DCS

VERMONT YANKEE
NUCLEAR POWER CORPORATION

Ferry Road, Brattleboro, VT 05301-7002

REPLY TO
ENGINEERING OFFICE
580 MAIN STREET
BOLTON, MA 01740
(508) 779-6711

September 23, 1996
BVY 96-107

James Lieberman
Director, Office of Enforcement
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

References: (a) License No. DPR-28 (Docket No. 50-271)
(b) Letter, USNRC to VYNPC, "Notice of Violation and Proposed Imposition of Civil Penalty," NVY 96-141, dated August 23, 1996

Subject: Reply to a Notice of Violation - Inspection Report No. 50-271/96-07

Violation

10 CFR Part 50, Appendix K, Section D.1, Single Failure Criterion, requires, in part, that an analysis of possible failure modes of Emergency Core Cooling System (ECCS) equipment and of their effects on ECCS performance must be made. In carrying out the accident evaluation, the combination of ECCS subsystems assumed to be operative shall be those available after the most damaging single failure of ECCS equipment has taken place.

Contrary to the above, prior to April 26, 1996, the licensee did not perform an analysis of possible failure modes of ECCS equipment and of their effects on the ECCS performance that included an analysis of the most damaging single failure vulnerability of the ECCS equipment for certain loss of coolant accidents (LOCAs). Specifically, LOCA analyses performed for operating Cycles 17 and 18 by licensee staff, and the LOCA analyses performed by contractor (General Electric) staff for Cycle 16, and earlier, (performed pursuant to 10 CFR Part 50, Appendix K) did not evaluate or acknowledge the single failure vulnerability that existed for certain loss of coolant accidents. In particular, for certain intermediate or small break LOCAs, a single failure vulnerability existed since 1974 in that for each train of the Residual Heat Removal (RHR) System, the two pumps per train were powered from separate emergency diesel generators (EDGs), and the minimum flow valve for the train, which was normally closed, was powered from one of those EDGs. A loss of the EDG that powered the minimum flow valve for that train would disable not only the RHR pump powered by that same EDG, but also could result in damage to the RHR pump powered by the other EDG because of the lack of minimum flow for pump cooling. (01013)

This is a Severity Level III violation (Supplement I); Civil Penalty - $50,000

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Response:

1) Admission of the Violation

Vermont Yankee does not contest this violation. As described in Reference (b), Vermont Yankee self identified the single failure vulnerability in April 1996 as part of its Appendix R review.

2) Reason for Violation

The root cause of this event was an inadequate design/single failure evaluation performed in support of a design change implemented in 1974. This change cross powered the RHR pumps to provide additional safety margin when a safety class electrical bus was inoperable coincident with a loss of coolant event. The evaluation failed to identify the potential loss of RHR pump minimum flow protection created by the design change for certain intermediate and small break loss of coolant accident (LOCA) scenarios. Vermont Yankee acknowledges that in addition to the root cause of this violation there were a number of other opportunities to identify the condition sooner. The corrective actions to remedy these missed opportunities were presented to your Staff at the predecisional enforcement conference on July 23, 1996 and are discussed below.

3) Corrective steps taken and the results achieved

a) Vermont Yankee has completed additional training of its Design Engineering staff in the areas of root cause analysis, missed opportunities and the need for comprehensive reviews of operating experience reports. We expect to complete similar training for the balance of the engineering organization by June 30, 1997.

b) We have completed a review of the current design change process and have confirmed that our current procedural guidance contains the controls necessary to ensure that reviews are broad in scope and comprehensive in coverage.

c) We performed an engineering evaluation to assess the safety significance of this finding. We determined that no significant safety concern existed. Using pump performance data from available industry sources, including the RHR pump vendor, we determined that there was no immediate operability concern. The results of this operability determination were documented and reviewed by the Plant Operations Review Committee. The revised LOCA analysis demonstrates, without taking credit for RHR system availability, that the integrated performance of the Core Standby Cooling Systems provides sufficient and timely core cooling in the event of a Loss of Coolant Accident.

d) We performed a 10CFR50.59 evaluation and a procedure change to operate with the minimum flow valves normally open. A new LOCA analysis determined that this mode of operation was acceptable and the valves were placed in the normally open position on April 28, 1996.

e) We reviewed plant programs to ensure that the correct position of the minimum flow valves was reflected in each program. We identified one program (Appendix J) which we will revise to incorporate the change in valve position. This change will be included in the Appendix J Program update committed to in LER 95-01.

f) We have formally re-examined the emergency core cooling systems for single failure vulnerabilities. This analysis is currently being independently reviewed. The initial results identified no additional vulnerabilities. We expect to complete the final report by December 31, 1996.

4) Corrective Steps that will be taken to avoid further violations

a) We will update our RHR system piping diagrams and the affected FSAR sections regarding the minimum flow valve position, minimum flow valve design basis and the LOCA analysis scenario. Per 10CFR50.71, we will incorporate this revised information into our 1997 FSAR update, which is in progress and will be submitted within 6 months following our present refueling outage.

b) We will perform two self-assessments related to this violation. Our engineering drawing corrective update process will be examined to identify and correct any weaknesses and provide a position on the proper use of drawings for design control. Our Operating Experience review process will be examined to identify improvements. The expected completion date for both self-assessments is December 31, 1996.

c) Vermont Yankee Design Engineering has developed a draft department procedure for performing reviews and evaluations of operating experience reports and other issues not currently covered by an existing formal process. We will use this draft procedure on a trial basis throughout the remainder of 1996 and formally implement the procedure by January 3, 1997.

d) Vermont Yankee has accelerated its Design Basis Documentation (DBD) Program for high and medium safety significant systems consistent with our Individual Plant Examination (IPE) and the recently implemented Maintenance Rule (10CFR50.65). We will include failure modes and effects analyses where appropriate. We have begun this effort and expect it to be completed in 1997.

e) Vermont Yankee will continue to emphasize and promote a questioning attitude, strong safety culture and broad external perspective.

5) Date by Which Full Compliance Will be Achieved

Vermont Yankee achieved full compliance with 10CFR Part 50, Appendix K when the position of the minimum flow valves was changed to the normally open position on April 28, 1996.

6) Payment

As instructed by the Notice of Violation enclosed with Reference (b), an electronic transfer has been completed.

We trust that the information provided is acceptable. However, should you have any questions or desire any additional information, please contact me.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Jay K. Thayer
Vice President, Engineering

STATE OF VERMONT)
)ss
WINDHAM COUNTY)

Then personally appeared before me, Jay K. Thayer, who, being duly sworn, did state that he is Vice President-Engineering of Vermont Yankee Nuclear Power Corporation, that he is duly authorized to execute and file the foregoing document in the name and on the behalf of Vermont Yankee Nuclear Power Corporation, and that the statements therein are true to the best of his knowledge and belief.

Diane McCue, Notary Public
My Commission Expires 2/10/99

DIANE M. McCUE
NOTARY
PUBLIC
WINDHAM COUNTY, VERMONT

C: USNRC Project Manager - VYNPS
USNRC Region I Administrator
USNRC Resident Inspector - VYNPS