APR 1 4 1994

Docket No. 50-271

Mr. Donald A. Reid
Vice President, Operations
Vermont Yankee Nuclear Power Corporation
RD 5, Box 169
Ferry Road
Brattleboro, Vermont 05301

Dear Mr. Reid:

SUBJECT: RESPONSE TO ELECTRICAL DISTRIBUTION SYSTEM FUNCTIONAL INSPECTION (EDSFI) OF VERMONT YANKEE, INSPECTION REPORT NO. 50-271/92-81

This refers to your letters, dated October 30 and December 7, 1992, in response to our letter, dated September 30, 1992.

Thank you for informing us of the corrective and preventive actions taken in conjunction with the EDSFI findings and of the schedule for addressing the unresolved issues. Three of these issues were reviewed during the inspection of December 14, 1992, as documented in our report 50-271/92-25. Your resolution of the other issues will be examined during a future inspection of your licensed program.

As requested in your letter, "Reply to a Notice of Violation," we have reconsidered the violations. Upon further review, we have concluded that one of the violations (92-81-01) remains, however, no additional response is required. The two other violations (92-81-02 and 92-81-03) are withdrawn. Our bases for these determinations are as follows.

In your response to the first violation (92-81-01), you disagreed with the violation and stated that the present method of testing the emergency diesel generator (EDG) air start receiver check valves was reviewed, discussed, and agreed to by the NRC in a memorandum, dated March 30, 1988. At that time, you stated that proper closure of the valves was monitored at least three times per day by verifying acceptable receiver pressure without excessive running of the compressor. During the EDSFI, the team found no evidence that a quantitative review of the check valve leakage was being performed. As stated in the inspection report, the frequency and duration of the compressor operations were not recorded in the operator's check sheet. Therefore, because the test methodology was not controlled by procedures, with appropriate acceptance criteria, we still consider the testing of these check valves to have been inadequate and in violation of NRC requirements.



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During a review of the additional information provided, we noted that the fuse list developed from walkdowns, though not all encompassing, was reviewed for technical accuracy; that procedures are in place for one-for-one replacements; and that maintenance support groups were trained and are aware of the one-for-one fuse replacement program currently in place. We also noted that these procedures resulted in the proper replacement of the standby liquid control fuses that had not been included in the list. The NRC staff has concluded that the fuse list and procedures discussed above constitute an adequate fuse control program and, therefore, the violation is withdrawn. However, we expect that the fuse list and associated procedures will be revised as necessary to address the coordination studies currently scheduled to be completed during the 93/94 winter.

As stated above, we acknowledge that you already considered corrective actions and program enhancements to address the violations.

Your cooperation with us in this matter is appreciated.

Sincerely,

Original Signed by

James T. Wiggins, Deputy Director
Division of Reactor Safety

cc:
R. Wanczyk, Plant Manager
J. Thayer, Vice President, Yankee Atomic Electric Company
L. Tremblay, Senior Licensing Engineer, Yankee Atomic Electric Company
J. Gilroy, Director, Vermont Public Interest Research Group, Inc.
D. Tefft, Administrator, Bureau of Radiological Health, State of New Hampshire
Chief, Safety Unit, Office of the Attorney General, Commonwealth of Massachusetts
R. Gad, Esquire
G. Bisbee, Esquire
R. Sedano, Vermont Department of Public Service
T. Rapone, Massachusetts Executive Office of Public Safety
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
State of New Hampshire, SLO Designee
State of Vermont, SLO Designee
Commonwealth of Massachusetts, SLO Designee

We understand that since the time of our inspection, additional analysis performed by your staff resulted in changes to the inservice testing program requirements. Specifically, the valves associated with the Notice of Violation are no longer subject to the reverse flow test requirements of the ASME Boiler and Pressure Vessel Code. Based on this additional information, no further response to the violation is required.

In your response to the second violation (92-81-02), you stated that Vermont Yankee's testing program for molded case circuit breakers (MCCBs) met the intent of 10 CFR 50, Appendix B, Criterion XI. The bases for your position included: 1) design verification testing of overcurrent trips was performed by the manufacturer; 2) periodic inspections and mechanical trip tests are performed in accordance with Procedure OP 5210, "MCC Inspections"; 3) overcurrent trip testing of breakers is performed upon receipt inspection, installation into an application, or when abnormalities are observed during the visual inspection, or mechanical or operations tests; and 4) the failure rate of MCCBs at Vermont Yankee is below the industry average.

You also stated that, although you consider the Vermont Yankee MCCB testing program to be adequate, you are considering an enhancement that would do some preplanned breaker time-current testing. The scope of the testing would be expanded or contracted based on the testing results, industry experience and NRC information.

We have reviewed the additional information provided. Based on this review, and in light of an ongoing NRC effort to generally evaluate the adequacy of licensee MCCB test programs (with respect to the 10 CFR 50, Appendix B requirements), the violation is withdrawn. However, it is expected that you will take the necessary measures to ensure the continued reliability of the MCCBs.

In response to the third violation (92-81-03), you stated that fuse replacements were controlled by Procedure AP 0021, "Work Orders," in conjunction with Procedures AP 008, "One for One Evaluations"; AP 6000, "Plant Design Change Requests"; and AP 6004, "Engineering Design Change Request." Applicable portions of these procedures were mailed to us on February 8, 1993. You also stated that the Vermont Yankee fuse replacement program is based upon verification of manufacturer drawings and a fuse list prepared to address commonly accessible fuses. With your package you included details of how the list was developed and verified, a copy of your generic fuse dedication evaluation, and records for the replacement of standby liquid control fuses questioned by the NRC at the time of the inspection.

bcc:
Region I Docket Room (with concurrences)
E. Kelly, DRP
J. Shedlosky, DRP
M. Shannon, ILPB
V. McCree, OEDO
D. Dorman, NRR
W. Butler, NRR

| RI:DRS | RI:DRS | RI:DRS | RI:DRS |
|---|---|---|---|
| Scholl | Ruland | Durr | Wiggins |
| 1/21/94 | 1/26/94 | 1/ /94 | 4/14/94 |

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VERMONT YANKEE
NUCLEAR POWER CORPORATION

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REPLY TO
ENGINEERING OFFICE
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(508) 779-6711

October 30, 1992
BVY 92-124

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, Electrical Distribution System Functional Inspection of Vermont Yankee, Report No. 50-271/92-81
c) USNRC Memorandum, W.F. Kane to S.A. Varga, "Meeting Minutes from the Staff's IST Review Meeting with Representatives of Vermont Yankee Nuclear Power Corporation held on October 14 and 15, 1987 at Region I (TAC 57518)" dated March 30, 1988.
d) Vermont Yankee Inservice Testing Program, Rev.12
e) Supplementary Information, H.M. Metell, VY, to N. Della Greca, USNRC, faxed August 13, 1992
f) NEMA AB4-1991, "Guidelines for Inspection and Preventative Maintenance of Molded Case Circuit Breakers Used in Commercial and Industrial Applications"
g) USNRC Information Notice 92-51, "Misapplication and Inadequate Testing of Molded Case Circuit Breakers", July 9, 1992
h) Maintenance Request 90-2812
i) NUMARC 90-12, "Design Basis Program Guidelines", October 1990
j) SECY-90-365, Taylor to Commissioners, "Design Document Reconstitution Programs Initiated by Utilities", October 26, 1990
k) EPRI Report, EPRI NP-7410, Vol 3, Breaker Maintenance

**SUBJECT: Response to NRC Electrical Distribution System Function Inspection of Vermont Yankee, Report No. 50-271/92-81, Reply to a Notice of Violation**

Dear Sir:

This letter responds to Reference b) which indicates that certain activities were not conducted in full compliance with NRC requirements. The apparent violations were identified in Reference b) as a result of the NRC Electrical Distribution System Functional Inspection conducted during the period July 6 to August 7, 1992 and have been classified as severity level IV. This response addresses these apparent violations. As suggested in Reference b), unresolved items will be addressed under separate cover.

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APPARENT VIOLATION A

Section 5.2.4 - Molded Case Circuit Breakers - Item 92-81-02

**10 CRF 50, Appendix B, Criterion XI, requires, in part, that: "a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, pre-operational tests, and operational tests during nuclear power plant... operation, of structures, systems and components." Test control is required by Section XI of the Yankee Atomic Electric Company Operation Quality Assurance Program Manual (YOQAP-1-A).**

**Contrary to the above, on August 7, 1992, Vermont Yankee did not have a test program for safety-related molded case circuit breakers to periodically demonstrate that the breakers would trip within the design time-current band. The trip characteristics of most of these breakers had not been verified by test since Vermont Yankee's commercial operation more than twenty years ago.**

RESPONSE

Vermont Yankee has reviewed the above item and has noted that:

- Vermont Yankee faxed sample MCCB (Molded Case Circuit Breakers) design time-current testing data sheets to the NRC on 8/13/92 (Reference e). VY collected this data during periodic MCC cubicle inspections per procedure OP 5210 "MCC Inspections". Specifically this data included manufactures design verification testing of overcurrent trips in the thermal (long time) and instantaneous regions of the manufacturer's time-current curves. OP 5210 provides the procedural controls for receipt inspection, initial installation and field testing of all molded case circuit breakers, and serves as Vermont Yankee's programmatic control for MCCBs.

- Although the EDSFI Inspection Report (Reference b, Page 24, Para. 3) did not acknowledge the design time-current testing, the report did acknowledge the other programmatic testing performed by OP 5210 which included:

  * visual inspection,
  * mechanical cycling of the breaker,
  * measurement of insulation and contact resistance.

- Vermont Yankee wrote OP 5210 in March 1992 and implemented it during the Spring 92 refueling outage. OP 5210 is primarily based on the EPRI Report NP-7410 (Reference k) on MCCBs, vendor manual information and NEMA AB4- 1991 (Reference f). Subsequently, the NRC issued the MCCB Testing Information Notice on July 9, 1992 (Reference g) which endorsed use of NEMA AB4-1991 and other industry practices. It can be seen that Vermont Yankee pro-actively addressed MCCB inspection/testing prior to the EDSFI and before the NRC Information Notice was issued.

- The EPRI report on MCCBs (Reference k) recommends overcurrent trip testing only for those MCCBs which exhibit some abnormality during the inspection/testing process. For Vermont Yankee 235 breakers were inspected/tested during the Spring 1992 Refueling Outage (73 of which were safety related) with 47 breakers overcurrent trip tested. This testing showed that all 47 breakers tripped satisfactorily with no failures to trip within the published manufacturer's tolerance curves.

- A search of NPRDS data showed, Vermont Yankee's history of MCCBs failures are less than the industry average.

Based on the above, Vermont Yankee has concluded that the intent of 10 CFR 50, Appendix B, Criterion XI has been met for Motor Control Center MCCBs. After performing the above review of Vermont Yankee's program for MCCBs it is felt that we have an adequate program but it might be enhanced if a representative sample of MCCBs was time-current tested each cycle. Vermont Yankee will evaluate this possible program enhancement which would do some level of preplanned breaker time-current testing, provide a sampling system which could be expanded or contracted based on testing results, industry experience and NRC information. Additional details on Vermont Yankee's MCCB program are provided in Appendix A.

APPARENT VIOLATION B

Section 4.2.2 - EDG Air Start System Item 92-81-01

**10 CFR 50.55a, Paragraph (g)(4)(ii) requires that inservice examinations of components, inservice test to verify operational readiness of pumps and valves whose function is required for safety, and system pressure tests must comply with the latest edition and addenda of Section XI of the ASME Code.**

**The ASME Boiler and Pressure Vessel Code, Section XI, paragraph IWV-3520 requires, in part: "Check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation... Valves that are normally open during plant operation and whose function is to prevent reversed flow shall be tested in manner that proves that the disk travels to the seat promptly on cessation or reversal of flow."**

**Contrary to the above, on August 7, 1992 the NRC determined that two check valves in the emergency diesel generator starting air system were not tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow.**

RESPONSE

Vermont Yankee has reviewed the above item and has noted that:

- The present method of testing EDG (Emergency Diesel Generator) air start receiver check valves was reviewed, discussed and agreed to by the NRC in Reference c). These discussions were extensive and recognized the limitations imposed by the installed configuration. On this basis, Vermont Yankee considers 10 CFR 50.55a and ASME Section XI was met.

- Vermont Yankee agrees with the NRC EDSFI Inspection Team, that the check valve testing could be enhanced beyond that agreed to in Reference c), but would require a hardware change. We noted to the inspectors that this would take engineering and construction resources that require management review.

Based on the above, Vermont Yankee agrees to consider the above mentioned hardware changes for our 1994 Design and Construction Work Scope. If approved, this change could be installed during the first available EDG outage after completion of the associated design work. Vermont Yankee sees that no other actions are necessary, unless the NRC is changing its positions stated in Reference c). Additional details on this subject are provided in Appendix B.

APPARENT VIOLATION C

Section 5.4 - Fuse Control Item 92-81-03

**10 CFR 50, Appendix B, Criterion III, requires that measures be established to assure that the design bases, as defined in 10 CFR 50.2, are correctly translated into specification, drawings, procedures and instructions. 10 CFR 50.2 defines design bases as that information which identifies the specific functions to be performed by a component, and the specific range chosen for controlling parameters as reference bounds for design. Criterion III further specifies that design changes, including field changes be subject to design control measures commensurate with those applied to the original design.**

**Contrary to the above, on or before August 7, 1992, Vermont Yankee did not have measures, such as instructions, procedures or drawings in all safety-related cases, to adequately identify electrical system fuse types to ensure appropriate replacement.**

RESPONSE

Vermont Yankee has reviewed the above item and has noted that the following measures are in place to adequately identify electrical system fuse types:

- Instructions and Procedures - Vermont Yankee controls fuse replacement by procedure AP 0021, "Work Orders". This procedure, in concert with supporting procedures, specifies strict equipment controls and material replacements. If an exact fuse replacement can not be made, a One for One evaluation is performed using procedure AP 0008, "One for One Evaluations". If a One for One evaluation can not be made, then a design change is initiated by procedure AP 6000, "Plant Design Change Requests" or AP 6004, "Engineering Design Change Request".

- Specifications and Drawings - Vermont Yankee utilizes the Vendor Manual Program, Vendor Specifications, the Procurement Program and controlled drawing information to adequately identify electrical system fuse types. As noted in the inspection report (Reference b) and information supplied in Reference e) Vermont Yankee had initiated work in 1989 to further enhance fuse information listed on drawings that are used by technicians. This work was performed as recommended by Reference i) and j).

Vermont Yankee also developed a controlled fuse list which listed pertinent fuse information for many commonly accessible fuses. It was compiled for each panel by wiring diagram review to identify panel fuse location and by field walk downs. An engineering review of each fuse size was performed to verify the fuse size met the design criteria. Vermont Yankee did not intend to have this list be all inclusive, but to be available as an aid. Maintenance and I&C personnel, who replace virtually all fuses, have been made aware of the list and may use it or may use appropriate specifications, drawings, instructions, and procedures as needed. This methodology was demonstrated during the EDSFI when an inspector noted that SLC (Stand-by Liquid Control) fuses were not listed on the fuse list. Vermont Yankee's investigation of an associated Maintenance Request (Reference h) showed the proper identification of the fuse was provided for SLC fuse replacement. In this example the correct fuse was found within the vendor manual.

Operations personnel replace fuses in urgent situations only, and follow up with a work order. The fuse list is a useful tool for these situations. Engineering, by AP 6000, "Plant Design Change Requests" and AP 6004, "Engineering Design Change Requests" will provide appropriate drawings, specifications, and procedures for design needs.

The information provided above and in the attached appendices provides a more comprehensive explanation of our programs and practices in the areas of apparent violation than we were able to provide during the inspection period. This information suggests that these areas may not be in violation. Therefore, Vermont Yankee respectfully requests the NRC to reconsider the apparent violations in light of the information provided within this letter. We have found the EDSFI inspection to have been a worth while activity and want to assure you that we are working diligently to address the areas of concern mentioned in the report.

Very truly yours,

Vermont Yankee Nuclear Power Corporation

James P. Pelletier
Vice President, Engineering

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

# APPENDIX A

## DETAILED RESPONSE TO APPARENT VIOLATION - SECTION 5.2.4, MOLDED CASE CIRCUIT BREAKERS ITEM 92-81-02

This appendix responds to Item 92-81-02 via the following subsections:

- Existing Program Description
- Vermont Yankee Maintenance Experience with Molded Case Breakers
- Industry Standards and Practices
- Conclusion

### EXISTING PROGRAM DESCRIPTION

Vermont Yankee's program for periodic testing of molded case breakers is contained in plant procedure OP 5210, MCC Inspections, and in Vermont Yankee's MPAC computerized maintenance program. MPAC specifies the frequency for inspection of MCC cubicles, including molded case breakers. The procedure has specific instructions for the testing of molded case breakers which incorporate the recommendations of various manufacturer's instructions and industry standards.

This testing includes visual inspection, mechanical testing of the breaker by cycling the breaker handle a minimum of five times to verify proper latching and opening of the breaker with the handle and by manually actuating the trip shaft, measurement of insulation and contact resistance, and overcurrent trip testing in the thermal (long time) and instantaneous regions of the manufacturer's curves. This procedure was in place and was being utilized in the testing of breakers at the time of the EDSFI inspection. Therefore, Vermont Yankee did have a test program for safety related molded case circuit breakers to demonstrate that the breakers would trip within the design time-current band.

Vermont Yankee performs breaker visual inspection, mechanical operation, and operability testing every third operating cycle. Vermont Yankee performs overcurrent trip testing of breakers 1) upon receipt inspection, 2) upon installation into an application, and 3) whenever the breaker is suspect for any reason during periodic inspection because of abnormalities observed in the visual inspection, during mechanical or operational tests.

### VERMONT YANKEE MAINTENANCE EXPERIENCE WITH MOLDED CASE BREAKERS

Vermont Yankee, although having hundreds of molded case breakers installed in the plant, does not have a history of breakers prematurely tripping or drifting from the published curves. The vast majority of breaker failures experienced have been mechanical in nature such as a failure to latch when closing the breaker. As an example of recent experience, of the 235 breakers tested last outage (73 of which were safety related), 47 were overcurrent trip tested. All 47 breakers trip tested satisfactorily with no failures or trips outside of published tolerances of manufacturer's curves.

Vermont Yankee's experience with molded case breakers does not indicate a need to increase the frequency of overcurrent testing. This is based on the number of breaker overcurrent device failures experienced during testing under the current program. Vermont Yankee does not believe increasing the frequency of overcurrent testing is justified from an experience perspective.

Because Vermont Yankee's program does test breakers periodically under OP 5210 and because Vermont Yankee performs overcurrent trip tests of breakers upon receipt inspection and initial installation, and then retests those breakers which show any sign of degradation, Vermont Yankee believes adequate assurance is provided that the breaker will perform its safety function.

Although it is true that a significant number of breakers in the plant have not been overcurrent trip tested since original installation, the testing that has been performed on these breakers (visual and mechanical testing and post maintenance testing) does not reveal a reason to suspect the breakers are degraded.

INDUSTRY STANDARDS AND PRACTICES

There is no consensus in the industry as to what minimum scope and frequency of testing is necessary to prove the ability of a breaker to perform its safety function. There also is no established firm technical basis to justify a required scope and frequency of testing in the industry.

There are a number of guidelines and reports which address the subject and provide recommendations but none firmly establish a required frequency or scope or provide any sound engineering basis for that requirement. The following are examples of industry documents which address the testing of molded case breakers:

a) EPRI Report EPRI NP-7410 Vol 3, Breaker Maintenance, provides the most in depth discussion of the subject and makes a recommendation in scope and frequency. However, it falls short of providing a sound engineering basis for the recommendation. In fact, the document states in Section 3.0, Periodicity and Program Development Guidelines, that their recommendations are submitted as a baseline and that every plant should adjust the test frequency on the basis of their experience. It also recognizes that the number of MCCBs at a plant are many and resources are limited. It states that "if the program is too aggressive, fewer resources may be available for other necessary programs."

b) NEMA Standard AB-4, Guideline for Inspection and Preventive Maintenance of Molded Case Breakers used in Commercial and Industrial Applications, addresses scope but does not address a required frequency. In section 4, Preventive Maintenance, it states "when inspections determine an abnormal condition and indicate possibility of damage, it may be necessary to perform certain maintenance steps. This section is intended to assist the user in performing these steps." The overcurrent testing of breakers is not included in the scope of this section. The program at Vermont Yankee exceeds this guidance since at Vermont Yankee overcurrent testing is performed if abnormal conditions are identified. OP 5210 was written based heavily on the contents of this standard for the scope of testing.

c) The Draft USNRC Generic Letter (which has never been issued) addresses only the overcurrent testing of the instantaneous device and consequences of premature tripping due to misapplied breakers or improper trip testing. This letter basically adopted the testing methods of NEMA AB-4. The document stated "addressees are not expected to initiate a comprehensive retesting program to reverify the instantaneous trip feature of MCCBs with safety functions involving this function except for individual MCCB testing in those specific cases in which (1) premature tripping of installed MCCBs is experienced during testing or operations, or (2) other specific information if obtained which may impugn the operability of particular installed safety related MCCBs or the suitability of previously tested, warehoused MCCBs, for installation in safety related applications." Vermont Yankee's program follows this philosophy of testing in the case of (1) or (2) above.

d) USNRC Information Notice 92-51, Misapplication and Inadequate Testing of Molded Case Circuit Breakers, was issued instead of the Generic Letter. This Notice, which states the suggestions contained in the Notice are not NRC requirements, addresses the same issues as the generic letter in an abbreviated format. It also endorses NEMA AB-4 but complicates the matter by warning that application of the manufacturers tolerances "may not always ensure that the MCCBs meet plant-specific breaker coordination, circuit protection or technical specification requirements."

The Information Notice does not provide any NRC requirements concerning frequency of testing of the overcurrent devices but simply states that testing per industry recommended practices should provide reasonable assurance that the MCCBs instantaneous trip performance is acceptable for safety related applications.

## CONCLUSION

The Vermont Yankee program and testing philosophy is consistent with the intent of NRC Information Notice 92-51 to provide reasonable assurance that premature tripping does not occur and that the circuit breaker will perform its intended (protection) function. It is also consistent with Section 6.0, Requested Actions, of the proposed Generic Letter, "Premature tripping and Inadequate Testing of the Instantaneous Trip Feature of Molded-Case Circuit Breakers MCCBs and Testing of their Instantaneous Trip Feature."

Molded case breaker maintenance history at Vermont Yankee does not reveal a significant history of breakers which failed due to trip device malfunction and does not support a conclusion that the existing Vermont Yankee program is inadequate. As in any program, enhancements should be considered. Vermont Yankee will consider a program enhancement which would do some sampling of breaker time-current testing and provide a sampling system which could be expanded or contracted based on test results, industry experience and future NRC information.

## APPENDIX B

## DETAILED RESPONSE TO APPARENT VIOLATION B - SECTION 4.2.2, EDG AIR START SYSTEM ITEM 92-81-01

This appendix addresses the adequacy of testing the EDG Air Start System Receiver Check Valves, V72-80A-D. The testing cited is performed under the Vermont Yankee Inservice Testing (IST) Program (Reference d). The present Second-Interval IST Program is written in accordance with the requirements of Section XI, Division 1, of the ASME Boiler and Pressure Vessel Code, 1980 Edition through and including Winter 1980 Addenda. This is in compliance with 10 CFR 50.55a. Testing requirements for check valves are provided in Paragraph IWV-3520, with the exercising procedure provided in Paragraph IWV-3522 of Section XI.

In preparation of this response, Vermont Yankee performed detailed reviews of both the safety function of check valves V72-80A-D and the present testing methods. These reviews indicated that check valves V72-80A-D have a safety function only in the closed position and that the cited testing methods are not in full compliance with the requirements of Paragraph IWV-3522.

Reverse flow testing to prove that the check valve disk travels to the seat promptly on cessation or reversal of flow is not practicable due to the existing system configuration. Allowance for this case is provided in 10CFR50.55a(f)(4), which states that "Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the inservice test requirements, **except design and access provisions**, set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda...**to the extent practical within the limitations of design, geometry and materials of construction of the component.**" [emphasis added] Vermont Yankee and the NRC after extensive discussions, considered the cited testing method to be as effective as the geometry currently permits.

To clearly state this position, Vermont Yankee agrees that relief from the IWV-3522 requirements should have been submitted in accordance with 10CFR50.55a(a)(3) and (f). However, Vermont Yankee believes the intent of 10CFR50.55a was met through the NRC review and approval of the cited testing method as documented in Reference (c). Reference c) provides questions asked by the NRC relating to IST, and the corresponding answers. NRC Question No. V7-5 deals specifically with check valves V72-80A-D. The "R" designation on the response denotes that the item was considered resolved and Vermont Yankee's position adequate.

In addition, as part of the preparation of the Vermont Yankee Third-Interval IST Program presently underway, Vermont Yankee will review the need for relief from the updated Code requirements and the feasibility of enhanced testing methods.

VERMONT YANKEE
NUCLEAR POWER CORPORATION

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December 7, 1992
BVY 92-136

United States Nuclear Regulatory Commission
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Washington, DC 20555

References:
a) License No. DPR-28 (Docket No. 50-271)
b) Letter, USNRC to VYNPC, Electrical Distribution System Functional Inspection of Vermont Yankee, Report No. 50-271/92-81, dated September 30, 1992
c) NUMARC 90-12, "Design Basis Program Guidelines", dated October 1990
d) Letter VYNPC to USNRC, BVY 92-124, Response to NRC Electrical Distribution System Functional Inspection of Vermont Yankee, Report No. 50-271/92-81, Reply to Apparent Violations, dated October 30, 1992
e) Letter VYNPC to USNRC, BVY 91-88, Station Blackout (SBO) Supplemental Information on Coping Assessment, dated September 30, 1991

Subject: **Response to NRC Electrical Distribution System Function Inspection of Vermont Yankee, Report No. 50-271/92-81, Unresolved Items and Other Issues**

Dear Sir:

This letter provides information requested by Reference b) to:

1) Provide our resolution and conclusions on unresolved items pertaining to degraded grid relay settings and diesel generator fuel oil transfer,

2) Provide our schedule for resolution of the other issues identified at the exit meeting.

~~9212150015~~

The degraded grid and fuel oil transfer unresolved items are addressed in Attachments A and B respectively. Attachment C to this letter provides our current schedule for resolution of all the items. If you have any further questions regarding these items, please contact Mike Metell (802-257-5271, Ext. 218) in my office.

Very truly yours,

Vermont Yankee Nuclear Power Corporation

James P. Pelletier
Vice President, Engineering

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

ATTACHMENT A

DEGRADED GRID RELAYS

Section 3.3 - Separation from Preferred Power Source - Item 92-81-04

**.... In response to the NRC concerns, the licensee stated that they were now reassessing the degraded grid relay setpoint bases. This reassessment emerged as a scheduled work activity as a result of surveillance testing performed during the March 1992 plant outage when these setpoints were observed to have drifted outside the technical specification limits. The licensee also indicated that completion of a new voltage regulation analysis was expected by the end of 1992.**

**In view of the above, the acceptability of voltage regulation is unresolved pending the licensee's preparation of appropriate analyses addressing the potential spurious grid separations described above (50-271/92-81-04).**

RESPONSE

We agree with the EDSFI inspection team that for 110KV/340KV minimum design line voltage in combination with maximum 4KV bus loading and concurrent accident signal, Vermont Yankee could be disconnected from the preferred power source and could be subject to an out of phase closure of a diesel generator breaker.

To address the postulated condition, Vermont Yankee has taken the following immediate actions:

- Vermont Yankee has examined worst case plant loadings and determined these loadings can only occur when the cooling towers are on line. Vermont Yankee has determined that without this cooling tower load, the postulated event should not occur.

  Additionally, we have examined actual minimum/maximum voltages currently supplied by NEPEX (New England Power Exchange) and compared this data to those values used in our voltage regulation analysis. We have determined that the original voltage values used in our analysis were based on very conservative historical limits. We estimate that our actual minimum line voltages are about 115KV and 345KV respectively (versus 110KV and 340KV used in our original analysis). We estimate that our normal line voltages are typically greater than 117KV and 354KV respectively. Based on these more realistic values, Vermont Yankee has not, and does not anticipate being subject to the grid separation event as postulated in Reference b).

Our short and long term actions are as follows:

- Short term actions - Vermont Yankee has contacted NEPEX and has initiated discussions on changing NEPEX procedures to ensure that minimum supplied line voltages are specified/maintained at 115KV/345KV levels. Other New England nuclear stations have pursued and secured similar requested changes. We will also complete the in-house voltage regulation study using the new limits. We anticipate that these changes can be accomplished by Spring 1993.

- Long term actions - Vermont Yankee plans to investigate other potential improvements which could further ensure preferred power source availability. These include a) limited shedding of nonessential loads such as the cooling towers; b) replacement of the degraded grid relays with models that have narrower reset tolerances; c) modification of the initiation logic of the degraded grid relays. The need for any improvements beyond the short term actions to be taken will also be considered. These investigations are scheduled to be completed by the Fall of 1994.

ATTACHMENT B

DIESEL GENERATOR FUEL OIL TRANSFER SYSTEM

Section 4.2.1 - Fuel Oil Transfer Pump Submersion - Item 92-81-09

During a walkdown of the fuel oil transfer pump house, the team noted that the pumps were located in a single pit adjacent to the storage tank pit. They also observed that a conduit penetrating the wall between the two pits had not been sealed. Because of the pumps vulnerability to common mode failure due to flooding, the team asked the licensee to address maximum flood level, tank rupture resulting from a design basis missile, and qualification of pump motors for submersion. The licensee's preliminary review indicated that the maximum flood level was several inches below the pump house access door and the rim around the tank pit. However, if the tank contained more than 68,000 gallons, a rupture of the tank at or below ground level could flood the tank pit above the 8' 4" level of the conduit penetration and hence the pump room. The pump motors were not qualified for submersion.

In view of the above, the capability of the transfer pumps to operate in the event of the postulated tank rupture is an unresolved item pending the licensee's further evaluation of the issue and NRC review (50-271/92-81-09).

RESPONSE

Vermont Yankee has determined that the only design purpose for the above mentioned wall penetration is to provide access for the subject conduit. To enhance the existing berm oil retention capability, the subject conduit is scheduled to be sealed by December 15, 1992. We conclude that this enhancement addresses all flooding/pump submersion items.

Section 3.2.1 - Fuel Oil Temperature Control - Item 92-81-10

.... Although, on the basis of the temperature specified in Section 10.12.3 of the FSAR, the requirements of the fuel oil procurement specification met those of the ASTM Standard and, hence, those of the Technical Specification, the team expressed concern for those times when the temperature fell below the pour point of the oil. Extended severe weather conditions could cause gelling of the fuel oil and clogging of both transfer pump strainers. Vermont Yankee's cold weather procedure, OP 2196 required that the temperature of fuel oil at the pump suction be noted once each shift. However, the primary purpose of the temperature reading was to ascertain the operability of the heat tracing.

**.... The inspectors agreed that the mass of the oil would retard gelling, but noted that this and past experience with fuel analysis could not be used to ensure that a common mode failure of the fuel transfer system would not occur. Therefore fluidity of the fuel oil is unresolved pending appropriate analysis and corrective actions by the licensee (50-271/92-81-10).**

RESPONSE

Vermont Yankee will enhance OP 3140 "Alarm Response" by December 15, 1992 to alert the operators of potential loss of fuel oil transfer capability for sub zero weather conditions. Specifically:

- We have analyzed fuel usage in sub zero weather, and have determined that fuel is transferred about once every two hours to meet house heating needs. Therefore by monitoring the house heating boiler day tank level (via level alarm switch LSL-108-6B), we effectively and automatically monitor fuel oil transfer. We will update OP 3140 to note that if alarm switch LSL-108-6B is alarmed, that fuel oil transfer/EDG operability may be impacted.

- To aid the operator in troubleshooting the LSL-108-6B alarm, we have also updated OP 3140 to compare the pump suction line temperature during transfer, to the fuel oil tank oil pour point (0 degree F specification, -10 to -20 degrees F typical actual values) if fuel oil transfer gelling is suspected. During fuel oil transfer, representative internal storage tank oil temperatures can be read at the fuel oil transfer pump suction line sensor.

We have also examined the potential for analytically predicting, under severe cold weather conditions, when the fuel oil gelling potential could be a problem. We have determined that:

- A pure analytical model may not give the desired accurracy, relative to the large number of variables to be considered, such as radiational cooling, air temperature, underground heat transfer, wind heat loss, precipitation, etc.

- Collecting data at the above mentioned conditions and tank oil temperature during transfer would allow evaluation of the potential for fuel oil gelling.

We have decided to collect and analyze this data during the 1992-1993 winter season. Please note that Vermont Yankee does not anticipate an oil transfer problem in that we have transferred fuel oil successfully without gelling for the past 20 years of operation, including severe sustained cold spells. We have concluded that these actions provide sufficient warning of a possible fuel oil gelling problem and address this issue.

Section 3.2.1 - Fuel Oil Transfer Piping Damage - Item 92-81-11

During a walkdown of the fuel oil transfer system, the team noted that approximately 15 feet of transfer piping downstream of each pump had been installed within inches from each other, outside the pump house. No protection had been provided against external damage from hazards in the area, e.g. backing up vehicle or missile during a tornado. The piping was in an exposed area adjacent to a roadway. The team was concerned that damage from such hazards might cause a common mode failure of both fuel oil supply lines and the shutdown of both EDGs upon depletion of the 3 hour supply of fuel oil stored in the day tanks.

The licensee was not able to satisfactorily address the issue during the inspection. Therefore this item is an unresolved item pending review by the licensee (50-271/92-81-11).

RESPONSE

We agree with the EDSFI Inspection Team that enhancing protection of these lines can improve their safety performance. On this basis, Vermont Yankee has completed the following actions:

- Fuel Oil Transfer Line Vehicle Protection - Vermont Yankee has determined that vehicle traffic could impact fuel oil transfer line performance. Therefore, during November 1992, Vermont Yankee completed installation of vehicle barrier protection for these fuel oil transfer lines.

- Tornado Impact on Fuel Oil Transfer Line Assessment - We have reviewed this concern relative to our Station Blackout response (Reference e). The probability of experiencing a tornado at Vermont Yankee is about 2 E-05 occurrence per year (i.e. 9.8 E-5 occurrence per year per square mile). We estimate that the probability of damage occurring at these lines (based on previous similar studies and Reference e), if Vermont Yankee experienced a tornado, would be less than 1 E-06. This is sufficiently small, such that further immediate action is not warranted at this time. Vermont Yankee will more formally address this item in our IPEEE Program.

Attachment C- Schedule for Addressing EDSFI Items

| | | Planned Completion Date |
|---|---|---|
| Separation from Preferred Power Source Analysis<br>Unresolved Item 1 - (50-271/ 92-81-04) | | Immediate - Complete<br>Short term - Spring 93<br>Long term - Fall 94 |
| Diesel Generator Loading Analysis<br>Unresolved Item 2 - (50-271/ 92-81-05) | | Summer 93 |
| 120 Vac Protective Devices Coordination Analysis<br>Unresolved Item 3 - (50-271/ 92-81-06) | | Winter 93/94 |
| 125 Vdc Protective Devices Coordination Analysis<br>Unresolved Item 4 - (50-271/ 92-81-07) | | Fall 93 |
| DC Bus Cross Connections Analysis<br>Unresolved Item 5 - (50-271/ 92-81-08) | | Spring 93 |
| Fuel Oil Transfer Pump Submersion - Hardware Upgrade<br>Unresolved Item 6 (50-271/92-81-09) | | Dec 15, 1992 |
| Fuel Oil Temperature Control - Procedural Enhancement<br>Unresolved Item 7 (50-271/92-81-10) | | Dec 15, 1992 |
| Fuel Oil Transfer Piping Damage<br>Unresolved Item 8 - (50-271/ 92-81-11) | - Short term analysis<br>- Hardware Upgrade<br>- IPEEE calculation | Complete<br>Complete<br>Spring 95 |
| Diesel Generator Room Temperature Calculation<br>Unresolved Item 9 - (50-271/ 92-81-12) | | Feb 93 |
| Battery Room Ventilation Calculation<br>Unresolved Item 10 - (50-271/ 92-81-13) | | Spring 93 |
| Cable Ampacity Calculation | | Summer 94 |
| 120 Vac Control Circuit Analysis<br>AC System Short Circuit Analysis | | Winter 93/94<br>Spring 93 |
| 120 Vac Voltage Drop Study | | Winter 93/94 |
| 125 Vdc Voltage Drop Study | | Spring 94 |
| Switchgear Room Ventilation Calculation | | Feb 93 |

Note 1: In accordance with NUMARC 90-12 (Reference c) and noted in Reference b), Vermont Yankee had already scheduled many of the above enhancements.

Note 2: The above schedule is for Vermont Yankee planning purposes only. Vermont Yankee does not consider this schedule as a commitment. It may be adjusted based on arising priorities.