Entergy

Entergy Nuclear Operations, Inc.
Vermont Yankee
320 Governor Hunt Rd
Vernon, VT 05354
Tel 802 257 7711

Michael J Colomb
Site Vice President

July 1, 2010

BVY 10-034

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Response to Request for Additional Information Regarding Vermont Yankee Request for Alternative VY-ISI-014
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

REFERENCES:
1. Letter, Entergy to USNRC, "10CFR0.55a(a)(3)(i) Inservice Inspection Program Request VY-ISI-014," BVY 09-066, dated December 14, 2009
2. Letter, USNRC to Entergy, "Request for Additional Information to Support the Review of the Vermont Yankee Nuclear Power Station Relief Request VY-ISI-014 (TAC No. ME2909)," dated June 3, 2010

Dear Sir or Madam:

Entergy Nuclear Operations, Inc. (ENO) submitted a request for alternative to apply the ASME Code Case N-702 requirements for nozzle to vessel weld inner radius examinations in Reference 1. The Nuclear Regulatory Commission issued Reference 2 to request additional information (RAI). Attachment 1 to this letter provides ENOs response to the subject RAI.

There are no new regulatory commitments being made in this submittal.

If you have any questions or require additional information, please contact Mr. James DeVincentis at 802-451-3150.

I declare under the penalty of perjury that the foregoing information is true and correct. Executed on July 1, 2010.

Sincerely,

[MJC/PLC]

A047
NRR

Attachments: 1. Response to Request for Additional Information

cc: Mr. Samuel J. Collins, Regional Administrator
U.S. Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Mr. James S. Kim, Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop O8C2A
Washington, DC 20555

USNRC Resident Inspector
Entergy Nuclear Vermont Yankee, LLC
320 Governor Hunt Road
Vernon, Vermont 05354

Mr. David O'Brien, Commissioner
VT Department of Public Service
112 State Street – Drawer 20
Montpelier, Vermont 05620-2601

Attachment 1

Vermont Yankee Nuclear Power Station

Response to Request for Additional Information

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REQUEST FOR ALTERNATIVE VY-ISI-014

RAI No. 1:

Please describe the weld materials from which the subject nozzle welds in VY-ISI-014 were fabricated, including any weld repair materials. The staff notes that nickel alloy weld materials, including weld repairs, are highly susceptible to stress-corrosion cracking in a BWR environment and are, therefore, unacceptable for application of the proposed alternative criteria of ASME Code Case N-702.

Response:

Per the weld procedures used by Chicago Bridge & Iron (CB&I), the Reactor Pressure Vessel (RPV) fabricator, the filler metal used for both initial weld and any repairs was an ASME Specification SA316 (Classification E8018NM). The Nickel content of this filler metal is relatively low (approximately 1%) and is consistent with the base metals being joined (RPV nozzle to shell). This level of nickel is well below levels considered to be a concern. Thus, the Vermont Yankee RPV nozzle to shell similar metal weld fabrication using ferritic low alloy steel filler is consistent with material applications that have been shown to be not susceptible to stress-corrosion cracking (SCC).

RAI No. 2:

Please state whether any relevant indications (e.g., flaws that were evaluated under the ASME Code, Section XI, Article IWB-3000, "Acceptance Standards") were found during previous ultrasonic examinations of ASME Code, Section XI, Examination Category B-D components during the current (fourth) 10-year ISI Interval or previous ISI intervals. Describe the nature of any such flaws (e.g., whether the flaws are fabrication flaws or service-induced) and any welds repairs that were implemented for any Examination Category B-D welds.

Response:

There have been relevant indications found during previous ultrasonic examinations of ASME Code, Section XI, Examination Category B-D components during the first and third 10-year ISI Intervals. These are discussed below. No relevant indications were found in the second interval and none have been found in the current (fourth) interval.

In the first inspection interval Vermont Yankee reported to the NRC, via letter dated April 9, 1975, indications in several nozzle to vessel welds N2C, N3C, N5A, and N5B (see nozzle identification below). Note the N4 nozzles are not part of this request for alternative. The nozzle to vessel weld indications were evaluated in accordance with the requirements of the 1974 ASME Section XI IWB-3000. These indications were determined to be laminations and well within the allowable limits of Table IWB-3511.3.

Also reported in the first interval, via letter dated January 4, 1979, were a number of indications in nozzle inner radii for nozzles N2D, N4A, N4B, N4C, N4D, N5A, and N5B (see nozzle identification below). These nozzle inner radius indications were determined to be in the RPV cladding and not in the inner radii.

Another recordable condition was that noted in the first period of the third interval. Indications were noted in two Feedwater nozzle to vessel welds (N4A and N4B). Note the N4 nozzles are not part of this request for alternative; therefore, 100% of these nozzles will be examined in accordance with Vermont Yankee's Code of Record, ASME Section XI Table IWB-2500-1, Category B-D. These indications were evaluated and determined to be within the allowable limits of IWB-3000 and as such were not reportable. Based on sizing and evaluation all recordable indications are believed to be fabrication related. In addition, none of the recorded indications required repair.

N2 – 12 inch Recirculation Inlet (10 nozzles total)
N3 – 18 inch Main Steam Outlet (4 nozzles total)
N4 – 10 inch Feedwater Inlet (4 nozzles total)
N5 – 8 inch Core Spray Inlet (2 nozzles total)

All previously mentioned indications have been re-examined subsequent to initial discovery. Since ASME Section XI Category B-D requires 100% examination of all B-D components, all components were examined in the Third VY ISI Interval. Any indication, whether previously identified or not, was evaluated against the acceptance standard in place during the Third Interval Program. The Third Interval ISI Program was developed to the requirements of ASME Section XI 1986 Edition. The current (fourth) VY ISI Interval was developed to the 1998 Edition/2000 Addenda of ASME Section XI. The acceptance criteria of IWB-3512 have not changed between the 1986 Edition and 1998 Edition/2000 Addenda. None of the subsequent examinations have resulted in identification of any fabrication or service related flaw that would exceed the 1998 Edition/2000 Addenda Code acceptance criteria of IWB-3512.

RAI No. 3:

Please state whether the provisions of the ASME Code, Section XI, Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems" have been and will continue to be used for volumetric examinations of the subject components.

Response:

In accordance with 10CFR50.55a, Ultrasonic Examination of ASME Category B-D components are to be performed to the requirements of ASME Code Section XI, Appendix VIII. Ultrasonic examination procedures used at Vermont Yankee satisfy the requirements of ASME Code Section XI, Appendix VIII. The continued use of provisions of the 2001 Edition of Appendix VIII ASME Code, Section XI, that complies with 10 CFR 50.55a(b)(2)(xxiv) was recently affirmed via NRC approval letter for Vermont Yankee Relief Request ISI-2008-1, Use of Later Edition and Addenda of ASME Code, Section XI for Repair and Replacement, Pressure Testing, and Non Destructive Testing Activities, dated April 30, 2009 (ML091170111).