with the highest impedance. This resulted in an enveloping condition for a fault at the load terminals of any affected loads. Although the engineering evaluation is technically correct, the engineer failed to formally document the basis for the conclusion concerning available fault current with respect to instantaneous trip settings.

The discrepant condition related to the statement that "Coordination review of 480 VAC...." occurred as a result of the lack of attention to detail, which resulted in the omission of Calculation PA84-065-753GE as a reference.

Corrective Actions and Results Achieved

A formal calculation will be prepared to determine the available fault current at the respective breakers prior to entry into Mode 4 from the current shutdown.

Corrective Actions to Avoid Future Violation

The Quality Review Board has been established as an interim measure to ensure engineering reviews of new design changes document the adherence to the plant's design basis, including preparation or update of affected calculations to support technical justifications.

Changes to the review and approval process as described in the DCM are much more stringent than processes that existed during original installation. The more stringent process will minimize similar violations in the future.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation when calculations are completed and satisfactory which will be prior to entry into Mode 4 from the current shutdown.

Nuclear Regulatory Commission Violation "E" (50-336/98-201-05)

Restatement of the Violation 201-05, E.4

- E. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, "The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews...." It further states, in part, that "design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design...."

Contrary to the above:

- (4) As part of Jumper Device Control Sheet No. 2-96-052, a temporary diesel generator was installed to provide power to safety-related loads and to allow for an extended outage of the normal emergency diesel generator (EDG) "B." However, the provisions for feeding the safety loads from the temporary diesel generator did not include consideration of protection and protective relaying features consistent with normal operation when using the safety-related diesel generator. Since the temporary generator step up transformer secondary winding was connected in delta, there was no source to detect a ground fault for protective relaying to operate, which differed from the grounding provided by the normal diesel generator.

The failure to include relevant protection requirements could result in undue exposure of the safety-related equipment while connected to the temporary diesel generator. The team concluded that the licensee had not conducted a complete engineering evaluation.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

This historic issue was a result of personnel error and inattention to detail such that a bypass jumper (2-96-052) installed a temporary diesel generator with a terminal voltage of 480 volt that was increased to 4160 volts using a transformer. The diesel generator was connected to a non-safety related bus (24A) via the "D" Circulating Water Pump breaker and could be aligned to the safety-related bus 24D via normal cross tie breakers. The diesel generator was installed as a defense in depth measure for shutdown risk and would only be used if the grid was lost (LNP), the permanent diesel generator failed, and the normal and emergency power sources from Unit 1 (Gas Turbine or Diesel Generator) were unavailable due to mechanical failure or bus outage (bus 14H).

Bypass Jumper 2-96-052 was written and reviewed with the knowledge that the same type of temporary Diesel Generator, with a terminal voltage of 4160 volts (no step-up transformer required), was installed previously in 1992 under Bypass Jumper 2-92-156. During the first installation, which was used to support the Steam Generator replacement, the coordination and grounding review were completed to determine if a ground detection scheme, which was installed within the Unit, should be used to trip the output breaker or just alarm. During that review process it was recommended that the ground scheme should not be used as a breaker tripping device but as an alarm only due to the possible nuisance tripping of critical power supply (last power supply in the defense in depth).

The review of previous installations, and the implication to the new breaker connection on the same bus (24A) as the earlier Bypass Jumper (2-92-156), should have been discussed in Bypass Jumper 2-96-052 and documented.

Corrective Actions and Results Achieved

The temporary Diesel Generator has been removed, therefore no additional actions are planned.

Corrective Action to Avoid Future Violations

The station procedure for performing temporary modifications, WC 10, has been revised to require a more extensive evaluation and documentation of the basis or justification for implementing temporary modifications to the plant.

Date When Full Compliance Will Be Achieved

NNECO is currently in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Violation "E" (50-336/98-201-05)

Restatement of the Violation 201-05, E.5

- E. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, "The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews..." It further states, in part, that "design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design..."

Contrary to the above:

- (5) Jumper Device Control Sheet No. 2-95-016, was for the replacement of EDG potential transformer fuses. Five 5-amp fuses of a different type and make were installed for "B" EDG potential transformers in place of the previous 6-amp fuses. The loading evaluation failed to consider actual loading, but instead, reflected on 40 percent of the fuse rating, which may not have been adequate. The selection of the fuse was justified on the basis that coordination was "not required." However, the fuse should have coordinated with the potential transformer high-voltage fuses and should also have provided transformer protection. There was no discussion concerning the presence of any downstream fuses with which the fuse should also coordinate. Also, there was no evidence that any required coordination under energizing inrush conditions was considered.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

A bypass jumper was used to resolve the associated 1995 NCR by implementing the change as a temporary modification. The temporary modification installed 5-amp fuses due to 6-amp fuses being unavailable. The design engineer failed to provide a more detailed technical justification for the selection of temporary fuses and the NCR should have formally documented a basis for the fuse size selection. The conclusion is that the fuses were sized based on the fact that the 6-amp fuses is 250% of the actual load of 2.4 amps. Use of the 5-amp fuses still leave a substantial capacity of 208% of the actual load.

The fuses on the secondary side of this potential transformer (PT) should coordinate with the fuses on the primary side and this should have been considered in the evaluation. In addition, the technical justification on NCR 295-049 failed to address fuse coordination under energizing inrush conditions. The engineer who prepared the NCR failed to thoroughly document that all the design parameters associated with the non-conformance were evaluated.

The review of the circuits supplied by these fuses indicates that the actual loads (i.e., Woodward Governor, Basler Regulator) have no inrush current. Fuse coordination should have been considered. However, should the governor or regulator fail, the diesel would be inoperable and the lack of coordination with the temporary fuses would not have any additional safety significant consequences.

Corrective Actions and Results Achieved

Based on the historical aspect of this violation, no corrective actions are specified for the personnel error failure. The temporary 5-amp fuses have been replaced (approximately three months after installation) with qualified 6-amp fuses that satisfy the original design basis.

Corrective Actions to Avoid Future Violation

The station procedure for performing temporary modifications, WC 10, has been revised to require a more extensive evaluation and documentation of the basis or justification for implementing temporary modifications to the plant.

Date When Full Compliance Will Be Achieved

NNECO is currently in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Violation "F" (50-336/98-201-06)

Restatement of the Violation 201-06, F.1

F. 10 CFR 50.59, "Changes, Tests, and Experiments," (a)(1) states, in part, that the holder of a license authorizing operation of a production or utilization facility may make changes in the facility as described in the safety analysis report...without prior Commission approval, unless the proposed change, test, or experiment involves...an unreviewed safety question and (b)(1) states, in part, that the licensee shall maintain records of changes to the facility. These records must include a written safety evaluation that provides the bases for the determination that the change, test, or experiment does not involve an unreviewed safety question.

Contrary to the above, the licensee made minor changes to the FSAR drawings in late 1997, but failed to perform safety evaluations pursuant to the requirements of (a)(i) as evidenced by the following examples:

- (1) FSAR Figure 11.01-04 Sheet 1, P&ID 25203-260211 Sheet 1, "Aerated Liquid Radwaste System," was revised by Maintenance Support Engineering Evaluation (MSEE) DCN DM2-00-1102-97, "Resolution of Drawing Discrepancies for Radiation Monitoring Loop RM-9116 (UIR 3389)." A written safety evaluation was not performed.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

DCN DM2-00-1102-97 involved minor changes to FSAR figures. While this DCN recognized that a FSAR figure change was involved, the safety evaluation screen for this DCN failed to conclude that a safety evaluation was required. This error was caused by an inadequate adherence to the 10 CFR 50.59 safety evaluation process.

Corrective Actions and Results Achieved

A review is being conducted to identify safety evaluation screens with a similar deficiency. The generic safety evaluation for minor changes to P&IDs will then be revised to clearly include these types of changes. The associated technical evaluation and safety evaluation screen will also be revised accordingly. These actions will be completed prior to entry into Mode 4 from the current shutdown.

Corrective Actions to Avoid Future Violations

A refined safety evaluation procedure, RAC 12, "Safety Evaluation Screens and Safety Evaluations," and improved training, which includes what constitutes a change to the FSAR, has increased the overall quality of safety evaluation screens and safety evaluations.

Also, as an interim measure, Engineering's Quality Review Board reviews all MSEEs.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown by completing the technical evaluation and revising the generic safety evaluation.

Nuclear Regulatory Commission Violation "F" (50-336/98-201-06)

Restatement of the Violation 201-06, F.2

F. 10 CFR 50.59, "Changes, Tests, and Experiments," (a)(1) states, in part, that the holder of a license authorizing operation of a production or utilization facility may make changes in the facility as described in the safety analysis report...without prior Commission approval, unless the proposed change, test, or experiment involves...an unreviewed safety question and (b)(1) states, in part, that the licensee shall maintain records of changes to the facility. These records must include a written safety evaluation that provides the bases for the determination that the change, test, or experiment does not involve an unreviewed safety question.

Contrary to the above, the licensee made minor changes to the FSAR drawings in late 1997, but failed to perform safety evaluations pursuant to the requirements of (a)(i) as evidenced by the following examples:

- (2) FSAR Figure 11.01-02, Sheet 1, P&ID 25203-26020, Sheet 2, "Aux Building Drains," was revised by MSEE DCN DM2-00-1104-97, "Drawing Update for Radiation Monitoring Loop RM-9049" (UIR 3352). A written safety evaluation did not envelope the change.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

The reason for this violation was personnel error since it was incorrectly determined that a generic safety evaluation applied. The drawing error was discovered during CMP. DCN DM2-00-1104-97 involved some minor changes to FSAR figures. These changes were thought to be bound by a previously approved generic safety evaluation (S2-EV-97-0204). However, a subsequent review determined that the changes are not completely bound by the generic safety evaluation.

Corrective Actions and Results Achieved

A review is being conducted to identify safety evaluation screens with a similar deficiency. The generic safety evaluation for minor changes to P&IDs will then be revised to clearly include these types of changes. The associated technical evaluation and safety evaluation screen will also be revised accordingly. These actions will be completed prior to entry into Mode 4 from the current shutdown.

Corrective Actions to Avoid Future Violations

A refined safety evaluation procedure, RAC 12, "Safety Evaluation Screens and Safety Evaluations," and improved training, which includes what constitutes a change to the FSAR, has increased the overall quality of safety evaluation screens and safety evaluations.

Also, as an interim measure, Engineering's Quality Review Board reviews all MSEEs.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown by completing the technical evaluation and revising the generic safety evaluation.

Nuclear Regulatory Commission Violation "G" (50-336/98-201-07)

Restatement of the Violation 201-07, G

- G. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, that activities affecting quality be prescribed by and accomplished in accordance with documented procedures appropriate to the circumstances.

SP-EE-261, "Design Standards for Modification of Control Panels at Connecticut Yankee, Millstone Units 1, 2, and 3," Attachment 2, Section 1.1, "Instrument/Display Labels," requires the use of a delimiter between the device designator (e.g., "TI" for temperature indicator) and instrument loop.

Contrary to the above, SP-EE-261 was not followed for changes made to control room panel labels implemented over an indeterminate period before April 20, 1998. Specifically, the delimiter was a dash for all non-RG 1.97 Post-Accident Monitoring (PAM) devices, and a color coded dot for PAM instruments. Some non-PAM indicators were color coded, and some PAM indicators had a black dash. Some indicators such as the nuclear instruments had color coded labels (i.e., "A," "B," "C," and "D") above the instruments rather than using a dot on the label. The control room label deviations from the standard was indicative of a failure to perform adequate HFE reviews for changes.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

The reason for this violation was Management's acceptance of low standards in that the control room panel label modifications failed to conform to SP-EE-261, "Design Standards for Modification of Control Panels at Connecticut Yankee, Millstone Units 1, 2, and 3." This specification, which delineates the labeling conventions of the control panels, did not preclude the same identifier from distinguishing between RG 1.97 instrumentation and Z1 and Z2 powered equipment.

Corrective Actions and Results Achieved

Prior to the issuance of this NOV, NNECO had identified corrective actions to annotate specification SP-EE-261 by distinguishing the labeling convention for RG 1.97 instrumentation from Z1 and Z2 powered equipment. Control Room nameplates, associated with RG 1.97, will be modified to conform to the updated labeling requirements of specification SP-EE-261. A design change has been approved and will address this and several other RG 1.97 issues affecting Control Room indicators.

Corrective Actions to Avoid Future Violations

The updating, annotating of SP-EE-261, and the implementation of the design change will prevent future violations.

NNECO has also devoted attention to significantly upgrade the programs, procedures and processes that are crucial to assure effective design control and configuration management in the future including the processes designed to implement the requirements of 10 CFR 50.59 and 10 CFR 50.71(e).

Date When Full Compliance Will Be Achieved

NNECC will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown by completing the RG 1.97 labeling modifications for Control Room nameplates as described in the violation.

Nuclear Regulatory Commission Citation "H" (50-336/98-201-08)

Restatement of the Violation 201-08, H.1

H. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that ...measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components."

Contrary to the above the following five **[four]** examples were identified where safety-related equipment was modified without ensuring the suitability of the new equipment for its intended use.

The following is one of the examples:

- (1) PDCR 2-039-94 modified the auxiliary feedwater automatic initiation system but did not ensure that the electromagnetic interference (EMI) generated by the new equipment did not adversely affect other safety-related equipment.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

The reason for this violation was historical personnel error since good engineering judgment was not used.

Corrective Actions and Results Achieved

An engineering evaluation pertaining to EMI/Radio Frequency Interference (RFI) emissions will be performed per specification SP-M2-IC-1010 prior to the replacement ICCMS being released to Operations. This evaluation will address the impact of exceeding MIL-STD-461C. As noted in the NOV, there is little safety significance associated with the lack of complete EMI/RFI testing on the auxiliary feedwater automatic initiation system (AFAIS). Additional electromagnetic compatibility (EMC) emissions testing results have been performed by the vendor that concludes the test results are within EPRI TR-102323 requirements. The vendor's evaluation will be reviewed by NNECO and incorporated into the specification for the Automatic Initiation Auxiliary Feedwater - SPEC 200 modification.

Corrective Actions to Avoid Future Violations

The Quality Review Board has been established as an interim measure to ensure engineering reviews of new design changes document the adherence to the plant's

design basis, including preparation or update of affected calculations to support technical justifications.

As noted in this inspection, NNECO's current design practice is to specify EMC requirements such as in Specification SP-M2-EE-032, Revision 3, "Specification for Repair of the Engineered Safeguards Actuation System (ESAS) Level 2 Undervoltage Logic."

Date When Full Compliance Will Be Achieved

NNECO is in full compliance with respect to the cited violation.

Nuclear Regulatory Commission Citation "H" (50-336/98-201-08)

Restatement of the Violation 201-08, H.2

H. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that ...measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components."

Contrary to the above the following five **[four]** examples were identified where safety-related equipment was modified without ensuring the suitability of the new equipment for its intended use.

The following is one of the examples:

- (2) Three non-quality assurance (QA) bushings were installed in 4.16 kV safety-related 4.16 Switchgear cubicle A407 for the "C" Service Water Pump at Emergency Bus 24D, Facility Z2, without performing adequate suitability of application evaluation for the non-QA equipment. The acceptance of the non-QA devices was performed on the basis of a review that considered only a few of the critical characteristics for establishing equivalency.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

The cause of the violation is procedural non-compliance. NNECO personnel upgraded non-safety related replacement parts using the incorrect process. Station Procedure NGP 3.05, "Non-Conformance Reports" was used rather than the applicable procedure NGP 6.11, "Commercial Grade Dedications" [NGP was previously NEO]. Use of the incorrect process resulted in the installation of non-safety related parts which were not inspected with sufficient rigor to verify all critical characteristics.

Corrective Actions and Results Achieved

The three non-quality assurance bushings will be replaced with safety related parts or full qualification will otherwise be restored under Appendix B requirements prior to entry into Mode 4 from the current shutdown.

Corrective Actions to Avoid Future Violations

Procedures supporting implementation of the Millstone Material, Equipment and Parts List (MEPL) Program requirements, installation of non-conforming materials, and commercial grade dedication activities have been strengthened since 1993 when the violation occurred. Controls currently in place as the result of process improvements prevent the upgrade and installation of non-safety related parts unless a commercial grade dedication has been performed.

Also, current controls associated with parts procurement precludes obtaining parts without appropriate design documentation.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown by either the replacement of the non-safety related parts with safety related parts or full qualification is otherwise restored under Appendix B requirements.

Nuclear Regulatory Commission Citation "H" (50-336/98-201-08)

Restatement of the Violation 201-08, H.3

H. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that ...measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components."

Contrary to the above the following five [four] examples were identified where safety-related equipment was modified without ensuring the suitability of the new equipment for its intended use.

The following is one of the examples:

- (3) PDCR 2-050-93, dated July 13, 1995, installed two safety-related isolating transformers in an alternate feed path to safety-related equipment but failed to evaluate the electrical circuit changes introduced by the transformers. Because of the addition of the new transformers, the circuit impedance was substantially changed, which would have an effect on the voltage regulation and the short circuit profiles. The lack of required evaluations and/or calculations could jeopardize the operation of both redundant safety divisions of vital ac power. While the main path of power would not be affected, both redundant alternate paths were affected.

Safety Evaluation (SE) No. SE-2-050-93, failed to include any objective evidence of an evaluation of the new failure modes introduced by the installation of two safety-related isolating transformers in alternate feed paths to safety-related equipment. For example, the SE Issue 3.2.1, "Effect on the probability that mitigating equipment will fail," was incorrectly annotated as "The credible failure modes are unchanged," which failed to recognize the fact that any failures associated with the new transformers would constitute new failure modes.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

This historic violation is the result of personnel error that resulted in the formal voltage drop and short circuit calculations not being performed. The Electrical, Controls, & Instrumentation (EC & I) Programs Detailed Review Checklist prepared by the Project Engineer incorrectly indicated that there was no impact on the steady state nor transient voltage studies. In addition, this checklist review indicates that "the isolating transformers have been sized to match the short circuit capabilities of the alternate sources." Engineering failed to formally document the basis for these positions.

The standards were not as stringent for preparing Safety-Evaluations (SE) in 1993 (when PDCR 2-050-93 was issued) as current expectations. Although this safety evaluation came to the correct conclusion, the Project Engineer who prepared the SE did not satisfactorily address all the effects (i.e. voltage drop and short circuit) on safety significant components due to the implementation of PDCR 2-50-93.

Corrective Actions and Results Achieved

A calculation, which will evaluate the adequacy of the alternate sources for inverters INV3 and INV4 (Voltage Drop for the 120 VAC Vital System), will be completed prior to entry into Mode 4 from the current shutdown.

A short circuit calculation will be prepared to verify that the transformers do not adversely impact the 120 VAC Vital Distribution System prior to entry into Mode 4 from the current shutdown.

If these voltage drop and short circuit calculations indicate that there is an adverse condition as a result of these isolating transformers, Safety Evaluation (SE) No. SE-2-050-93 will be updated accordingly.

Corrective Actions to Avoid Future Violation

Millstone Unit No. 2 is continuing efforts to raise the standards for preparing safety evaluations. Changes to RAC 12 and greatly enhanced training are additional measures that will improve performance in this sensitive area.

The Quality Review Board has been established as an interim measure to ensure engineering reviews of new design changes document the adherence to the plant's design basis, including preparation or update of affected calculations to support technical justifications. In addition as part of the Configuration Management Program, key calculations which support the design basis for Class 1E systems have been reviewed for accuracy, methodology, and correct design inputs.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown by completing the voltage drop and short circuit calculations.

Nuclear Regulatory Commission Citation "H" (50-336/98-201-08)

Restatement of the Violation 201-08, H.4

H. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that ...measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components."

Contrary to the above the following five **[four]** examples were identified where safety-related equipment was modified without ensuring the suitability of the new equipment for its intended use.

The following is one of the examples:

(4) PDCR 2-009-95 failed to provide an evaluation of impact of changing from an inverter type power supply to a transformer type power supply to safety-related circuits for the "A" and "B" Hydrogen Analyzer power circuits. These circuits were disconnected from VA10 and VA20 buses (fed from inverters) and reconnected to VA30 and VA40 buses (fed from transformers), to obtain higher short circuit current to provide for adequate coordination. The inverter type power supply is credited with a higher reliability, constituted by the dc battery source.

PDCR 2-009-95 **[PDCR 2-050-93]** also failed to provide an evaluation of impact of increasing the inverters frequency tolerance bandwidth from 1 percent to 2 percent, to provide objective evidence that indicated that the new frequency setting was tolerable and did not have any undesired effects in the operation of the connected safety-related instrumentation.

NNECO's Response

NNECO agrees with the cited violation.

Reason for the Violation

A historic personnel error which resulted in the failure to adequately document the technical basis was the reason for not preparing a fault current calculation for the 120V Vital System. The Electrical, Controls, & Instrumentation (EC & I) Programs Detailed Review Checklist for PDCR No. 2-009-95, incorrectly indicated that there was no impact on current studies, voltage profiles, or fault analysis. Although the 120 V Vital System was not adversely affected, the Engineering evaluation failed to formally document the basis for these positions and these omissions were not identified during the review process. Engineering standards and management's expectations were not as stringent during the preparation of PDCR No. 2-009-95 as today's requirements.

Safety Evaluation SE-2-050-93, Rev. 0, states that a review of the equipment supplied by the vital AC system indicates that the equipment (RPS, ESAS) are not frequency sensitive and that a 2% drift from 60Hz would have a negligible effect. A review performed by Design Engineering of the critical 120 VAC Vital Instrumentation Loads supplied by the inverter indicates that the RPS, ESAS, & Spec. 200 power supplies are not frequency sensitive (i.e. Most restrictive minimum frequency 50 Hz / maximum frequency 440 Hz). Operating these power supplies within their specified frequency requirements ensures that the connected loads perform as designed. This discrepant condition is the result of the lack of attention to detail, which resulted in not formally documenting the technical justification for the 2% frequency tolerance.

Corrective Actions and Results Achieved

A calculation will be prepared to document the basis for the available fault current on the 120V Vital System prior to entry into Mode 4 from the current shutdown.

The implementation of DCR No. M2-96051 "Hydrogen Monitoring / Post Accident Sampling System Modification" replaced the existing "A" and "B" Hydrogen Analyzers with the new Whittaker analyzers, which are powered from VA10 and VA20. The supporting design change package details for DCR No. M2-96051 provide an evaluation (including cable ampacity and voltage drop) of power circuits which supply these safety-related circuits. As a result the circuits in question were removed from the loading of Panels VA30 & VA40.

Corrective Actions to Avoid Future Violation

The Quality Review Board has been established as an interim measure to ensure engineering reviews of new design changes document the adherence to the plant's design basis, including preparation or update of affected calculations to support technical justifications.

Changes to the review and approval process as described in the DCM are much more stringent than processes that existed during original installation. The more stringent process will minimize similar violations in the future.

Date When Full Compliance Will Be Achieved

NNECO will be in full compliance with respect to the cited violation prior to entry into Mode 4 from the current shutdown and after the completion of the formal fault current calculation.

Docket No. 50-336
B17438

Attachment 3

Millstone Nuclear Power Station, Unit No. 2

Additional Items Which Are Not Regulatory Commitments

October 1998

Additional Items Which Are Not Regulatory Commitments

NNECO has conducted a thorough review of the ICAVP Tier 3 Inspection Report ⁽¹⁾ and has identified several items that will be tracked internally in our corrective action program, but are not considered to be regulatory commitments. These items and their associated section number are indicated below:

2.2.1.3

"The licensee's failure to identify correctly the root cause of the degradation of the service water pumps and to take appropriate corrective actions to preclude repetition does not meet the requirements of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." In response to this finding, the licensee generated condition report (CR) M2-98-1076 and committed to inspect all of the service water pumps before the Unit 2 restart."

NNECO's commitment regarding this item is specified in Attachment 1, Item Number B17438.03.

4.2.1.1

"The licensee made significant changes to ESFAS during the last few years. Most of these changes were to resolve initial design deficiencies such as a loss of a dc vital bus causing the loss of two of the four ESFAS sensor and instrument cabinets, and a single failure vulnerability in the AFW automatic initiation system (AFAIS). Additionally, the licensee committed to additional ESFAS modifications before startup as well as during the next refueling outage.

The AFAIS single failure vulnerability was identified to NRC in Licensee Event Report (LER) 94-15-00 dated June 17, 1994. The licensee committed to resolve the problem by the end of the next refueling outage."

The above action is not considered as a Regulatory Commitment. However, it will be tracked internally as a corrective action.

4.2.1.2

"This lack of complete EMC testing is similar to one for the inadequate core cooling monitoring system (ICCMS) replacement performed under DCR M2-96-077. As with the AFAIS upgrade, documentation addressed the susceptibility to EMI, but nothing supported the conclusion that the new system did not generate EMI which could affect

⁽¹⁾ E. V. Imbro letter to M. L. Bowling, "NOTICE OF VIOLATION AND INDEPENDENT CORRECTIVE ACTION VERIFICATION PROGRAM TIER 3 SPECIAL INSPECTION OF MILLSTONE UNIT 2 (NRC INSPECTION REPORT NO. 50-336/98-201)," dated August 12, 1998.

other equipment important to safety. 18767-ICE-373133, Rev. O, "Evaluation of the EMI/RFI Susceptibility of the Computer Products G2VX for Millstone Unit 2," addresses the ability of parts of the new system to operate in a normal environment; it did not address the generation and conduction of EMI.

When the team identified this, issue the licensee took prompt actions to ensure that this generated EMI/RFI will be-addressed in the upcoming ICCMS validation testing."

NNECO's commitment regarding this item is specified in Attachment 1, Item Number B17438.09.

4.2.1.3

"As a result of this team-identified issue, the licensee stated they planned to review all control room labels and ensure that they were consistent with the new labeling guidelines."

NNECO's commitment regarding this item is specified in Attachment 1, Item Number B17438.08.

4.2.1.4

"FSAR Table 7.5-3, Rev. 49, indicated that four channels were provided for most of these Category 1 instruments. However, the licensee determined that only two channels were required to be upgraded and the remaining two channels would remain isolated from safety-related instrument loop components. The 10 CFR 50.59 SE concluded that the reduction from four channels to two channels was not a USQ, and the licensing basis was that only two channels had to be safety-related. The licensee stated that the over commitment in the FSAR resulted from a sequence of administrative errors. The team found that having only two channels of safety-related displays was technically adequate but inconsistent with the approved licensing basis. The licensee stated they planned to address this issue in writing with the staff in the near future. After the staff reviews the submitted documents, a determination will be made if reducing the docketed correspondence of four PAM channels to two PAM channels was a USQ. This issue is identified as an Unresolved Item. (URI-50-336/98-201-13)"

The above action is not considered to be a Regulatory Commitment.

5.2.1.2

"However, the licensee stated that the verification process for calculations with multiple parts will be reviewed by the DCM working group and is being tracked by AR 98008242-01 to determine if this process should be strengthened."

The above action is not considered to be a Regulatory Commitment.

7.0

"The team had a subsequent meeting regarding the status of the MEPL with the licensee and concluded that MEPL could have a significant impact on the recovery of Unit 2. The licensee committed to develop an action plan and submit this plan to NRC. This issue is being closely monitored by the Millstone Unit 2 NRC Senior Resident Inspector and is identified as an Inspector Followup Item. (IFI 50-336/98-201-16)"

The above item was closed in NRC Inspection Report 50-336/98-212.