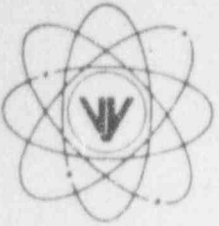


VERMONT YANKEE NUCLEAR POWER CORPORATION



Ferry Road, Brattleboro, VT 05301-7002

REPLY TO:
ENGINEERING OFFICE
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December 12, 1994
BVY 94 - 124

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

References: a. License No. DPR-28 (Docket No. 50-271)
b. Letter, VYNPC to USNRC, BVY 93-137, dated December 3, 1993
c. Letter, USNRC to VYNPC, NVY 94-177, dated October 12, 1994

Subject: Response to Request for Additional Information on the Vermont Yankee Third
10-Year Interval Inservice Inspection (ISI) Program Plan and Associated
Requests for Relief

The Third Interval Inservice Inspection (ISI) Program and associated relief requests for the Vermont Yankee facility were submitted for NRC review via Reference (b). NRC requested additional information with regard to this review effort via Reference (c).

Enclosed please find Vermont Yankee's response to NRC's request for additional information. As requested, a copy of this response is also being sent to NRC's contractor, INEL.

As per our responses to Items E, F, and H in the enclosure, Vermont Yankee intends to revise the Third Interval ISI Program. We anticipate completion and submittal of the revised Program document by March 31, 1995.

In addition, in order to supplement our response to Item C in the enclosure, Vermont Yankee is in the process of completing up-to-date system drawings (P&IDs) that comprise the scope of the third interval program. To assist NRC in review completion, we anticipate submittal of these drawings by January 15, 1995.

Should you have further questions or require additional information, please contact this office.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Leonard A. Tremblay, Jr.
Leonard A. Tremblay, Jr., P.E.
Senior Licensing Engineer

A047

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December 12, 1994
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cc: USNRC Region I Administrator
USNRC Resident Inspector - VYNPS
USNRC Project Manager - VYNPS

Mr. Boyd W. Brown
INEL Research Center
2151 North Boulevard
P.O. Box 1625
Idaho Falls, Idaho 83415-2209

Enclosure to BVY 94-124

NRC Additional Information Required:

- A. Address the degree of compliance with augmented examinations that have been established by the NRC when added assurance of structural reliability is deemed necessary. Examples of documents that address augmented examinations based on licensee commitments are listed below.
- (1) Branch Technical Position MEB 3-1, High Energy Fluid Systems, Protection Against Postulated Piping Failures in Fluid Systems Outside Containment;
 - (2) Regulatory Guide 1.150, Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination;
 - (3) NUREG-0619, BWR Feedwater Nozzle and CRD Return Line Nozzle Cracking;
 - (4) NUREG-0803, Integrity of BWR Scram System Piping;
 - (5) NUREG-0313, Technical Report on Material Selection and Processing Guidelines For BWR Coolant Pressure Boundary Piping which pertains to augmented examination of all Code Class 1 piping and components which are considered susceptible to intergranular stress corrosion cracking (IGSCC).

Vermont Yankee Response

- A. Vermont Yankee performs a number of augmented examinations in addition to the ASME Section XI required inspections. Vermont Yankee also complies with additional criteria for examinations, such as Regulatory Guide 1.150. The commitments that are related to the documents referenced above and other commitments when added assurance of structural reliability is deemed necessary are listed below.
- (1) Branch Technical Position MEB 3-1, High Energy Fluid Systems, Protection Against Postulated Piping Failures in Fluid Systems Outside Containment. In a letter dated December 19, 1974, Docket No. 50-271, a Safety Evaluation was published by the USAEC titled "Rupture of High Energy Lines Outside of Containment" for Vermont Yankee. This Safety Evaluation and Vermont Yankee do not rely on any augmented inservice inspection to exclude high energy pipe breaks outside containment. Vermont Yankee can withstand the consequences of a rupture in any high energy fluid piping outside containment without

the loss of the capability to initiate and maintain safe shutdown of the plant.

- (2) Regulatory Guide 1.150, Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination. Vermont Yankee complies with the guidelines set forth in Regulatory Guide 1.150 for examination of RPV welds, as referenced in the Applicable Documents section of the Vermont Yankee Third Interval Inservice Inspection Program. It is expected that when ASME Section XI, Appendix VIII, is made mandatory (projected for January, 1996), this Regulatory Guide will be withdrawn. Appendix VIII will supersede those guidelines. If that is the case, the Regulatory Guide would only be applicable for the first and second outages of the current interval.
- (3) NUREG-0619, BWR Feedwater Nozzle and CRD Return Line Nozzle Cracking. The NRC is currently considering a relief to the PT examination that Vermont Yankee submitted February 11, 1994, and has provided additional information in a letter dated November 8, 1994. In lieu of PT, a remote underwater ultrasonic examination from the ID of the nozzle will be performed. The CRD return line was capped and is no longer within the scope of NUREG-0619.
- (4) NUREG-0803, Integrity of BWR Scram System Piping. The scram discharge volume is designed as a Safety Class 2 system in accordance with the Vermont Yankee Safety Class Manual (which was derived from applicable sections of ANS-22, Draft 4, Rev. 1, May 1973, and ANS-52.1). Piping is designed to ANSI B31.1. The scram discharge volume system is classified as a Seismic Class I system in accordance with the Vermont Yankee FSAR. This system is examined in accordance with ASME Section XI, IWC-2500, Categories C-F-2 and C-H, and is included in the scope of the Vermont Yankee Third Interval Inservice Inspection Program as part of the CRD system. In addition, inspection requirements for SDV supports are also contained in the "Supports" section of the program under the CRD system.
- (5) NUREG-0313, Technical Report on Material Selection and Processing Guidelines For BWR Coolant Pressure Boundary Piping. Vermont Yankee performs ultrasonic and penetrant examinations of piping welds susceptible to IGSCC in accordance with NUREG-0313. As stated in a letter, FVY 88-62, Vermont Yankee's Response to NRC Generic Letter 88-01, dated July 27, 1988, with the exception of six items, all of the piping welds within the scope of the generic letter at Vermont Yankee are Category A welds. The pipe replacement in 1985 replaced all of the recirculation piping and all of the stainless steel RHR piping. Safety Class stainless steel portions of the Reactor Water Cleanup system have been replaced in various outages. Category A welds are

being examined in accordance with NUREG 0313, Paragraph 5.3.2.1, which requires that a sample of 25% of those welds be examined every 10 year interval. All Class 1 Category A welds are enveloped by the ASME Section XI Vermont Yankee Third Interval Inservice Inspection Program, and thus, do not require augmented examination. The only remaining Category A items are the Class 3 Reactor Water Cleanup stainless steel welds. A sample of 25% of those welds are examined every 10 year interval under an augmented program. There are no Category B or C weldments at Vermont Yankee. There are six Category D items at Vermont Yankee. These are the two core spray safe-ends, which have a non-welded Inconel 600 crevice; the two core spray safe-end to reactor vessel nozzle welds, which are Inconel 600; and the two core spray safe-end to reducer welds, which are weld overlaid. These are being examined in accordance with NUREG 0313, Paragraph 5.3.2.4, which requires that approximately half of those items be examined every refueling outage. In actual practice, Vermont Yankee examines all six of these items every other refueling outage. There are no Category E weldments at Vermont Yankee.

- (6) Augmented examination of Main Steam piping from the outermost containment isolation valve to the turbine stop and bypass valves. Vermont Yankee performs examinations of these piping welds and piping supports in accordance with the requirements of ASME Section XI, Table IWC-2500-1, Code Category C-F-2 and Code Case N-491, Table - 2500-1, Code Item No. F1.20. A sample of 7.5% of the circumferential welds are examined every 10 year interval and a sample of 15% of the piping supports are examined every 10 year interval.

NRC Additional Information Required:

- B. Code of Federal Regulations, Part 10, 50.55a(g)(6)(ii)(A), states that all licensees must augment their reactor vessel examinations by implementing once, during the inservice inspection interval in effect on September 8, 1992, the examination requirements for reactor vessel shell welds specified in Item B1.10 of Examination Category B-A of the 1989 Code. In addition, all previously granted relief for Item B1.10 of Examination Category B-A, for the interval in effect on September 8, 1992, is revoked by the new regulation. For licensee's with fewer than 40 months remaining (e.g., Vermont Yankee) in the interval on the effective date, deferral of the augmented examination is permissible with the conditions stated in the regulations. Discuss the current schedule for meeting the augmented reactor pressure vessel examinations and the approach for meeting the volumetric examination coverage requirements.

Vermont Yankee Response

- B. Vermont Yankee plans to perform these examinations in the refueling outage scheduled to begin approximately mid-September, 1996, which is designated as the third refueling outage of the first period of the third interval. The second period of the third interval is actually scheduled to begin September 1, 1996. If the third refueling outage begins after that date, Vermont Yankee will invoke ASME Section XI, IWB-2412(b), which allows a period to be shifted by as much as 1 year to coincide with a refueling outage. Table 1 on page 4 of the Preface of the Vermont Yankee Third Interval Inservice Inspection Program would be revised to reflect this position. These welds are currently shown on pages 70 and 71 of the Vermont Yankee Third Interval Inservice Inspection Program as being scheduled for the third refueling outage of the first period and will remain as such.

NRC Additional Information Required:

- C. Provide the staff with the Boundary Diagrams which define the ASME Code Class 1, Class 2 and Class 3 boundaries for the systems in the Vermont Yankee Nuclear Power Station, Third 10-year Interval ISI Program Plan.

Vermont Yankee Response

- C. A full set of 11x17 isometric drawings delineating these boundaries accompanied our December 3, 1993 submittal [Reference (b)]. However, to assist NRC in review completion, we are presently completing up-to-date system drawings (P&IDs) for the systems which comprise the scope of the Vermont Yankee Third Interval Inservice Inspection Program. We anticipate completion of these drawings and submittal to the NRC by January 15, 1995.

NRC Additional Information Required:

- D. Regulatory Guide (RG) 1.26 and Standard Review Plan (SRP) 3.2.2 give guidance for quality group classification of components. In these documents, the main steam line from the outermost containment isolation valve to the turbine stop and bypass valves, and connected piping up to and including the first valve that is either normally closed or capable of automatic closure, is to be designated as Quality Group B or ASME Code Class 2. Vermont Yankee Nuclear Power Station has this portion of the main steam piping classified as non-safety related. Please provide technical justification for classifying this piping as non-safety related rather than Class 2 as specified in RG 1.26 and SRP 3.2.2.

Vermont Yankee Response

- D. Regulatory Guide 1.26 was issued in March 1972. No "Implementation" section was included in this issue. Revision 1, issued September 1974, contained an Implementation section which stated that this standard should be applied for all plants for which the docket date of the application for a construction permit is subsequent to January 1, 1975. Application of the guide to plants for which the docket date of the application was prior to January 1, 1975, was at the designer's option. Vermont Yankee received its construction permit in 1967 and an initial operating license in March of 1972. Vermont Yankee's original piping was designed to USAS B31.1-1967.

Vermont Yankee determined the classification of the main steam piping from the outermost containment isolation valve up to the turbine stop valve based on the guidelines of N-212 ANS-22, Draft No. 4, Rev. 1, dated May, 1973. ANS-22 classifies the Power Conversion System, which contains "that portion of the main steam lines which extend from the outermost main-steam isolation valves to the turbine including the turbine bypass valves, and branch lines and valves" as "Other Systems." Because of the interface between the power conversion system and safety systems, ANS-22 applies additional mechanical design or quality requirements.

Since the main steam piping from the outermost containment isolation valve to the turbine stop and bypass valves was constructed to quality standards commensurate with current standards and, in addition, is currently subject to inservice inspection as described in response A(7) above, the intent of Regulatory Guide 1.26 is satisfied.

NRC Additional Information Required:

- E. Included in the discussion of "Safety Class 2 Components," the licensee provided a list of pipe lines $< 3/8$ inch thickness and noted that piping welds in these lines would be excluded from examination. The licensee stated that there are no Examination Category C-F-1 welds $\geq 3/8$ inch. What is the total number of Examination Category C-F-1 welds $< 3/8$ inch represented by these lines?

Portions of Code Class 2 piping welds in the Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal (CHR) systems are critical to the safe shutdown of the plant. It has been recognized that current Code examination requirements exclude selection of thin wall piping welds ($< 3/8$ inch) in the subject systems. As a result, flaws in thin wall piping welds of piping systems critical to the safe shutdown of the plant would not be detected until through wall leakage occurs. Considering the safety significance of the subject systems, describe your plans for volumetric

examination of a sample of thin-wall piping welds to assure the continued integrity.

Vermont Yankee Response

- E. There are a total of 42 Category C-F-1 welds on condensate lines CT1 and CT4, all of which are less than 3/8 inch thick. Vermont Yankee will consent to perform an augmented sample examination of four (4) welds out of these 42 welds. This sample size would not meet the requirements of Table IWC-2500-1 for Category C-F-1 welds, if the welds did indeed fall within the scope of ASME Section XI (greater than or equal to 3/8 inch thick). Table IWC-2500-1, Category C-F-1, Note (2) requires that 7.5%, but not less than 28 welds be examined. A sample of 28 welds would equate to 67% of the Category C-F-1 welds, whereas a sample of four (4) welds out of 42 welds (9.5%) on these two lines is adequate to ensure the health and safety of the public.

There are a total of 836 Category C-F-2 welds that are greater than or equal to 3/8 inch thick. There are an additional 256 Category C-F-2 welds which are less than 3/8 inch thick. Currently 67 Category C-F-2 welds, all greater than or equal to 3/8 inch thick, are scheduled for examination in the third interval. Vermont Yankee will consent to perform an augmented examination of an additional 19 Category C-F-2 welds which are less than 3/8 inch thick. This would bring the total number of Category C-F-2 welds being examined to 86 out of a total of 1,092 Category C-F-2 welds. This equates to a sample of 7.9%. The additional weld sample will be distributed, prorated to the degree practicable, on the number of nonexempt welds per system, per type of weld (terminal end or structural discontinuity), and per pipe nominal diameter. The Vermont Yankee Third Interval Inservice Inspection Program will be revised to reflect these selection criteria.

NRC Additional Information Required:

- F. For Code Class 1 integral attachment welds to piping, pumps, and valves, the Code does not require examinations for the third and fourth interval when implementing Inspection Program B. Examination of integral attachments in Code Class 2 and 3 systems is required in the third and fourth interval. The recently approved ASME Code Case N-509 (approved November 25, 1992 by ASME), provides for continued inspection of Class 1 integral attachments for the life of the plant as well as readjustments in the sample inspection requirements for Code Class 2 and 3. Describe your plans with respect to implementing this Code Case.

Vermont Yankee Response

- F. Vermont Yankee will implement Code Case N-509 for integral attachments of vessels, piping, pumps, and valves. The Vermont Yankee Third Interval

Inservice Inspection Program will be revised to reflect these selection criteria and examination requirements.

NRC Additional Information Required:

- G. In the "Preface" to the program plan, under "Additional Examinations (Expansions)," the licensee stated that, "If component supports require corrective action in accordance with ASME Code Case N-491-3000, additional examination will be performed in accordance with ASME Code Case N-491-2430."

It should be noted that when ISI examinations reveal conditions exceeding acceptance levels for component supports that require corrective action or alternatively are evaluated for acceptance for continued service, the requirements for additional examinations must be met. Additional examinations validate that findings are isolated and also provide assurance of system integrity. Verify that the requirements for additional examinations are also applied to findings found acceptable for continued service based on acceptance by evaluation.

Vermont Yankee Response

- G. In the case when conditions noted in the field are found to be acceptable based on evaluation, Vermont Yankee treats this evaluation process of component supports as a part of the further definition of the acceptance criteria. The examination of supports encompasses many different types of supports and support applications, which essentially requires evaluation to be made on a case by case basis. This differs from IWB, IWC, and IWD-3500 evaluations where acceptance criteria are well defined. For example, spring supports at Vermont Yankee have not been pre-analyzed to determine an acceptable as-found setting range. A narrow tolerance of $\pm 5\%$ of the load has been established for initial acceptance. When a recorded setting is found to be outside this $\pm 5\%$ range, the as-found settings are given to engineering for further evaluation. If, through engineering evaluation, it is found that a spring support setting is acceptable and that no undue stress has been placed on the system, there is no failure, and therefore, no need for additional examinations. Another example would be the case where a support rod is deformed and is reported as such, but was installed in that manner and originally accepted in that condition. In this case, evaluation would be necessary to accept this condition, but it would not be considered a failure and, therefore no additional examinations would be performed. Again, the noted condition is not indicative of a failure. In support of this philosophy are Section XI Interpretation XI-1-86-30 and Code Case N-491 which recognize that these types of evaluations are sometimes necessary, but that additional examinations may not be required.

When the results of examinations require corrective measures in accordance with the provisions of N-491-3000, Vermont Yankee will perform additional examinations in accordance with N-491-2430.

NRC Additional Information Required:

- H. Verify that no additional requests for relief are required at this time. If additional relief requests are required, the licensee should submit them for staff review.

Vermont Yankee Response

- H. At this time, subsequent to the initial submittal, the need for only one additional request for relief has been identified. This relief will address the reactor pressure vessel bottom head welds required to be examined in accordance with ASME Section XI, Table IWB-2500-1, Category B-A, Code Items B1.21 and B1.22. The Vermont Yankee Third Interval Inservice Inspection Program will be revised to add this relief request.