

Maine Yankee

RELIABLE ELECTRICITY SINCE 1972

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February 28, 1997

MN-97-39

MBS-97-04

UNITED STATES NUCLEAR REGULATORY COMMISSION

Attention: Document Control Desk

Washington, DC 20555

References:

- (a) License No. DPR-36 (Docket No. 50-309)
- (b) NRC Integrated Inspection Report 50-309/96-16, February 11, 1997
- (c) Confirmatory Action Letter (No. 1-96-015, Supplement No. 1), January 30, 1997
- (d) Confirmatory Action Letter No. 1-96-015, December 18, 1996
- (e) Maine Yankee Independent Safety Assessment Response, December 10, 1996
- (f) NRC Special Inspection Report 50-309/96-11, November 20, 1996
- (g) NRC Integrated Inspection Report 50-309/96-09, November 20, 1996
- (h) NRC Independent Safety Assessment Team Report, October 7, 1996
- (i) Maine Yankee Special Inspection Report 50-309/96-10, September 20, 1996
- (j) Maine Yankee February 7, 1997, response to NRC 10 C.F.R. § 50.54(f) Letter, "Adequacy and Availability of Design Basis Information," dated October 9, 1996.

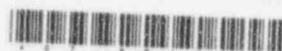
NRC Inspection Report (IR) No. 50-309/96-16 (Reference (b)) integrated, from an enforcement perspective, several issues that had been raised by the NRC during and subsequent to Independent Safety Assessment (ISA) Team inspections which occurred at Maine Yankee during the summer of 1996. The inspection reports considered in IR 96-16 included References (f), (g), and (i) above.

IR 96-16 also scheduled a predecisional enforcement conference on March 11, 1997, to discuss the apparent violations noted within. At the enforcement conference, Maine Yankee was to present information that when combined with existing NRC knowledge, would enable the NRC to make an enforcement decision based on a common understanding of the facts, root causes, missed opportunities to identify the apparent violations, corrective actions, significance of the issues, and the need for lasting and effective corrective action.

Maine Yankee has carefully considered the apparent violations scheduled for discussion during the March enforcement conference. Issues associated with these apparent violations could be divided into two primary categories: (1) specific apparent violations and (2) broad issues that involve the underlying causes associated with the specific violation issues. We believe, based on our review, that in this case there may be minimal value in conducting an enforcement conference on the specific apparent violations. Instead, we believe that a discussion of the broad issues and common causal factors that have evolved from the specific enforcement issues and their implications on future operation of Maine Yankee would form the basis for a more useful and informative meeting. We share our thought process, in this regard, below.

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Specific Apparent Violations

Maine Yankee and the NRC have exchanged information and views regarding broad root causes and specific issues during several public meetings, i.e., the August 23, 1996 preliminary exit meeting at the Maine Yankee plant; the October 10, 1996, public ISA exit meeting in Wiscasset, ME; and the February 4, 1997 Commission Meeting. Further, Maine Yankee positions regarding broad root causes and specific issues were provided in our December 10, 1996 response to the ISA report. Also, the February 7, 10 C.F.R. § 50.54(f) submittal described the steps Maine Yankee is taking to address design basis issues.

Providing this information to the NRC again appears to have limited merit considering the amount of information already provided to the NRC and preliminarily acknowledged by the NRC to be adequate for regulatory assessment. Therefore, all of these factors, collectively considered, minimize the need to hold an enforcement conference to discuss specific apparent violations.

In lieu of an enforcement conference on the detailed issues, Maine Yankee is providing as Attachment A to this letter, its detailed assessments of the apparent violations presented in IR 96-16. Generally speaking, Maine Yankee agrees with the apparent violations noted in IR 96-16. While, for some of the other apparent violations, there may be some differences of opinion, we do not believe that these differences impact the overall conclusions of IR 96-16. However, for accuracy purposes, we have provided clarifying information as part of our response to the apparent violation.

Attachment A is structured as a response to a Notice of Violation, consistent with 10 C.F.R. § 2.201. We have also provided, where appropriate, additional relevant information.

Broad Issues

While plant safety and strong operating performance rest upon a robust technical design, combined with well maintained and operated equipment, the underlying safety culture and programmatic integrity form the infrastructure for continued success.

At Maine Yankee, doubt has been cast on the quality of that infrastructure through internal and external evaluations such as the ISA report. Although there are many hardware changes that are ongoing at Maine Yankee to increase safety margin, the primary challenge facing the plant is replacing regulator and public doubt with confidence that problems will be identified promptly, understood deeply and resolved broadly.

Restoration of these necessary confidences begins with Maine Yankee's understanding of what happened in the past such that cultural and programmatic failure barriers are erected which guard against recurrence. We acknowledge that today, Maine Yankee is still discovering the full extent of previously inadequate barriers and will continue to identify issues warranting corrective action. Accordingly, we are devoting significant resources to revisiting the past of Maine Yankee as a critical element of our restart plan.

During the next several months, a dedicated group of diverse and knowledgeable personnel will be reviewing the reasons why Maine Yankee's performance declined. For example, this group will assess root cause evaluations associated with hardware and programmatic issues to identify commonalities and to determine if more fundamental causes are present. We will be reconsidering the generic implications of previously identified problems, and when appropriate, extend our review into previously unexamined areas. A key area of focus will be confirming the ability of the corrective action program to monitor the health of, and strengthen our safety culture.

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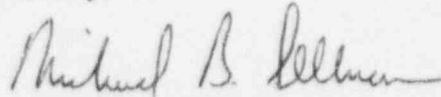
These activities will not be completed before the March 11, 1997, meeting. However, we expect to have made reasonable progress in understanding the extent of condition and will be able to relate it to and expand upon the basic causal factors identified in the ISA report. Overall, we believe that our presentation of broad issues coupled with feedback and insight from the NRC will lead to a constructive meeting, and a base upon which we can build in restoring confidence and restarting Maine Yankee.

Conclusion

We look forward to meeting with the NRC on March 11, 1997, and sharing our views on past problems and future initiatives.

We also are intent on resolving any outstanding concerns or questions you may have regarding the specific apparent violations provided in IR 96-16 and our Attachment A response. Please contact Mike Meisner or me should you require additional information or clarification regarding our response.

Sincerely,



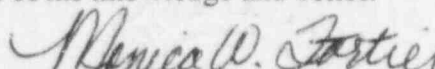
Michael B. Sellman
President, Maine Yankee

Enclosure

c: Mr. Hubert J. Miller
Mr. J. T. Yerokun
Mr. P. J. Dostie
Mr. Clough Toppan
Mr. Uldis Vanags
Mr. D. H. Dorman
Mr. Richard W. Cooper
Mr. John Zwolinski
Mr. Richard J. Conte

STATE OF MAINE

Then personally appeared before me, Michael B. Sellman, who being duly sworn did state that he is President of Maine Yankee Atomic Power Company, that he is duly authorized to execute and file the foregoing request in the name and on behalf of Maine Yankee Atomic Power Company, and that the statements therein are true to the best of his knowledge and belief.


Notary Public

Monica W. Fortier, Notary Public
State of Maine
My Commission Expires 5/3/98

Attachment A

I. Introduction

The following discussion provides Maine Yankee's response to the apparent specific violations in NRC Inspection Reports (IRs) 96-09, 96-10, 96-11, and 96-16. As previously noted, these responses contain information similar to what would be provided consistent with a 10 C.F.R. § 2.201 reply to a notice of violation. Therefore, the discussion of each violation includes: Maine Yankee's admission or denial of the apparent violation, a discussion of the apparent cause(s), safety significance, prompt corrective actions, and long term corrective actions. Additional long-term corrective actions will be discussed during the enforcement conference as they relate to the broad underlying causes and associated corrective actions. Maine Yankee requests that the NRC evaluate this information as part of its enforcement-related deliberations. In addition, Maine Yankee requests that the NRC incorporate by reference into this response, References (e) and (j). If the NRC has additional questions regarding apparent violation information, please contact Michael Meisner, Vice President, Licensing.

The following discussion generally follows the recommended apparent violation categories suggested by the NRC in IR 96-16. That is, the apparent violation discussions have been divided into five categories: (A) Safety-Related Inoperability, (B) Testing Inadequacies, (C) Safety Review Inadequacies, (D) Procedure Inadequacies and Non-Adherences, and (E) Corrective Actions. In that regard, Maine Yankee has addressed in this response, issues raised by the NRC in its inspection reports and additional issues believed to be relevant to enforcement deliberations. Attachment (B) provides a convenient correlation table regarding apparent violation subject, the relevant requirement, the ISA report, Maine Yankee response to the ISA Report, and correlating report/response pages.

II. Discussion of Apparent Violations

A. Safety-Related Equipment Inoperability

1. Environmental Qualification

Restatement of Violation Example:

Maine Yankee identified that the plant had been operating with several electrical components that were categorized as "important to safety," but were not qualified for post-accident submergence in accordance with 10 C.F.R. § 50.49. The NRC categorized this finding as an apparent violation of 10 C.F.R. § 50.49, Sections b.3 and e.6, which require post-accident monitoring equipment to be qualified to the environment in which they are expected to function, including submergence. The components addressed by this apparent violation are as follows:

<u>Component ID/Description</u>	<u>Elevation¹</u>	<u>Impacted System/Function</u>
1. DR-A-6 NAMCO Limit Switch (Ass'y)	11"	CI Valve Position Indication (RG 1.97)
2. LT-1213A 1154 Rosemount (Ass'y)	20"	SG Level;RPS and (RG 1.97)
3. LT-1213B Conax Connector/Pigtail	15"	SG Level;RPS and (RG 1.97)
4. LT-1213C 1154 Rosemount (Ass'y)	20"	SG Level;RPS and (RG 1.97)
5. LT-1213D EGS Connector/Pigtail	17"	SG Level;RPS and (RG 1.97)
6. LT-1214 EGS Pigtail	18 1/2"	SG Level;RPS and (RG 1.97)
7. LT-1223A 1154 Rosemount (Ass'y)	20"	SG Level;RPS and (RG 1.97)
8. LT-1223B 1154 Rosemount (Ass'y)	20"	SG Level;RPS and (RG 1.97)
9. LT-1223C EGS Connector/Pigtail	17 1/2"	SG Level;RPS and (RG 1.97)
10. LT-1223D 1154 Rosemount (Ass'y)	20"	SG Level;RPS and (RG 1.97)
11. LT-1224 EGS Pigtail	17 1/2"	SG Level;RPS and (RG 1.97)
12. LT-1233A 1154 Rosemount (Ass'y)	20"	SG Level;RPS and (RG 1.97)
13. LT-1233B 1154 Rosemount (Ass'y)	19 1/2"	SG Level;RPS and (RG 1.97)
14. LT-1233C 1154 Rosemount (Ass'y)	20 1/4"	SG Level;RPS and (RG 1.97)
15. LT-1233D 1154 Rosemount (Ass'y)	20"	SG Level;RPS and (RG 1.97)
16. LT-1234 EGS Pigtail	16 3/4"	SG Level;RPS and (RG 1.97)
17. PCC-A-252 Namco LS Pigtail	11"	CI Valve Position Indication (RG 1.97)
18. PCC-A-268 Namco LS Pigtail	3 1/2"	CI Valve Position Indication (RG 1.97)
19. PCC-A-300 Namco LS Pigtail	14 1/4"	CI Valve Position Indication (RG 1.97)
20. PD-A-122 Namco LS Pigtail	14 1/2"	CI Valve Position Indication (RG 1.97)
21. PDT-3001 Rockbestos Cable	1/2"	PITS, Sm-Brk LOCA, CI
22. PDT-3002 Rockbestos Cable	-1 1/2"	PITS, Sm-Brk LOCA, CI
23. PR-A-40 Namco LS Pigtail	10"	CI Valve Position Indication (RG 1.97)
24. PS-A-1 Namco LS/Pigtail	19 1/2"	CI Valve Position Indication (RG 1.97)
25. PS-A-2 Namco LS/Pigtail	19"	CI Valve Position Indication (RG 1.97)
26. PS-A-3 Namco LS Pigtail	2 1/2"	CI Valve Position Indication (RG 1.97)
27. PS-A-15 Namco LS/Pigtail/Cable	10 1/2"	CI Valve Position Indication (RG 1.97)
28. PS-A-20 Namco LS/Pigtail	12"	CI Valve Position Indication (RG 1.97)
29. PV-A-10 Namco LS Pigtail	11 1/2"	CI Valve Position Indication (RG 1.97)
30. SL-M-51 Limitorque LS Housing	18"	CI Valve Position Indication (RG 1.97)

Maine Yankee Position:

Maine Yankee acknowledges that based on the submergence level of record, a few components could become submerged prior to performing their intended safety function. To determine the full scope of components that could be affected, Maine Yankee has reconstituted the design basis submergence level of record and has concluded that the original 375,000 gallon value used to calculate flood level remains valid. Suggestions that larger volumes of water could be injected into the containment after an accident have been shown to be unlikely. This conclusion is based, in part, on the fact that specific operator action is required to go beyond the recirculation actuation signal point and operators are required to continuously monitor safeguards circuit performance during the implementation of Emergency Operating Procedure E-1, "Loss of Primary or Secondary Coolant" to ensure that core spray suction automatically switches to recirculation mode prior to the Refueling Water Storage Tank reaching a remaining volume of 100,000 gallons. The remaining 100,000 gallons would not automatically be discharged into the containment. Therefore, several of the initially identified submerged components would remain above the actual flood level. The unqualified equipment is limited to the few instances for which cables and/or components would extend below the 1.17 ft. elevation flood level or $\approx 14"$ elevation flood level.

¹ Elevation is for the main component in the assembly identified, i.e. LS, LT, connector, etc.

Cause(s):

Subsequent to Maine Yankee's identification of this issue, an extensive root cause investigation was performed on identified submergence issues. In addition, an assessment of the environmental qualification (EQ) program in general was performed by a team of industry EQ experts. In regard to the specific apparent violations, Maine Yankee concludes that the apparent cause was a failure to maintain a continuous EQ coordinator at Maine Yankee who had the responsibility and accountability for maintaining, upgrading, and promoting Station sensitivity to this level of detail for EQ compliance. The absence of a single, responsible individual, coupled with inadequate formality regarding the process for controlling EQ-related component attributes, such as submergence, during design change reviews and inadequate training in EQ issues (which could have compensated for the lack of formality), led to the failure to take submergence into account in these cases. The EQ expert team assessment identified similar weakness in the EQ program and provided recommendation for corrective action. However, the team found that the EQ program and processes at Maine Yankee encompassed each of the principle elements necessary for the implementation of a sound EQ program.

Safety Significance:

For those components that would become submerged prior to their performing their intended safety function, there were no actual safety consequences in that no event occurred which caused submergence of the components.

As the NRC may note from the list of affected components above, utilizing the 375,000 gallon value (which corresponds to $\approx 14''$), some equipment previously categorized as being submerged (i.e., Rosemount transmitters, EGS, connectors, some EGS connector pigtails, and Limitorque actuators) would, in hindsight, not be below the flood level.

In addition, Maine Yankee has identified that some equipment has been qualified for submergence as demonstrated in applicable vendors' qualification reports. This equipment consists of Rockbestos FWL III cable, which has been qualified and documented in Farwell & Hendricks Report No. 20254, Rev. 2. Since the EGS connector's pigtails are Rockbestos FWL III cable, they are qualified based on this finding. This additional information completes qualification for the entire Rosemount transmitter assembly. The Conax ECSA connector has been qualified for submergence as documented in Conax Report No. 1079, Addendum A, in Maine Yankee file QDR-1012.

For the remaining twelve components, which under the worst case scenario could be submerged, the operator would have redundant paths to complete the required safety functions as follows:

- For the Namco limit switch and connector seal assembly used for the containment isolation valve position indication, the operator would also have the redundant external containment isolation valve to perform the intended closure function. This valve is closed upon a containment isolation signal.
- The CI signal occurs very early in the accident scenario causing valve closure within one minute. The operator would be able to use the ECCS light box to confirm valve closure before submergence occurs. Once closed, there is no reason to reopen the valve.
- Notwithstanding the potential shorting of SOV 3501 (PS-A-15), position indication for containment integrity valves would be available to plant operators (post-LOCA) to evaluate whether appropriate valves have closed. Primary sampling valves which potentially lose control capabilities after reaching the closed position will not adversely affect post-accident sampling because such functions could be taken from the HPSI pump recirculation line.

Maine Yankee acknowledges that significant calculations were necessary to reach these conclusions.

Corrective Actions:

Maine Yankee prepared a justification for continued operation (JCO) evaluation for the components conservatively identified to become submerged during a design basis accident. This JCO evaluation, which was performed as Design Basis Screen (DBS) 96-044, was reviewed by the NRC who concurred this was acceptable (see IR 96-10, pp. 2-6).

Maine Yankee has filled the position of EQ Program Manager. The responsibilities of the EQ Program Manager include ensuring that the program is kept current and programs/processes are improved to better ensure that EQ is considered during all appropriate phases of plant maintenance, operation, and design modification. Controls for these programs/processes are to be in place by December of 1997.

Maine Yankee also will be relocating relevant components during the current outage. In addition, a project to re-verify the accuracy of the EQ Master List was initiated on February 19, 1997. Training of Plant Engineering Department (PED) and maintenance personnel on EQ is planned for Fall 1997.

2. Damper Failure Position

Restatement of Violation Example:

As a result of a Maine Yankee initiated design basis screen (DBS No. 96-051), it was discovered that dampers VP-A-56 and VP-A-57 may fail shut (in a non-conservative position) rendering the fans providing ventilation for LPSI and CS Pumps and Containment Spray Building exchangers potentially inoperable. This issue was originally assessed by Maine Yankee in 1991, but was inadequately resolved at that time. According to the NRC, this finding is an apparent violation of 10 C.F.R. Part 50, Criterion III, "Design Control."

Maine Yankee Position:

Maine Yankee acknowledges the apparent violation. While the failure mode evaluated in response to the 1991 issue (loss of control air to the controller) was appropriately evaluated, the 1991 evaluation did not adequately consider other potential failure modes.

Cause(s):

The apparent cause of this violation was the failure by the reviewer, in closing out the 1991 issue, to critically assess all potential damper failure mechanisms. This deficiency also occurred because of a weak engineering review process which failed to detect the inadequate review. Work overload also appears to have contributed to a perceived time pressure that limited the scope of the engineering review process.

Safety Significance:

This finding does not have actual safety consequences because the dampers were not called upon during the subject period. The potential safety consequence is that there could have been a loss of fresh air cooling to the ECCS components located in the Containment Spray (CS) building.

Corrective Actions:

Upon identification of this issue in 1996, Maine Yankee promptly evaluated under 10 CFR 50.59 and installed, a temporary modification to block the dampers and thereby remove the potential for unacceptable failure modes. The long-term resolution for engineering review process improvement is to apply formal review guidelines for evaluation of potential engineering-related safety issues. Maine Yankee instituted the Learning Process in January 1997, which significantly improves the process controls to be applied to all safety issues identified, and we believe will resolve this matter. Engineering will modify its self-assessment program to periodically evaluate the effectiveness of issue resolution in the Learning Process. This effort is scheduled to be completed by June 1997.

3. HPSI Operability (Cut Wire)

Restatement of Violation Example:

Maine Yankee testing activities revealed that the "A" High Pressure Safety Injection Pump (P-14A) would not start as required on an SIAS actuation signal because circuit wiring had been inadvertently cut. The NRC categorized this finding as an apparent violation of T.S. 3.9-2 No. 1.

Maine Yankee Position:

Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program, which did not include this circuit, satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in earlier NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is inadequate work controls coupled with incomplete periodic surveillance testing. It appears that work on wiring, which included this wire, was performed as routine maintenance and not under more rigorous control of a work order. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

This finding did not have actual safety consequences since the component was not called upon to operate during a design basis event. However, potential safety consequences were present since there was a loss of redundancy and the HPSI pump may not have automatically started. These potential consequences have very limited impact because operators, by training, would have verified that HPSI pumps were running and that the HPSI valve line-up had occurred during the early phase of a design basis accident. Also, consistent with training, the operators would be expected to manually start the pump within the first minute of the event. The slight delay in pump initiation would have a small adverse impact on the analysis results (LBLOCA, SBLOCA, MSLR). It is estimated that the analysis acceptance criteria would still be met.

Corrective Actions:

The cut wire was replaced. A search for other cut wires did not identify any similar deficiencies. In addition, a multidisciplinary root cause investigation team was convened to determine the extent of condition and the root cause. Subsequent to repair of the cut wire, the pump was successfully tested. The periodic surveillance testing requirements for the pumps also are being modified. This effort should be completed by the end of the current refueling outage.

4. Relief Valve Protection on PCCS

Restatement of Violation Example:

Maine Yankee identified that there was an absence of relief valve protection on the Primary Component Cooling (PCC) System (which had not been in place since initial commercial plant operation) which had the potential to render components cooled by the PCC System (i.e., "A" train ECCS and one of the EDGs) inoperable. Maine Yankee's assessment of a Westinghouse Safety Advisory Letter (WSAL) resulted in the identification of the original design discrepancy in protecting PCC from thermal hydraulic overpressurization. The NRC categorized this finding as an apparent violation of T.S. 3.6 and 3.12.

Maine Yankee Position:

Maine Yankee acknowledges that adequate overpressure protection had not been provided for the PCC system. Once Maine Yankee had identified this issue, prompt, conservative actions were taken by shutting down the plant and installing thermal reliefs on the PCC system. Subsequently, this issue was brought to the attention of the industry through Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions." As such, it appears to be a generic issue that arose from a common misunderstanding of design requirements and was shared by several older vintage plants. The failure to have this relief protection was not previously identified by Maine Yankee, the NRC, INPO or other assessment organizations as constituting a deficiency. However, Maine Yankee now recognizes that overpressure protection is necessary and, as discussed below, has taken necessary steps to address this matter.

Cause(s):

The failure to consider this transient extends back to original licensing. Although there are no records of the reasons for not including relief valves in the PCC system, it appears that the most likely reasons are: (1) a belief that pressure would not build up substantially due to the heating of entrained fluid because boundary valves were expected to leak (and would relieve pressure) and pipes were considered flexible and ductile enough to relieve any pressure buildup; and (2) the one time loading created by the post-LOCA environment created self-limiting secondary stresses which did not present credible fatigue or failure concerns. Concerns that designers of similar vintage plants may also have adopted these understandings led the NRC to issue its generic letter in 1996. Prior to this time, there had been no known regulatory attention to this matter.

Safety Significance:

This finding does not have any actual safety consequences in that the PCCS had not been overpressurized. However, the potential safety consequences exist from the potential overpressurization during a design basis accident, which could have resulted in the bursting of PCC piping. Combined with certain other unlikely events, the end result could have been to render components cooled by both PCC and SCC (i.e., Both trains of ECCS and both EDGs).

Corrective Actions:

An Engineering Design Change was implemented to install relief valves on the affected piping prior to plant restart from an unplanned outage in August 1996. In addition, screening evaluations were completed to determine the extent of the problem. Operability determinations were completed for all containment penetrations and 16 additional relief valves will be installed on containment penetration piping during the current refueling outage.

5. Control Room Ventilation Operability

Restatement of Violation Example:

The NRC identified that Maine Yankee failed to demonstrate that two trains of control room ventilation were operable prior to making the reactor critical in January 1996. This finding was categorized by the NRC as an apparent violation of T.S. 3.25.B.2.

Maine Yankee Position:

Maine Yankee agrees that it did not adequately demonstrate operability of two trains of control room ventilation prior to criticality in 1996. Although an appropriate process was utilized to evaluate the failed Control Room positive pressure surveillance test, the basis utilized in the evaluation for concluding that the condition was acceptable was faulted.

Cause(s):

The apparent cause of this violation is a failure to exercise adequate control over and communication with Yankee Nuclear Services Division (YNSD) regarding the control room envelope test results. Although Maine Yankee had measured a slight negative pressure in the control room envelope, YNSD focused on the impact of an increased unfiltered air infiltration rate on control room operator dose, while continuing to assume a slight positive pressure.

Safety Significance:

This finding did not have actual safety consequences because an event involving radiation dose to the operators did not occur during the period before a successful test was performed. The potential safety consequence of having the control room at a slightly negative pressure of 0.004 inches of water is that control room operator dose rates could have exceeded GDC 19 criteria.

Corrective Actions:

To improve Maine Yankee personnel ownership and accountability regarding calculations performed by YNSD, appropriate personnel have been notified that they are responsible and accountable for ensuring that YNSD performed calculations and recommendations are based on an accurate understanding of information provided by Maine Yankee. Also, Maine Yankee has informed YNSD that all calculations and analyses must contain a section which provides all critical assumptions and input information. As part of the larger resolution of Maine Yankee/YNSD interface concerns, YNSD engineers will be seamlessly integrated into the Maine Yankee engineering organization. In addition, Maine Yankee will confirm that for a representative sample of calculations performed by YNSD, in support of informal requests made by Maine Yankee, that the results have been appropriately utilized. This review will include validation of input assumptions and associated implementing documents. These process and interface improvements are expected to be completed prior to plant restart.

B. Testing Inadequacies

1. Diesel Generator Room Exhaust Fan Calibration

Restatement of Violation Example:

The NRC identified that thermostats for Emergency Diesel Generator Room Exhaust Fan FN-20A and FN-20B were not routinely calibrated. This finding was categorized by the NRC as an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XI, "Test Control."

Maine Yankee Position:

Maine Yankee agrees with this apparent violation.

Cause(s):

The apparent cause of this violation is that management did not ensure that the testing program included secondary equipment necessary to confirm that critical characteristics of the principal component (which was listed in technical specifications) was functional. Management's earlier attempt to broaden the calibration and test program beyond what was explicitly required by Technical Specifications was inadequate because the authority, responsibility and accountability for the overall calibration and test program had not been clearly established. Also, adequate resources, especially engineering support, were not devoted to the program and program oversight was not effective.

Safety Significance:

This deficiency did not have actual safety consequences, as upon identification of this concern, Maine Yankee calibrated the thermostats and found them to be within acceptable tolerance. The potential safety consequence of this violation is that the thermostats could have drifted out of calibration range and as a result, may not have detected excessive temperatures in the room. This theoretically could have resulted in the EDG overheating. However, EDG overheating is an unlikely event due to the fact that the maximum thermostat range is 95 degrees F. This value, even if reached by an out of calibration thermostat, would have resulted in air supply fans FN-20A and FN-20B starting and a rapid cooldown of the EDG ambient temperature.

Corrective Actions:

The thermostats were promptly and correctly calibrated per Procedure 6-30-4.2. Also, the thermostats have been added to the I&C Preventative Maintenance Program, in procedure 6-03-4.1 Preventative Maintenance, with a calibration interval of every second refueling. Management has reassessed its prior approach to technical specification compliance, and has initiated steps, as part of its response to Generic Letter 96-01, which will expand its interpretation of what component operabilities are necessary to support technical specification compliance. In sum, the Maine Yankee testing program will now include secondary components that also must be operable to support principal component operability. These test program improvements and associated calibration improvements are expected to be complete prior to plant restart.

2. Flow Control Valve Testing

Restatement of Violation:

Based on a Quality Programs Department (QPD) surveillance of the Operations ECCS Valve Database in May 1996 and as re-raised during a series of ISAT questions, Maine Yankee determined that testing had not been performed for PCC and SCC flow control valves PCC-T-19/20 and SCC-T-23/24. This finding was categorized by the NRC as an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XI, "Test Control."

Maine Yankee Position:

Maine Yankee agrees with this apparent violation.

Cause(s):

The apparent cause of this violation was erroneous interpretation of component function and Code requirements. Since the valves do not receive a safety actuation signal, it was apparently assumed by the preparers of the IST Program that the valve safety function was to modulate flow through the respective heat exchanger. There was a failure to recognize that the valves performed a "fail safe" function. By assuming that the valves did not have a required accident position, the valves were excluded from the IST Program based on ASME Section XI, IWV-1200(a)(2).

Safety Significance:

This violation does not have actual safety consequences in that an event did not occur as a result of the inadequate tests or during the period of inadequate testing. In addition, potential safety consequences were minimal as testing that was performed, subsequent to identification of the deficiency, confirmed functionality of the flow control valves. If functionality had not been demonstrated, the CCW control valves would have limited the heat removal capability of the CCWS and rendered the corresponding train of ECCS inoperable. This scenario may result in overheating of the CCW during a LOCA event. Since these valves continuously control CCWS temperatures and their performance is monitored on operator rounds, other accident scenarios with heat loads similar to, or less than, normal operations would not have been challenged.

Corrective Actions:

Promptly upon determining that a deficiency existed, PCC-T-19/20 and SCC-T-23/24 were full-stroke, open-tested. In addition, all plant control valves will be screened for similar conditions and all identified deficiencies will be resolved prior to plant startup. Also, the third Interval IST Program will be revised to include PCC-T-19/20 and SCC-T-23/24 prior to startup from the current refueling outage.

Future/ongoing actions, including improved systems training, is being developed for the Engineering Division and a two year rolling systems training process will begin the second quarter of 1997. Since improved design basis information could have helped to prevent this deficiency, Maine Yankee, as part of a long term design bases improvement effort, is updating/enhancing the existing design basis summary document for the PCC and SCC systems. In addition, a design bases summary document development effort has been revitalized and is planned for completion by June 1998.

3. Solenoid Valve Testing

Restatement of Violation Example:

Maine Yankee identified two solenoid operated valves, which control the operation of each excess flow check valve, that were not tested separately to verify operation. In addition, the three parallel actuation circuits for each Solenoid Operated Valve (SOV) were not separately verified and the operation of the manual close feature was not verified in a test procedure. This finding was categorized by the NRC as an apparent violation of T.S. 4.1.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not seize the opportunity to identify the potential inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the component was not called upon to operate. The potential safety consequences were minimal since the valves were subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the valves had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, the excess flow check valves may fail to close thus preventing isolation of a steam line break which could lead to an excessive cooldown of the reactor coolant system, possible return to criticality, and possible exceedance of the EQ analyzed condition. Many plants routinely calculate return to criticality for the MSLR analysis without significant offsite release.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the valves. In addition, the periodic testing program for these valves is being upgraded consistent with GL 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

4. Safety Injection Actuation System Permissive Testing

Restatement of Violation Example:

Maine Yankee identified that the SIAS permissive for feedwater trip system was not adequately tested as required by T.S. Table 4.1-2. This finding was categorized by the NRC as an apparent violation of Technical Specification 4.1.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the circuits were not called upon to operate. The potential safety consequences were minimal since the circuits were subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the circuits had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If the feed train trip were inoperable, coupled with a failure of the safety class main feedwater regulating valve closure, feedwater would continue to be supplied to a faulted steam generator which might cause an excessive cooldown of the reactor coolant system, possible return to criticality, and possible exceedance of the containment pressure and EQ analyzed conditions. Many plants routinely calculate return to criticality for the MSLR analysis without significant offsite release.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the SIAS permissive for the feedwater trip system. In addition, the periodic testing program for these circuits is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

5. Emergency Feedpump Circuit Breaker

Restatement of Violation Example:

Maine Yankee identified that emergency feedwater pump circuit breaker closure had not been tested. This finding was categorized by the NRC as an apparent violation of T.S. 4.1.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Safety Significance:

The potential safety consequences were minimal since the auto start signal was subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the automatic start feature had been unknowingly inoperable, the emergency feedwater pumps may have failed to automatically start on low steam generator water level. The original design of the plant did not include automatic initiation of the EFW pumps. There are proceduralized operator actions providing direction to manually initiate EFW on a loss of feedwater condition. Operators would have several minutes to manually initiate EFW to prevent dryout of the steam generators.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the pumps. In addition, the periodic testing program for these pumps is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

6. Swing Pump Testing

Restatement of Violation Example:

Maine Yankee identified that it had not been testing the dual function swing pump (P-61S) as a Low Pressure Safety Injection (LPSI) and Containment Spray (CS) pump for undervoltage and Safety Injection Actuation Signal actuation nor the automatic trip of swing pump P-61S when used as low pressure safety injection pump. These issues have been categorized by the NRC as an apparent violation of T.S. 4.1.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the pump was not called upon to operate. The potential safety consequences were minimal since the pump was subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the pump auto start/auto trip features were inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, operators would have been required to manually start/trip the pumps. Both of these actions are proceduralized in the EOPs. While this may have some impact on the licensing analysis results (LBLOCA and containment pressure analysis), core cooling/containment heat removal functions would be expected to be recovered.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the pumps. In addition, the periodic testing program for these pumps is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

7. Service Water Pumps P-29B and P-29C Testing

Restatement of Violation Example:

Maine Yankee identified that it had not been verifying that service water pumps P-29B and P-29C remain operating on the bus if they are the only available pumps in their train. The NRC categorized this finding as an apparent violation of T.S. 4.5.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the available pump feature was not called upon to operate. The potential safety consequences were minimal since the pumps were subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the pumps had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, operators would be required to manually start the service water pump. This action is proceduralized in the EOPs.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the pumps. In addition, the periodic testing program for these pumps is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

8. Primary Component Cooling Pump P-9B Testing

Restatement of Violation Example:

Maine Yankee identified that it had not been testing the primary component cooling pump P-9B as the preferred pump. This finding was categorized by the NRC as an apparent violation of T.S. 4.5.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the preferred pump feature was not called upon to operate. The potential safety consequences were minimal since the pump was subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the pump had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, operators would be required to manually start the PCC pump. This action is proceduralized in the EOPs.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the pump. In addition, the periodic testing program for this pump is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

9. Secondary Component Cooling Pump P-10B Testing

Restatement of Violation Example:

Maine Yankee identified that it had not been testing secondary component cooling pump P-10B as the preferred pump. The NRC categorized this finding as an apparent violation of T.S. 4.5.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was narrowly based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the preferred pump feature was not called upon to operate. The potential safety consequences were minimal since the pump was subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the pump had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, operators would be required to manually start the SCC pump. This action is proceduralized in the EOPs.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the pump. In addition, the periodic testing program for this pump is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

10. Main Feedwater Pump, Condensate Pump, Heater Drain Pump Testing

Restatement of Violation Example:

Maine Yankee identified that it had not been verifying, through testing, the tripping of each main feedwater pump, condensate pump and heater drain pump circuit breaker. The NRC categorized this finding as an apparent violation of T.S. 4.6.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the pump trip was not called upon to operate. The potential safety consequences were minimal since the tripping features were subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the feature had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If the feed train trip was inoperable, coupled with a failure of the safety class main feedwater regulating valve closure, feedwater would continue to be supplied to a faulted steam generator, which might cause an excessive cooldown of the reactor coolant system, possible return to criticality, and possible exceedance of the containment pressure and EQ analyzed conditions. Many plants routinely calculate return to criticality for the MSLR analysis without significant offsite release.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the pump trip feature. In addition, the periodic testing program for these pumps is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

11. Independent Testing of SIAS and UV Conditions

Restatement of Violation Example:

Maine Yankee identified that it had not been independently testing the high pressure safety injection HPSI pump start signals for safety injection (SIAS) and undervoltage conditions (impact on P-14A, P-14B, and P-14S). The NRC categorized this finding as an apparent violation of T.S. 4.1.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

This finding did not have actual safety consequences since the component was not called upon to operate during a design basis event. However, potential safety consequences were present since there was a loss of redundancy and the HPSI pump may not have automatically started. These potential consequences have very limited impact because operators, by training, would have verified that HPSI pumps were running and that the HPSI valve line-up had occurred during the early phase of a design basis accident. Also, consistent with training, the operators would be expected to manually start the pump within the first minute of the event. The slight delay in pump initiation would have a small adverse impact on the analysis results (LBLOCA, SBLOCA, MSLR). It is estimated that the analysis acceptance criteria would still be met.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the start signal. In addition, the periodic testing program for these pumps is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

12. Solenoid Valve Testing

Restatement of Violation Example:

Maine Yankee identified that it had not been verifying, during testing, the three parallel actuation circuits for each solenoid operated valve for each excess flow check valve. This finding appears to be a duplicate of Apparent Violation B.3

Maine Yankee Position:

See response to B.3.

Cause(s):

See response to B.3.

Safety Significance:

See response to B.3.

Corrective Actions:

See response to B.3.

13. Solenoid Valve Testing

Restatement of Violation Example:

Maine Yankee identified that it had not been verifying, during testing, the manual close feature for each excess flow check valve. This finding appears to be a duplicate of Apparent Violation B.3.

Maine Yankee Position:

See response to B.3.

Cause(s):

See response to B.3.

Safety Significance:

See response to B.3.

Corrective Actions:

See response to B.3.

14. ECCS Operational Test Recirculation Actuation System

Restatement of Violation Example:

Maine Yankee identified that it had not been testing the manual actuation capabilities for the ECCS Operational Test Recirculation Actuation System. This finding was categorized by the NRC as an apparent violation of T.S. 4.1.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was narrowly based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of a safety related component.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the components were not called upon to operate. RAS is an automatic action at Maine Yankee keyed on low RWST level. Therefore, for the design basis accidents, the manual RAS capability provided a backup to this automatic function. In the unlikely event that manual RAS was required, the potential safety consequences were minimal since manual actuation was subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the manual actuation mode had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, the EOPs direct the control room operator to manually align the valves.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the manual action capability. In addition, the periodic testing program for this circuit is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

15. Emergency Diesel Generator Testing Procedures

Restatement of Violation Example:

Maine Yankee identified that it had not been performing proper testing and/or calibration of the following safety-related or fire protection equipment:

- Safety-related electrical time-delay relays associated with the EDG load sequencer were not verified for proper operation and were not calibrated per the calibration program.
- Step 5.2.6 of Procedures 3.1.14A/B was incorrect because the sign-off for the twenty second start block for P-25C/A was listed in the procedure as 30 seconds was performed several times and the 10 second error in the timing sequence was never questioned.
- The motor-driven fire pump start permissive relay 62-P4 and the safety-related permissive relay 62-RAS to remove the low pressure safety injection pump trip 10 seconds after the recirculation actuation signal to allow manual restart of the pump was not tested. (Maine Yankee identified)
- For the 62-RAS permissive relay, Procedure 3.1.15.2 did not verify the trip block function of the 62-RAS timers. (Maine Yankee identified)

According to the NRC, this finding was an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XI.

Maine Yankee Position:

Similar to Example A.3 above, Maine Yankee acknowledges the apparent violation, which was identified by Maine Yankee as a result of its evaluation of an NRC question.

Cause(s):

The apparent cause of this violation is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the components were not called upon to operate. The potential safety consequences were minimal since the components were subsequently tested with satisfactory results. In hindsight, however, it could be postulated that if the components had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, portions of the diesel generator load sequencing may have been inoperable with a possible resultant overload of the diesel generator and possible loss of emergency power. For the 62-RAS permissive relay, which is not part of the diesel generator load shedding and sequencing circuits, it may be possible to start the low pressure safety injection pump(s) prior to the proper alignment of valves for recirculation, resulting in loss or partial loss of suction to the containment spray pumps and the high pressure safety injection pumps.

Corrective Actions:

Tests were promptly performed, with successful results, to confirm operability of the above components. In addition, the periodic testing program for these components is being upgraded consistent with G.L. 96-01 recommendations. Any additional required tests will be completed prior to plant startup.

16. Test Methodology Deficiencies

Restatement of Violation Example:

The NRC and Maine Yankee jointly identified the following test methodology inadequacies. These findings were categorized by the NRC as examples of apparent violations of T.S. 4.7:

- Charging/HPSI Pump Discharge Check Valves CH-10, 19, and 26 (Procedure 3.1.2.4 Quarterly Test)
- Electrical Feedwater Pump Discharge Check Valves EFW-15 and 314 (Procedure 3-1-22, Cold S/D Test)
- LPSI Pump Discharge Check Valves LPSI-50 and 51 (Procedure 3.1.20.2, Quarterly Test)
- PCC Pump Discharge Check Valves PCC-6 and 13 (Procedure 3.1.2.8, Quarterly Test)
- SCC Pump Discharge Check Valves SCC-7 and 14 (Procedure 3.1.2.7, Quarterly Test)
- Service Water Pump Discharge Check Valves SW-1, 4, 7 and 10 (Procedure 3.1.2.9)

Maine Yankee Position:

Maine Yankee agrees with the apparent violation examples. The deficiency common to each violation example involves the methodology used for verifying the closure of the discharge check valve on an idle pump when aligned in parallel with an operating pump. The test methodology did not properly verify that the valve was seated adequately such that the operating pump could perform its intended safety function.

The methodology erroneously verified that minimum pressure occurred upstream of the subject check valve. This approach was inadequate because the suction of the standby pumps are vented. Therefore, it was not possible to identify any pressure increase even if the check valve was leaking.

Cause(s):

The apparent cause of the violation involving the EFW check valves was inattention to detail regarding the ability to read a fifteen pound pressure difference on a 0-3000 pound gauge coupled with inadequate configuration knowledge regarding the proper methodology for verifying check valve operation. The commonality in the apparent cause for each of these check valve violations was inadequate system configuration knowledge and inadequate testing procedures. This inadequate test procedure contributor was compounded by the failure to detect the procedure deficiencies during the Plant Engineering review of the original procedures.

Safety Significance:

This issue did not have actual safety consequences since the check valves were never called upon to operate during a design basis accident. In addition, potential safety consequences were minimal because when properly tested, the check valves performed their intended safety function. If the check valves had not operated properly, a short cycling of the flow from the running pump could have depleted the overall delivered system flow.

Corrective Actions:

Once the NRC identified testing deficiencies with the EFW check valves, an extent of condition review was performed to determine whether other similar deficiencies existed. This review by Maine Yankee resulted in the identification by Maine Yankee of the other cited violation examples (and was documented as part of Technical Evaluation 149-96). All identified deficient check valve test procedures were reviewed and revised. In addition, affected check valves were re-tested utilizing new testing methods. Maine Yankee also is taking steps to hire a new, permanent IST Coordinator who will have clear responsibility and accountability for, and experience in, this type of activity.

Maine Yankee is developing a two year rolling systems training process for the Engineering Division with training to begin in the second quarter of 1997. Additionally, Maine Yankee is currently developing and staffing a system engineering group who will be responsible to review surveillance testing activities against system design and licensing bases. Clear management expectations have been established with regard to the content, quality, and ownership of Engineering Programs in order to address weaknesses in this area.

17. Fault Alarms Not Adequately Tested

Restatement of Violation Example:

The NRC identified four fault alarms in the safety-related ECCS system that were neither periodically tested nor had an established test procedure prescribing the necessary instructions to perform testing of these circuits. These findings were categorized as examples of an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XI.

- AOP 2-37.RH, Page 35 of 52, SIAS 86 Device Trip Path Fault Proc. No. 3-6.2.1.5.4, Safeguard Channel Calibration Safety Injection Actuation Signal.
- AOP 2-37.RH, Page 41 of 52, RAS 86 Device Trip Path Fault/Proc. No. 3-6.2.1.41, Indication for Safeguard Channel Calibration for RWST.
- AOP 2-37.RH, Page 48 of 52, CIS 86 Device Trip Path Fault/Proc. No. 3-6.2.1.5.2, Safeguard Channel Calibration Containment Isolation Actuation Signal.
- AOP 2-37/RH, Page 38 of 52, CSAS 86 Device Trip Path Fault/Proc. No. 3-6.2.1.5.3, Safeguard Channel Calibration Containment Spray Actuation Signal.

Maine Yankee Position:

Maine Yankee acknowledges that it has not tested the four fault alarms described above. The testing inadequacies were not identified by technical, quality, or safety review programs because there was a general belief at Maine Yankee that the testing program satisfied NRC requirements. Maine Yankee had interpreted its technical specifications narrowly, in that logic system operability was based on surveillances explicitly enumerated in the plant technical specifications. This belief was not disputed in NRC inspection report results or other forms of correspondence from the NRC. However, in hindsight, Maine Yankee acknowledges that its approach to this matter did not satisfy Maine Yankee or NRC expectations in that it did not identify the inoperability of annunciator components. Maine Yankee recognizes the advantages of including the verification of annunciator window activation in surveillance procedures as procedural enhancements. Maine Yankee will include annunciator window activation verification in its refueling interval surveillance procedures.

Cause(s):

The apparent cause of failing to include the annunciators as part of surveillance testing is the limiting of the scope of surveillance testing of logic circuits to those explicitly described in the technical specifications. This type of testing deficiency has recently been recognized by the NRC as an industry-wide generic issue in Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

Safety Significance:

There were no actual safety consequences regarding this violation in that the trip faults were not called upon to operate. The potential safety consequences were minimal since the annunciators are not relied upon for system operability. In hindsight, however, it could be postulated that if the trip fault annunciators had been inoperable, such a condition would not have been identified utilizing the testing that was being performed. If that were the case, a trip fault may have existed in the circuit which the operators would have recognized through visual verification of ESF status lights and to which they would have responded.

Corrective Actions:

Maine Yankee will include the verification of annunciator window activation in appropriate refueling interval surveillance procedures as procedural enhancements. This will be completed prior to the startup from the current refueling outage.

C. Safety Review Inadequacies

1. Service Water Temperatures

Restatement of Violation Example:

Maine Yankee identified through analysis that the CCW Systems would not support plant operation up to the Service Water temperature values in the UFSAR. The NRC categorized this finding as an apparent violation of 10 C.F.R. 50.59.

Maine Yankee Position:

Maine Yankee agrees with the apparent violation. Initial flow testing of the Service Water System in 1994 indicated lower service water flow than what was assumed in design basis analyses. Therefore, evaluations of the lower flow rates were performed as design basis screens to determine the effect on service water limits stated in the UFSAR and in operating procedures. As a result of these evaluations, service water temperature limits, more restrictive than those in the UFSAR, were incorporated into operating procedures while final analyses were being completed. However, the UFSAR was not revised during the reevaluation time period.

The final steps in the reevaluation process included flow tests of the component cooling water systems in their accident configurations. This occurred during the 1995 refueling outage. Subsequent to these tests, the affected calculations, which made up the ultimate heat sink analyses, were revised to incorporate the test results. While the ISA was in process, Technical Evaluation 121-96 also was in process. This effort already had planned on formally documenting test results and calculation revisions and modifying controlled documents, as appropriate. This effort would have included updating the UFSAR and performing any necessary 10 C.F.R. § 50.59 evaluations. The fact that the ISA was conducted while this effort was ongoing and prior to Maine Yankee having had the opportunity to complete its efforts was fortuitous. Technically speaking, however, at the time of the ISA, this effort had not yet been performed.

Cause(s):

The apparent cause of this violation is the failure to revise the UFSAR in a timely manner when more restrictive service water temperature limits were identified and incorporated into procedures.

Safety Significance:

There are no actual safety consequences regarding this violation because the CCW systems were capable of performing their intended safety function. The potential safety consequences arose from the possibility that the UFSAR values (which were less conservative than the procedure values) could have been used as a basis for other actions, which, in turn, could have placed the plant outside of its design basis.

Corrective Actions:

Technical Evaluation 121-96 was completed and the associated 10 C.F.R. § 50.59 determination along with identified UFSAR changes documented. These changes will be submitted with the next 10 C.F.R. § 50.71(e) UFSAR amendment (Revision 13). Additional UFSAR change process improvements are provided in section C.3 of this report.

2. Cross-Connecting Redundant 125 Vdc Busses

Restatement of Violation Example:

The NRC identified that Procedure 1-22-2, AC and DC Vital Bus Operation permitted cross-connecting redundant 125 Vdc vital buses for up to 72 hours during plant operation. The NRC concluded that this allowance was contrary to UFSAR, Appendix A, Criterion 39, Emergency Power for ESFs and therefore, is an apparent violation of 10 C.F.R. 50.59.

Maine Yankee Position:

Maine Yankee agrees with this apparent violation.

Cause(s):

This violation was caused by inadequate understanding of the design bases which led to the broader reinstatement of this cross-tie to provide flexibility in the conduct of maintenance. Until 1989, limited cross-connect was provided for in order to conduct maintenance on the battery charger and inverter. In 1989, a spare battery charger and inverter were installed and the cross-connect eliminated as being unnecessary. In 1996, concern over the loss of flexibility due to a loss of one of the redundant battery chargers and inverters led to the reinstatement and broadening of the cross-tie procedure. The focus on flexibility and the inadequate awareness of Criterion 39 led Maine Yankee to the conclusion that this scenario was consistent with the plant design basis.

Safety Significance:

This violation had no actual safety consequences because a cross-tie was not made. Also, potential safety consequences did not exist because it was not believed by plant staff that a cross-tie was acceptable while still considering both power supplies independent. The conditions under which a cross-tie would be made were carefully spelled out in procedures and limited to cases where the cross-tie would be highly unlikely to lead to a loss of dc power. Procedural precautions were intended to assure that before a live bus would be cross-tied to a dead bus, the operators would assure themselves that the fault on the dead bus would not also damage the live bus.

Corrective Actions:

Procedure 1-22-2, "AC&DC Vital Bus Operation" and AOP 2-13, "Loss of Vital DC Bus" were modified to remove the possibility of cross-tying busses while the reactor is critical.

3. UFSAR Inconsistencies

Restatement of Violation Example:

Maine Yankee identified UFSAR-related inconsistencies which included:

- 89 changes that required a 10 C.F.R. 50.59 evaluation or reviews to support the corrected text reflecting equipment and procedures that have changed from that described in the UFSAR; and
- 27 changes to the UFSAR that should have been made as a result of implementation of either Engineering Design Change Requests or Plant Design Change Requests that have already been implemented.

The NRC considered these findings to be apparent violations of 10 C.F.R. 50.59(b)(1) which requires that there must be written bases to support changes that are made to the facility or its operation which do not result in a Unreviewed Safety Question and 10 C.F.R. 50.71(e)(4) which requires periodic updates to the UFSAR.

Maine Yankee Position:

Maine Yankee agrees that the UFSAR has numerous inconsistencies and that some of these inconsistencies should have had accompanying 10 C.F.R. § 50.59 analyses. However, several of the inconsistencies clearly did not require a § 50.59 evaluation since they were editorial or clarifying changes to the UFSAR. The discovery of these deficiencies by Maine Yankee were the result of a plant self assessment to determine the accuracy of the UFSAR. As the NRC is aware, this issue has potential impact on the whole nuclear industry as indicated by the 10 C.F.R. § 50.54(f) letter sent to all Part 50 licensees in October 1996. As such, the fact that Maine Yankee had initiated a UFSAR review in the spring of 1995 indicates that it was proactive, and ahead of several industry utilities in identifying and reconciling its UFSAR problems without NRC prompting.

The 1995 review included an assessment of the UFSAR by organization personnel who were the most experienced and knowledgeable in the assigned UFSAR sections and the associated license and design bases as compared to the physical plant configuration. This effort will continue, as indicated in Maine Yankee's February 7, 1997 response to the October 9, 1996, 10 C.F.R. § 50.54(f) letter to Charlie Frizzle. Maine Yankee also notes that it should not be provided a disincentive for initiating this effort in 1995, which arguably was before the NRC's implementation of an Enforcement Policy provision for granting enforcement discretion for deficiencies identified through a docketed, formal process for identification and correction of UFSAR discrepancies, (Revision to Enforcement Policy, NUREG-1600, Published in Federal Register (61FR54461; 10/18/96)).

Cause(s):

Maine Yankee believes that the cause of this deficiency is similar to NRC findings that led it to issue to all Part 50 licensees, a 10 C.F.R. § 50.54(f) letter requesting information on the adequacy and availability of design basis information. That is, licensees appear to have varying interpretations of what information is required for inclusion in a UFSAR and what changes require a 10 C.F.R. § 50.59 evaluation.

Safety Significance:

The actual safety consequences of this violation is minimal. Information that was not updated in the UFSAR should have been reviewed as part of formal design change, engineering evaluation, and calculation preparation procedural requirements. However, it is apparent from several violations cited in IR 96-16, that the required review of information did not always occur. These procedures are being reviewed and process control weaknesses or inadequacies identified will be resolved prior to plant startup.

Corrective Actions:

In regard to the above, Maine Yankee's December 10, 1996, ISA response addresses, among other things, corrective actions being taken by Maine Yankee to improve its performance regarding the preparation of 10 C.F.R. § 50.59 evaluations and UFSAR updates. For example, the Configuration Management Improvement Initiatives Plan will ensure that license and design bases documents are re-established, and administrative controls are enhanced for maintaining plant configuration current with the license and design bases documents. Guidelines or checklists are being established to assist personnel in reviewing the license/design bases to assure completeness and consistency.

Also, an Engineering Division "expert team" has reviewed the UFSAR against guidelines, design bases, license bases (including license amendments), and engineering analyses. A second initiative is designed to maintain the UFSAR current through continued reviews of proposed changes by the "expert teams" and maintenance of the UFSAR in an electronic filing system to facilitate electronic searching and network distribution.

Regarding 10 C.F.R. § 50.59, process improvements are ongoing. Improved 50.59 evaluations are expected as a result of the use of enhanced inputs and assumptions processes such as the Safety Analysis Information Document (SAID) process. A centralized and serialized file for 50.59 evaluations has been established, separate from the parent documents, to improve accountability and retrievability and to ensure annual reporting requirements are met.

4. Negative Control Room Pressure Analysis

Restatement of Violation Example:

The NRC identified that Maine Yankee failed to provide an acceptable safety evaluation that provides the written basis that operation of the plant without both trains of the Control Room Building Air Supply (CRBAS) system demonstrating the capability to provide for positive control room pressurization is not a Unreviewed Safety Question (USQ). The NRC categorized this finding as a violation of 10 C.F.R. 50.59(b)(1).

Maine Yankee Position:

It appears that this violation is a restatement of Violation Example A.5, except from a 10 C.F.R. § 50.59 perspective. As such, please refer to that violation response for Maine Yankee's position, causes, assessment of safety significance, and corrective actions.

Cause(s):

See Maine Yankee response to Violation Example A.5.

Safety Significance:

See Maine Yankee response to Violation Example A.5.

Corrective Actions:

See Maine Yankee response to Violation Example A.5.

D. Procedure Inadequacies and Non-Adherences

1. Minimum Control Room Staffing

Restatement of Violation Example:

According to the NRC, Maine Yankee would have failed to meet procedural requirements for minimum control room staffing requirement in the event of a fire coincident with a medical emergency. The NRC categorized this finding as an apparent violation of T.S. 5.8.2

Maine Yankee Position:

Maine Yankee agrees with the apparent violation. When this issue was addressed in response to an event at Maine Yankee (described in Information Notice 91-77), our response did not address the full scope of potential scenarios. However, Maine Yankee had reasonable confidence that although procedures did not address the cited scenario, control room staffing would have been adequately maintained.

Cause(s):

The apparent cause of this violation is the failure by operations personnel to ensure that the cited scenario was adequately addressed by procedural controls.

Safety Significance:

This violation did not have any actual safety consequences in that a fire coincident with an injury did not occur. Potential safety consequences were minimal since Maine Yankee personnel, particularly Senior Reactor Operators, are aware of shift staffing requirements and would have prioritized their actions accordingly.

Corrective Actions:

Maine Yankee has procedurally transferred the responsibility for responding to a medical emergency from the Plant Shift Superintendent to Security. Fire Brigade Leader duties have been transferred from the Shift Operating Supervisor to a Control Room Operator. These actions will ensure adequate Control Room staffing in the event of a fire coincident with an injury. Maine Yankee also performed a review of other actions required by Control Room personnel and determined that there were no other similar conflicts.

2. Control Room Log

Restatement of Violation Example:

The NRC identified that control room operators did not adequately enter plant operational conditions into the control room log as required by Procedure 1-200-3, Operations Shift Records and Logs. This finding was categorized by the NRC as an apparent violation of T.S. 5.8.2.

Maine Yankee Position:

Maine Yankee agrees with the apparent violation.

Cause(s):

Inconsistent communication of management expectations regarding log keeping. In this regard, the interpretation of the terms "major equipment" and "significant change in status" used in the control room log procedure were not clearly understood.

Safety Significance:

This violation did not have actual safety significance in that it did not prevent operators from responding to a design basis event or from evaluating operating parameters. Log keeping is only one of the methods used by operators to track the status of equipment, e.g., shift briefings, surveillance procedures, shift turnovers, equipment operator (NPO) logs, etc..

Corrective Actions:

Management has clarified and communicated its expectations regarding log keeping. Logs will be periodically reviewed by management to ensure that its expectations continue to be met.

3. Operability Determination

Restatement of Violation Example:

The NRC determined that MY had incorrectly interpreted a T.S. requirement involving logic testing as required by T.S. 4.1-2.

The NRC determined that Maine Yankee had failed to perform an appropriate operability determination as required by Procedure 1-200-10, "Conduct of Operations," Section 4.13.5. This finding was categorized as an apparent violation of T.S. 5.8.2.

Maine Yankee Position:

Maine Yankee agrees with the apparent violation.

Cause(s):

The apparent cause of this violation is that Maine Yankee did not recognize that its testing methods were unsatisfactory even though they complied with specific requirements in plant technical specifications.

Safety Significance:

This finding did not have actual safety consequences since the component was not called upon to operate during a design basis event. However, potential safety consequences were present since there was a loss of redundancy and the HPSI pump may not have automatically started. These potential consequences have very limited impact because operators, by training, would have verified that HPSI pumps were running and that the HPSI valve line-up had occurred during the early phase of a design basis accident. Also, consistent with training, the operators would be expected to manually start the pump within the first minute of the event. The slight delay in pump initiation would have a small adverse impact on the analysis results (LBLOCA, SBLOCA, MSLR). It is estimated that the analysis acceptance criteria would still be met.

Corrective Actions:

Operation management has issued guidance clarifying the operability requirements associated with GL 96-01 review and testing. This guidance states, in part, that systems or components that do not meet GL 96-01 testing criteria will be considered inoperable until satisfactory test results are achieved.

4. Poor Work Practices

Restatement of Violation Example:

The NRC identified the following poor work practices which it categorized as examples of an apparent violation of T.S. 5.8.2:

- Failure to perform a vendor recommended magnetic particle inspection of used emergency feedwater pump diffusers prior to their reassembly;
- improper removal of a seismically qualified pipe support on a seal water line for Service Water pump P-29C by maintenance personnel on 8/13/96 without tagging out the pump or declaring the pump inoperable; and a
- lack of procedural detail for installation and control of fastener lockwire on six safety related components.

Maine Yankee Position:

While Maine Yankee agrees with the NRC that the apparent violation examples constitute poor work practices, it is not clear that they constitute a violation of Technical Specification 5.8.2. It is not clear that any violation would be appropriate, since the issues involved either vendor recommendations or inadequate procedures. Maine Yankee believes that any such violation could be more appropriately categorized as either inadequate procedures or a failure to follow procedures.

Cause(s):

The cause of the failure to perform a vendor recommended magnetic particle inspection of the used emergency feedwater pump diffusers prior to reassembly was due to an oversight when planning the work. This oversight was compounded by the fact that this activity was a recommendation and not a procedural requirement. P-25A was scheduled to have its pump internals replaced with a material not susceptible to diffuser wear problems. The work was performed and the upgraded materials installed. However, shortly after the pump was placed back into service, the rotor seized while troubleshooting an oil leak. Once the pump was again disassembled, it was determined that the new pump internals could not be used without additional repair.

As an interim measure to return the pump back to service as soon as possible, the old internals were reinstalled. Because the old internals were going to be replaced as an upgrade, not because they were degraded, disassembly, cleaning, inspection, and reassembly were the only activities deemed necessary at that time. Because of these factors, and the last minute decision to return the old internals to the pump, the vendor recommended NDE of the diffusers was overlooked.

The apparent cause of the improper removal of the seismically qualified pipe support was due to an inadequate pre-job briefing. This lead to a failure to adequately communicate to the crew that only pre-fabrication work was to be performed. Contributing to this error were weaknesses in the work control process.

The apparent cause of the missing fastener lockwire on six safety related components was inadequate procedural detail.

Safety Significance:

There were no actual or potential safety consequences of the above examples. No events occurred as a result of the alleged deficiencies. In addition, the impact of the deficiencies was potentially minimal in that no adverse impact on the health and safety of the public was evident. The vendor advised that the lockwires prevent tampering and ensure capscrew thread engagement is maintained if the capscrew pre-load is lost. Tampering has not been a problem at Maine Yankee. In addition, the capscrew preload was not lost. Regarding the in-core instrumentation (ICI), the lockwire is installed on the locknut, which provides stability to the ICI seal housing at the seal table. It is not a pressure boundary and therefore, no safety consequences could arise from its absence.

Corrective Actions:

Maintenance will perform a root cause evaluation to determine why the diffuser NDE was overlooked and what corrective actions should be taken to prevent recurrence. The pump maintenance procedure (5-9-3) has been revised to require NDE of cast iron diffusers during pump rebuild. In addition, new internals have been procured and will be installed prior to startup from the current outage. The new style (stainless steel) internals do not require NDE of the diffusers.

A root cause evaluation will be conducted to identify causal factors associated with the removal of the seismic pipe support on the SW seal water line. Corrections will be initiated accordingly. Regarding the lockwires, they were installed as required on RC-M-32 and the five ICI seal housings. Relevant procedures will be revised as necessary to ensure that RC-M-32 (and similar valves) cap screw pre-loads is maintained. These improvements will be provided prior to plant startup.

E. Corrective Actions (Identification, Timeliness, Adequacy)

1. CS Building Damper Corrective Actions

Restatement of Violation Example:

The NRC concluded that there was a lack of followup of the identification of damper concerns from 1991 and that the recent focus on problems with the Containment Spray (CS) building ventilation system did not result in identifying a vulnerability with the dampers. These findings were categorized by the NRC as an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XVI.

Maine Yankee Position:

Two issues in the ISA Report dealt with CS building ventilation; effective resolution of icing concern with HV-7, and the adequacy of a 1991 self-assessment issue regarding building dampers failure modes and effects. The latter matter is discussed in item A.2 "Damper Failure Position." Maine Yankee agrees with this violation.

Cause(s):

The apparent cause of the delay in HV-7 replacement involved engineering and capital resource availability, in addition to incorrect work prioritization.

Safety Significance:

This violation did not have actual safety consequences. The potential safety consequence is that there could have been a loss of fresh air cooling to the ECCS components located in the Containment Spray (CS) building.

Partial blockage of the HV-7 fresh air pathway was not likely to compromise the operability of ECCS components if they were challenged during cold weather conditions. Subsequent calculations have shown that outside temperatures of less than 70°F would not compromise operability even if the HV-7 pathway was not available.

Corrective Actions:

Upon identification of this issue in 1996, Maine Yankee promptly evaluated under 10 CFR 50.59 and installed, a temporary modification to block the dampers and thereby remove the potential for unacceptable failure modes. The long-term resolution for engineering review process improvement is to apply formal review guidelines for evaluation of potential engineering-related safety issues. Maine Yankee instituted the Learning Process in January 1997, which significantly improves the process controls to be applied to all safety issues identified, and we believe will resolve this matter. Engineering will modify its self-assessment program to periodically evaluate the effectiveness of issue resolution in the Learning Process. This effort is scheduled to be completed by June 1997. HV-7 was replaced under EDCR 96-33.

2. Submergence of EQ Components

Restatement of Violation Example:

The NRC concluded that EQ submergence issues represented a condition adverse to quality that went unrecognized by Maine Yankee and are an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XVI. This apparent violation appears to address the same issues raised through Apparent Violation A.1, previously discussed.

Maine Yankee Position:

See Maine Yankee's response to Apparent Violation A.1. It is not clear to Maine Yankee that restating the violation also as a corrective action violation is warranted. Since Maine Yankee had not identified this issue as a problem, it could not have taken appropriate corrective actions to prevent recurrence.

Cause(s):

See Maine Yankee's response to Apparent Violation A.1.

Safety Significance:

See Maine Yankee's response to Apparent Violation A.1.

Corrective Actions:

See Maine Yankee's response to Apparent Violation A.1.

3. Turbine Hall Flooding

Restatement of Violation Example:

The NRC concluded that Maine Yankee failed to identify and resolve, in April 1994, when the issue was raised as part of the Service Water System Operational Performance Inspection, that the plant was outside of its design basis. This finding was categorized as an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XVI.

Maine Yankee Position:

Maine Yankee agrees with the apparent violation.

Cause(s):

The apparent causes of this violation was failure to recognize that the issue involved a matter that was inconsistent with the plant design basis, and inadequate monitoring of the engineering backlog. As previously noted, Maine Yankee was aware that documentation for the change had not been completed. However, because of the perceived minimum safety significance, the issue was not given high priority.

Safety Significance:

This violation does not have any actual safety consequences since a flooding event that could challenge safe plant shutdown did not occur. Potential safety consequences arise from the unlikely event that a significant line break could occur without the operators being aware of such an event and therefore, not responding. In that unlikely scenario, the operability of equipment in the turbine hall (e.g., PCC/SCC pump motors) or adjacent areas (e.g., Control Room) could have been adversely affected.

Corrective Actions:

An evaluation of the IPEEE finding was performed promptly after Maine Yankee became aware of the violation. (Reference Design Basis Screen 94-009, Rev. 2A, Safety Issue Concern 96-003, and LER 96-008.) Operating restrictions were put in place to require roll up doors to be left open at both ends of the turbine hall. This would prevent any flooding of the above mentioned areas. In addition, permanent modifications have been completed which will protect safe shutdown equipment from a design basis flood in the turbine hall. Modifications include a passive flap in the north wall of the turbine hall, a paved drainage trench leading to the storm drain system, and a higher berm (6" versus 4") at the entrance to the Control Room. In addition, modifications to protect against flood sources considered beyond design basis (IPEEE concerns) are being developed, including new high level switches in the turbine hall to trip the circulating water pumps to protect against a major circulating water pipe failure new backflow preventers in the floor drain piping between the turbine hall and adjacent DG rooms and metal bands around service water expansion joints to reduce maximum leakage flow rates. These modifications will be completed prior to startup from the current refueling shutdown.

Maine Yankee instituted the Learning Process in January 1997, which significantly improves the corrective action process controls and prioritization for safety related identified issues.

4. ECCS Actuation Logic Testing

Restatement of Violation Example:

According to the NRC, the lack of complete testing of the ECCS actuation logic was an example of a significant condition adverse to quality that went unrecognized is an apparent violation of 10 C.F.R. Part 50, Appendix B, Criterion XVI.

Cause(s):

It appears that this violation is a restatement of the violations noted in Sections A.3 (HPSI cut wire), B.2 (ECCS Flow Control Valve Testing, B.4 (SIAS Permissive Testing), B.11 (Independent Testing of SIAS and UV conditions, B.14 (ECCS Operational Test Recirculation Actuation System, and B.17 (Fault Alarms Not Adequately Tested). Accordingly, please refer to those discussions for "cause" conclusions. Broader causes also will be discussed during the March 11, 1997, meeting.

Safety Significance:

See Maine Yankee's responses to Sections A.3 (HPSI cut wire), B.2 (ECCS Flow Control Valve Testing, B.4 (SIAS Permissive Testing), B.11 (Independent Testing of SIAS and UV conditions, B.14 (ECCS Operational Test Recirculation Actuation System, and B.17 (Fault Alarms Not Adequately Tested).

Corrective Actions:

See Maine Yankee's responses to Sections A.3 (HPSI cut wire), B.2 (ECCS Flow Control Valve Testing, B.4 (SIAS Permissive Testing), B.11 (Independent Testing of SIAS and UV conditions, B.14 (ECCS Operational Test Recirculation Actuation System, and B.17 (Fault Alarms Not Adequately Tested).

Restatement of Violation Example:

The NRC concluded that the AFW control system repetitive problems and the manner in which Maine Yankee addressed the negative control room pressure issues are apparent violations of 10 C.F.R. Part 50, Appendix B, Criterion XVI.

Maine Yankee Position:

Maine Yankee acknowledges that it did not resolve the AFW control system problems at an acceptable pace. Maine Yankee also acknowledges that it did not resolve the control room negative pressure issues when the YSND analysis was performed. However, it is not clear to Maine Yankee that its judgement regarding the AFW control system problems or the restatement of the Category A.5 and C.4 examples regarding the control room negative pressure issue also as a corrective action violation is appropriate. Since Maine Yankee did not identify the issues as deficiencies, it could not have taken corrective actions to prevent recurrence.

Cause(s):

The pace at which the AFW control system issues were resolved was a result of the level of priority attached to the issues based on a combination of safety significance and available resources.

See Maine Yankee response to Violation A.5 and C.4 for a discussion of the causes for the root issues.

Safety Significance:

The AFW control system issues did not have actual safety consequences since they did not result in the AFW system being unavailable when called upon. The AFW control system issues had minimal potential safety consequences because the UFSAR acknowledges that the system would not always be available in that equipment failures, routine maintenance, etc. could cause it to be out of service. However, Maine Yankee acknowledges that the availability value provided in the IPE of 91% was greater than the actual availability of 76% at the time of the ISA inspection.

See Sections A.5 and C.4 for appropriate corrective actions for the negative control room pressure issue.

Corrective Actions:

The P-25B pressure reducing valve controller has been changed to improve the response time and eliminate pressure cycling at the inlet to the governor valve. Testing, thus far, indicates a significant improvement compared to the previous instrument. Additionally, temporary instrumentation has been installed for performance monitoring and to evaluate the response of the new pressure controller. P-25B also has been screened to a(1) status pursuant to 10 C.F.R. § 50.65. This disposition was approved by the Maintenance Rule Oversight Committee. An extensive performance improvement plan has been developed and is in the process of being implemented.

III. Additional Perspectives

Maine Yankee offers the following discussion of additional perspectives for consideration in determining the appropriate enforcement response to IR 96-16.

A. Quality Assurance

The following discussion provides Maine Yankee's initial insights on the Quality Programs Department (QPD) which, although not cited for a specific violation, could be considered a barrier that did not perform as desired. QPD issues are just one aspect of the extent of condition issues that will be addressed as part of Maine Yankee's response to the December 18, 1996 Confirmatory Action Letter (as supplemented on January 30, 1997).

It is apparent to Maine Yankee that if QPD had been proactively identifying and aggressively seeking resolution of issues, more of the violations would have been self identified earlier. In that regard, the QPD has taken an introspective look at how it performs its day to day operations. Regarding the identified issues, the following broad categories of QPD-related problems, in part, were noted:

- QPD was too customer oriented with regard to Department Managers. In seeking manager acceptance, QPD inadvertently de-emphasized the importance of compliance with 10 C.F.R. Part 50, Appendix B-type standards. In addition, QPD frequently relinquished its position when challenged.
- The QPD audit process lacked depth in several areas and did not always focus on critical elements of the area being reviewed, e.g., design basis performance assumptions, elemental functions of structures, systems and components.
- QPD audit scope was too narrow. QPD personnel have not consistently pursued generic implications of their findings.

In response to the above, QPD has conducted a preliminary cause determination which identified apparent problems with management processes and people. This effort is scheduled for completion by April 1997. Compensatory measures are being implemented based on preliminary cause determination results to improve QPD's capability to identify and communicate significant issues more effectively. For instance:

- Develop and communicate a QPD Mission Statement that clarifies regulatory expectations of QPD individuals and moves to the forefront, compliance with 10 C.F.R. Part 50, Appendix B and related requirements.
- Revise the surveillance process to improve its interface with the inspection and audit processes. This will improve the ability to provide an integrated message to management.
- Develop the ability to trend data, real time, so that QPD can evaluate situations and become more anticipatory instead of reactionary.

B. Other Considerations

Maine Yankee has stated in this submittal that the individual violation examples had minimal actual and potential safety consequences. Maine Yankee acknowledges, however, that the collective impact of these deficiencies elevates the overall potential safety consequences since they could have further complicated operator actions necessary to mitigate the effects of a design basis accident. In addition, Maine Yankee acknowledges that the number of violation examples are regulatory significant regarding the overall operation of Maine Yankee.

We also note that significant NRC enforcement actions often are issued to send a "message" to the licensee or industry that certain conduct is unacceptable. From an industry perspective we believe that message has already been sent. Maine Yankee's issues have been the subject of several Commission meetings and generic industry correspondence for example, most recently (February 19, 1997), the Commission held a Commission meeting on lessons learned from the Maine Yankee and Millstone findings. From a Maine Yankee perspective, the message has been clearly sent and received. The confirmatory action letter, the "problem plant" classification and the associated Commission meeting (February 4, 1997) were unequivocal and forceful communications. We believe that there are also clear signs that MY has understood and is conscientiously acting upon the message. We intend to discuss those actions in more detail on March 11, 1997. Accordingly, significant enforcement action is not necessary to send a message to either Maine Yankee or the industry that the types of issues identified at the plant are unacceptable.

Maine Yankee has taken the unprecedented step of bringing in a new management team with proven capabilities to help turn around declining performance. We have already clarified operational and regulatory expectations, taken conservative steps to keep the plant shut down until all appropriate issues are addressed, and identified much of what it takes to return Maine Yankee to top performer status. We hope these, and other aggressive steps such as extending the current outage to address significant issues are a clear signal that we are serious in understanding and accepting our responsibilities.

APPENDIX B - CHART OF APPARENT VIOLATION ISSUES

Chart of Apparent Violation Issues

NRC designated categories: (1) safety-related equipment inoperability; (2) testing inadequacies; (3) safety review inadequacies; (4) procedure inadequacies and non-adherence; (5) corrective actions not identified, untimely, and/or inadequate.

NRC Category Example	Apparent Violation	IR Reference	MYankee ISA Response Section	Regulatory Requirement	ISAT Reference
Design and Configuration Control Problems Category A- Safety Related Equipment Inoperable					
A.1	Failure to qualify appropriate components for submergence conditions: 30 items	96-10, E2.2.6, p. 6	pp. 3-10, 4-5, Enclosure 6 E-17	50.49 Equipment Qualification Design Control	2.3.9.1
A.2	Potential for dampers to fail in a position that would have prevented the fulfillment of the safety function of LPSI and CS; FN-44A/B	96-09, E2.1.c, p. 13	pp. 3-6, 3-8, Enclosure 6 E-10	Crit III App. B Design Control	2.3.7.2
A.3	Failure of HPSI "A" to function as designed (cut wire)	96-11, M4.1.b, p. 9	pp. 3-9, 4-1	T.S. 3.9	3.2.4(4)
A.4	Lack of relief valve protection on PCCS had potential to render components cooled by system (A-ECCS and EDG) inoperable	96-16, E2.1.C	NONE	T.S. 3.6, 3.12	NONE
A.5	Failure to demonstrate that two trains of control room ventilation were operable prior to making reactor critical in 1/96	96-16, E3.2.b (11), p.20	p. 3-11, Enclosure 6 E-51	T.S. 3.25.B.2	3.2.4(2)

Chart of Apparent Violation Issues

NRC Category Example	Apparent Violation:	IR Reference	MYankee ISA Response Section	Regulatory Requirement	ISAT Reference
Category B - Testing Inadequacies					
B.1	Thermostats for fans FN-20A and FN-20B were not routinely calibrated	96-09, M3.2, p. 11	p. 4-1, Enclosure 6 E-47	Crit XI, App.B Test Control	3.2.4(8)
B.2	Failure to demonstrate functionality of PCC-T-19 and SCC-T-24	96-09, E2.2.c, p. 14	pp. 3-9, 4-1	Crit XI, App.B Test Control	2.2.2.6(3)
B.3	Two SOVs control operation of each excess flow check valves; however, testing did not separately verify operation of each SOV	96-11, E3.2.b (3), p. 5	pp. 3-9, 4-1	T.S. 4.1; Test Proc. 3-6.2.1.2.1	NONE
B.4	SIAS permissive for feedwater trip system not adequately tested as required by TS Table 4.1-2	96-11, E3.2.b (4), p. 6	pp. 3-9, 4-1	T.S. 4.1	NONE
B.5	EFWP circuit breaker closure not tested	96-11, E3.2.b (5), p. 7	pp. 3-9, 4-1	T.S. 4.1	NONE
B.6.a	Dual function swing pump P-61S not tested as LPSI and CS pump for UV and SIAS actuation	96-11, E3.2.b (1), p.4	pp. 3-9, 4-1, Enclosure 6 E-49	T.S. 4.1	3.2.4(4)
B.6.b	Automatic trip of swing pump P-61S, when used as low pressure safety injection pump not tested	96-11, E.3.2.b (6), p. 8	pp. 3-9, 4-1, Enclosure 6 E-49	T.S. 4.1; Procedure 3.1.15.2	NONE
B.7	Service water pumps P-29B and P-29C not verified to remain operating on the bus if only available pumps in their train	96-11, E3.2.b (2), p. 5	pp. 3-9, 4-1	T.S. 4.5	NONE
B.8	PCC pump P-9B not tested as preferred pump	96-11, E3.2.b (2), p. 5	p. 4-1	T.S. 4.5	NONE

Chart of Apparent Violation Issues

NRC Category Example	Apparent Violation	IR Reference	MYankee ISA Response Section	Regulatory Requirement	ISAT Reference
B.9	SCC pump P-10B not tested as preferred pump	96-11, E3.2.b (2), p. 5	p. 4-1	T.S. 4.5	NONE
B.10	Testing did not verify tripping of each MFWP, CP, and heater drain pump circuit breaker	96-11, E3.2.b (4), p. 6	pp. 3-9, 4-1	T.S. 4.6.D.1.a	NONE
B.11	HPSI start signals for SIAS and UV conditions not tested independently P-14A, P-14B, P-14S	96-11, E3.2.b (1), p. 4	pp. 3-9, 4-1	T.S. 4.1	3.2.4(4)
B.12	Three parallel actuation circuits for each SOV not separately verified	96-11, E3.2.b (3), p. 6	pp. 3-9, 4-1	T.S. 4.1; Test Proc. 3-6.2.1.2.1	NONE
B.13	Operation of the manual close feature is not verified in a test procedure.	96-11, E.3.2.b(3), p.6	pp. 3-9, 4-1	T.S.4.1, Test Procedure 3- 6.2.1.2.1	NONE
B.14	Manual actuation not tested for ECCS Operational Test Recirculation Actuation System	96-11, E.3.2.b (6), p. 8	pp. 3-9, 4-1, Enclosure 6 E-42	T.S. 4.1; Procedure 3.1.15.2	3.2.4(9)
B.15	(i)Time-delay relays for EDG load sequencer not verified for proper operation and not in calib. prog.; (ii) procedure incorrect; (iii) MD fire pump start permissive relay 62-P4 not in calib prog. and (iv) SR permissive relay 62-RAS (LPSI) procedure did not verify trip block function of 62-RAS timers	96-16, M1.2.b (2) (i), p. 6	pp. 3-9, 4-1, Enclosure 6 E-37	Crit XI; Proc 3.1.14A/B, step 5.2.6; Proc. 3.1.15.2 (LPSI)	NONE

Chart of Apparent Violation Issues

NRC Category Example	Apparent Violation	IR Reference	MYankee ISA Response Section	Regulatory Requirement	ISAT Reference
B.16	Test methodology def. (i) check valve EFWS (ii) chg/HPSI Pp disch chk CH-10, 19, 26 (iii) Elec. EFW Pp disch chk EFW-15, 314 (iv) LPSI Pp disch chk LPSI-50, 51 (v) PCC Pp disch chk PCC-6-13 (vi) SCC Pp disch chk SCC-7, 14 (vii) Svc Wtr disch chk SW-1, 4, 7, 10	96-16, M1.2.b (2)(iii), p. 7	p. 4-1,	T.S. 4.7; Crit XI; Procs 3.1.2.4 qtrly test; 3-1-22 cold s/d test; 3.1.20.2 qtrly test; 3.1.2.8 qtrly test; 3.1.2.7 qtrly test, 3.1.2.9	NONE
B.17	Alarm response procedures and corresponding testing procedures failed to provide requisite testing (i) SIAS 86 Device Trip Path Fault, Safeguard Channel Calibration Safety Injection Actuation Signal; (ii) Indication for Safeguard Channel Calibration for RWST; (iii) Safeguard Channel Calibration Containment Isolation Actuation Signal; (iv) Safeguard Channel Calibration Containment Spray Actuation Signal	96-16, M1.2.b (2)(iv); p. 8	pp. 3-9, 4-1 Enclosure 6 E-44	Crit XI	NONE
Category C - Safety Review Inadequacies					
C.1	Inability of SW system to support plant operations up to UFSAR temp values without appropriate change in place	96-16, E3.2.b (2), p.16	p. 3-11, 3-12	50.59	2.2.2.6

Chart of Apparent Violation Issues

NRC Category Example	Apparent Violation	IR Reference	MYankee ISA Response Section	Regulatory Requirement	ISAT Reference
C.2	Inadequate 50.59 review and procedure allowing for cross-connecting redundant 125 Vdc busses for up to 72 hrs during plant operation, contrary to UFSAR.	96-16, E3.2.b (8), p.18	Enclosure 6 E-4	50.59; Proc 1-22-2; UFSAR Appendix A, Criterion 39, "Emergency Power for ESFs"	2.3.8
C.3	89 procedure changes needed 50.59 evaluation or reviews to support the corrected text; 27 changes to UFSAR that should have been made as result of implementation of EDCR or PDCR already implemented — inadequate written bases that changes made to facility or its operation do not result in USQ and UFSAR update requirements	96-16, E3.2.b (9), p.19	§ 4.3	50.59(b)(1), 50.71(e)(4)	2.4
C.4	Failure to provide acceptable safety evaluation that provides the written basis that operation of the plant without both trains of the CRBAS system demonstrating the capability to provide for positive control room pressurization is not a USQ	96-16, E3.2.b (11), p.21	§ 4.3	50.59(b)(1)	NONE
Category D - Procedure Inadequacies & Non-Adherence					
D.1	MY would have failed to meet procedural requirements assuming that TS minimum staffing requirements with a fire coincident with a medical emergency	96-16, O4.1.b, p. 2	Enclosure 6 O-16	T.S. 5.8.2 Proc. 1-200-10 Proc. 1-26-4	3.1.1.2

Chart of Apparent Violation Issues

NRC Category Example	Apparent Violation	IR Reference	MYankee ISA Response Section	Regulatory Requirement	ISAT Reference
D.2	Failure of control room operators to adequately enter plant operational conditions into control room log	96-16, O4.2.b, p. 2	Enclosure 6 O-36	T.S. 5.8.2 Proc. 1-200-3	3.1.2.1
D.3	Failure of MY to perform an appropriate operability determination	96-16, O4.3.b, p. 3	NONE	T.S. 5.8.2 Proc 1-200-10	3.1.2.5
D.4	Instances of poor work practices re (i) failure to perform vendor recommended magnetic particle inspection of used EFWP diffusers prior to reassembly as part of 1995 overhaul of P-25A EFW pump; (ii) improper removal of seismically qualified pipe support on seal water line for SW pump P-29C on 8/13/96 w/o tagging out pump or declaring inop; (iii) lack of procedural detail for installation and control of fastener lockwire on 6 SR components	96-16, M1.1.b, p. 5	Enclosure 6 M-14, M-50, M-47	T.S. 5.8.2, Proc 0-16-3	(i) 3.2.3.(1) (ii) 3.2.3.(2) (iii) 3.2.3.(4)
Category E - Corrective Actions Not Identified					
E.1	Containment Spray Building - Ventilation design that relied on a non-safety related source of instrument air.	96-16, E8.1.b (2)(i); p.22	pp. 3-6, 3-8, 3-9	Crit XVI	2.3.7.2, 3.3.1, 4.2.2
E.2	EQ submergence	96-10 (see above); 96-16; E.8.1.b (2)(iii); p. 23	pp. 3-10, 4- 5, Enclosure 6 E-17	Crit XVI	NONE

Chart of Apparent Violation Issues

NRC Category Example	Apparent Violation	IR Reference	MYankee ISA Response Section	Regulatory Requirement	ISAT Reference
E.3	SWS Operational Performance Inspection performed by MY 1n '94 identified turbine hall flooding issue (scheduled to be addressed in 6/97). April '96 IEEE showed that plant was outside design basis for turbine hall flood. Issue could have been ident. And resolv. In '94	96-16; E8.1.b (2)(iv); p. 23	pp. 3-6, 3-10	Crit XVI	4.2.2
E.4	Lack of complete testing of ECCS actuation logic	96-11; 96-16; E8.1.b(3); p.23	pp. 3-9, 4-1	Crit XVI	4.1
E.5.a	AFW control system	96-16, E3.1.b(4); p.23	p. 3-8, Enclosure 6 M-22	Crit XVI	4.2.2
E.5.b	Negative control room pressure	96-16, E.8.1.b(4); Pg. 23 E3.2.b(11) Pg. 20	p. 3-11, Enclosure 6 M-51	Crit XVI	NONE