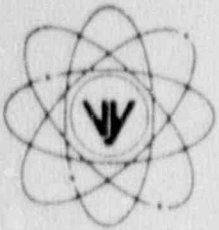


VERMONT YANKEE NUCLEAR POWER CORPORATION



Ferry Road, Brattleboro, VT 05301-7002

BVY 90-119

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

November 28, 1990

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

- References:
- a) License No. DPR-28 (Docket No. 50-271)
 - b) Letter, USNRC to VYNPC, NRC Safety System Functional Inspection Team Report No. 50-271/90-80, dated October 23, 1990
 - c) Letter, VYNPC to USNRC, Response to Inspection Report 50-271/90-09, Notice of Violation, dated October 29, 1990
 - d) Reportable Occurrence No. LER 90-10, Supplement 1, dated November 20, 1990
 - e) Memo, VYE 45/89, Response to SSFI Observation WGD-5, Calculations Not Performed Per ANSI N45.2.11 or WE-103, dated May 17, 1989

Dear Sir:

Subject: Response to NRC Safety System Functional Inspection, Notice of Violations

This letter responds to Reference b) which indicates that certain of our activities were not conducted in full compliance with NRC requirements. These alleged violations have been classified as Severity Level IV and were identified as a result of the NRC Safety System Functional inspection (SSFI) conducted during the period August 6 to August 17, 1990. Our response addresses these alleged violations and provides discussion on our proposed corrective actions and schedules to address the unresolved items and weaknesses described in Reference b).

VIOLATION

"Part 4.10.A.1.a of the Technical Specification requires that each diesel generator shall be started and loaded once a month for sufficient time for the diesel engine and generator to reach equilibrium temperature at expected maximum emergency loading not to exceed the continuous rating to demonstrate operational readiness.

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Contrary to the above, the diesel generators were consistently tested at loads lower than the expected maximum provided in the Final Safety Analysis Report, Section 8.5.3. The under loading was caused by using a unity or 100% power factor during the test rather than using a realistic value of 80-90% power factor. Further, both the November 1988 and April 1990 diesel generator loading studies made by the licensee provided information that the diesel generator loading was substantially higher than the FSAR and the monthly surveillance tests loading value."

RESPONSE

VY agrees with the NRC that we did not totally utilize the November 1988 /April 1990 loading studies for establishing new emergency diesel generator (EDG) test loading criteria. However, we have reviewed the design basis for EDG loading and have determined that power factor, based exclusively on FSAR input, has been appropriately accounted for, in monthly testing.

The expected maximum emergency loading for VY's EDG is equal to the expected maximum emergency bus loading plus the real power required to support the magnetic field of these loads. The expected maximum emergency bus loading, based on FSAR figure 8.5.1, is equal to 2467.3 kW. The real power required to support the reactive load (PF = 0.85) can be conservatively estimated by using the nameplate rating of the generator excitor. This value, per FSAR 8.5-3, is 26 kW. The expected maximum emergency load for VY's EDG, based exclusively on FSAR input, is 2493.3 kW (i.e., 2467.3 kW plus 26 kW) therefore TS 4.10.A.1.a has been met on this basis. VY has also noted that:

- a) The 2493.3 kW value is not clearly specified in either the FSAR or Technical Specifications.
- b) Our reviewers of the November 1988/April 1990 studies did not compare the study results against the 2493.3 kW loading. Our reviewers focused on EDG capability and not on functional surveillance testing requirements of Technical Specifications.
- c) As a result, VY did not recognize the significance of this difference in a timely manner.

To address these issues, VY intends to implement the corrective action recommended by LER 90-10 Supplement 1 (Reference d).

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VIOLATION

"10CFR 50, Appendix B, Criterion III, requires that design control measures provide for verifying or checking the adequacy of the design.

The Vermont Yankee Operational Quality Assurance Manual, Section III, Design Control requires ...'the performance of proper design verification or checking by means of design reviews or alternate calculations by verifiers with the proper qualifications and the required level of responsibility for adequacy of design.'

Contrary to the above, an analysis was conducted, Calculation VYC-791, to verify the adequacy of the safety-related 480 volt motor control centers to provide power to the attached loads. The analysis concluded that the motor control centers were adequately sized to supply the necessary power of 481 amperes; however, the analysis and the required verification review failed to recognize that the electrical capacity of MCC 8A was limited by the feeder circuit breaker and cables to 400 amperes."

RESPONSE

Calculation VYC-791, Rev. 0, was part of a larger design basis review program (Reference e), for reexamining the following areas:

- MCC loading calculations
- Cable ampacity studies
- Relay and circuit breaker setpoint studies
- Breaker coordination studies
- Load flow and short circuit studies

This process is consistent with NUMARC's Design Basis Program Guidelines for addressing discrepancies and developing design basis document validation, maintenance and control. VY agrees with the NRC assessment that MCC-8A documentation could be improved, but further notes that we had already initiated this process via a planned schedule and would have corrected this discrepancy.

In response to the 1990 NRC-SSFI team queries, VY revised VYC-791 on August 15, 1990. This revision evaluated the impact of MCC feeder cable size and feeder breaker trip ratings and identified the limiting factors affecting the ability of MCC 8A to supply the emergency loads. The revised load schedule for MCC 8A showed that although the MCC load approached the long-time feeder breaker trip setting, it was operable in the as-found condition.

Time-current curves for MCC 8A feeder breaker were also developed in accordance with Vermont Yankee's relay coordination and protection guidelines. New breaker settings were provided to Vermont Yankee personnel for their use on September 20, 1990, and the trip setting was modified during the 1990 refueling outage. This change provided additional assurance that MCC 8A would supply its required emergency loads and protect the feeder cable.

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Further, the load tables for MCCs 8B, 8C, 8F, 9A, 9B, 9C, and 9D were reviewed and revised to ensure that all emergency loads were included. Also, the limiting factors (i.e., feeder cable or feeder breaker trip settings) were evaluated to ensure that the MCCs were capable of supplying their required emergency loads. No additional concerns with feeder circuit breakers or cables were identified.

Based on the above, VY immediately demonstrated MCC 8A operability, and accelerated the design basis review to address NRC queries. VY believes that our original design basis review schedule for MCC 8A was within the NUMARC Design Basis Guidelines (which have been endorsed by the NRC). On this basis, VY respectfully requests that the NRC consider withdrawing this violation.

VIOLATION

"10CFR 50.59.a(2) states: A proposed change, test or experiment shall be deemed to involve an unreviewed safety question (i) if the probability of occurrence or consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (ii) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (iii) if the margin of safety as defined in the basis for any technical specification is reduced.

Contrary to the above, on August 6, 1990, it was identified that two safety evaluations, one for the RHRSW pump cooler lines and the other for CS system, concluded that the changes in the systems would not increase the probability of equipment malfunction. Although, the addition of valve #999 in RHRSW system, and closure of a normally open valve (11B) in the CS system respectively did increase the probability of equipment malfunction, it was neither recognized nor evaluated, and the changes were implemented in the system thereby modifying the system from the analyzed configuration."

RESPONSE

Vermont Yankee has reviewed the above violation and has taken the following actions:

A) Actions taken for RHRSW valve #999

Upon identification that the RHRSW motor cooling discharge lines may be outside 50.59 requirements, VY immediately initiated augmented surveillance and re-reviewed all the changes associated with RHRSW valve #999 and RHRSW motor cooling piping. VY concluded that although there was an incremental increase in the probability of equipment malfunction for both

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RHRWS valve #999 and associated piping, that the increase was not considered significant. The results were presented to the NRC on September 25, 1990 during the extended inspection interval. In addition VY has:

- o locked open RHRWS valve #999; and
- o made plans to reinvestigate RHRWS motor cooling piping configuration for upgrade during the 1993 refueling outage.

VY believes that the long term considerations of this event can be addressed by reevaluating our corrective update process. We anticipate that this review will be completed during the 1st quarter of 1991.

B) Actions taken for Core Spray Valve 11B

VY agrees that the Core Spray safety evaluation did not specifically address the increase of probability of equipment malfunction for maintaining CS-11B and 12B closed. To ensure that no safety issue existed, VY performed a PRA evaluation which showed that the increase of the probability of equipment malfunction by maintaining CS-11B closed increased by such an insignificant amount that it could be considered zero. VY also reexamined and redrafted the Core Spray safety evaluation to include the above information and presented the results to the NRC during the extended inspection interval on September 25. In addition, per Reference c), VY has proposed an alternate approach in addressing valve lineup configurations.

Unresolved Item 1: "Need for a performance test of cooling tower cell #1 (90-80-01)."

RESPONSE

VY has investigated conducting a thermal performance test on cell 1 at specified tower conditions. We note that our specification is very conservative in that the specified ambient temperature is above that regularly reached and sustained during summertime operation. This will require VY to extrapolate test results. VY is currently investigating cooling tower performance data that is readily available from our environmental monitoring program. As suggested in Generic Letter 89-13 and Supplement 1, testing at an alternate condition is permissible if thermal performance testing at design specified conditions can not be readily performed. VY has made preliminary calculations which indicate that we will be able to assess cell 1 thermal performance by this means, and have contacted our cooling tower vendor for assistance. VY anticipates that this effort can be completed during the second quarter of 1991.

Unresolved Item 2: "Assess the potential for CS pump damage at existing recirculation flow during a small break LOCA (90-80-4)."

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RESPONSE

VY is currently reassessing the time that the Core Spray pump would spend in the minimum flow condition. The previously stated "5 hour" time limit is considered very conservative and it is believed that this time limit can be reduced after closer examination of VY's LOCA analysis. VY is also pursuing the performance of an evaluation by a pump expert to determine the potential for damage during extended low flow pump operation. These efforts are ongoing and are anticipated to be completed during the second quarter of 1991.

Unresolved Item 3: "Lack of valve operability test (90-80-06) (...The licensee does not have a program to periodically ensure the operability of RHRSW manual isolation valves since some of the valves are intentionally kept closed to preclude the introduction of oxygen. Also, none of the large manual alternate cooling system isolation valves are in the licensee's IST program. Lack of such a program for a safety-related system is considered to be an unresolved item).

RESPONSE

Vermont Yankee is currently reviewing Section XI, the VY IST program, and the VY-FSAR with associated amendments to determine the need for performing operability tests on the manual alternate cooling system isolation valves. VY anticipates that this review will be completed during the first quarter of 1991.

Weakness 1 "Lack of precautionary procedure instructions to operators of the possibility of loss of RHRSW pump suction in the alternate cooling mode."

RESPONSE

The Operations Department is currently reviewing this item for inclusion into appropriate procedures. This review will include NPSH, siphon potential, and alternate cooling basin inventory needs. The review is expected to be completed during the first quarter of 1991.

Weakness 2 "Lack of recognition of the potential loss of coolant inventory through RHRSW pump motor cooling flow from the alternate cooling loop."

RESPONSE

A design change is presently scheduled for 1993 to review and revise the configuration of the RHRSW pump motor coolers; loss of alternate cooling inventory through the RHRSW motor coolers will also be examined. For the interim, the appropriate system operating procedures will be reviewed during the

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first quarter of 1991 and revised as appropriate to ensure that the operators are aware of the possibility of the loss of alternate cooling inventory from RHRSW pump motor coolers.

Weakness 3 "Lack of a specified maximum flow for RHRSW pump motor cooling."

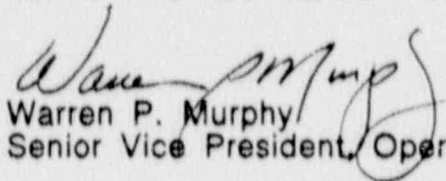
RESPONSE

In conjunction with the long term solution proposed in our response to Weakness 2 above, VY will evaluate the RHRSW pump motor piping configuration to address this weakness. During the interim, the benefits of throttling RHRSW pump motor flow to conserve alternate cooling water inventory will be considered. These benefits must be compared to the operational needs of maintaining stricter flow control, and corresponding surveillance and calibration changes. An interim evaluation will be completed during the first quarter of 1991.

We trust the information provided above adequately addresses your concerns; however, should you have any questions or desire additional information, please do not hesitate to contact us.

Very truly yours,

Vermont Yankee Nuclear Power Corporation



Warren P. Murphy
Senior Vice President, Operations

cc: USNRC Regional Administrator, Region 1
USNRC Resident Inspector, VYNPS
USNRC Project Manager, VYNPS