

CATEGORY 1

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SUBJECT: Responds to NRC 980403 request for addl info re reactor vessel structural integrity to include application of ratio procedure in assessment of surveillance data from welds.

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August 25, 1998



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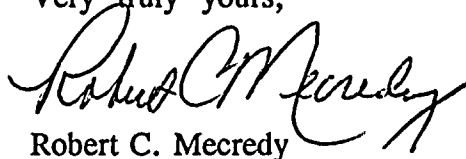
Subject: Response to Request for Additional Information (RAI) Related to Reactor Pressure Vessel Integrity (TAC No. MA0546)
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Ref. (1): Letter from Guy S. Vissing (NRC) to Robert C. Mecreddy (RG&E),
SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING REACTOR PRESSURE VESSEL INTEGRITY AT R. E. GINNA NUCLEAR POWER PLANT (TAC NO. MA0546), dated April 3, 1998

Dear Mr. Vissing:

By Reference 1, the NRC staff requested additional information regarding Reactor Vessel Structural Integrity to include the application of the ratio procedure in the assessment of surveillance data from welds. The attachment to this letter provides the requested information.

Very truly yours,


Robert C. Mecreddy

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Attachment

Subscribed and sworn to before me
on this 25th day of August, 1998

ADU1


Notary Public

LORETTA MARSHALL PARKER
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U.S. NRC Ginna Senior Resident Inspector

**RESPONSE TO U.S. NRC REQUEST FOR ADDITIONAL
INFORMATION (RAI) REGARDING REACTOR
PRESSURE VESSEL INTEGRITY AT
R. E. GINNA NUCLEAR POWER
PLANT (TAC NO. MA 0546)**

Section 1.0: Assessment of Best-Estimate Chemistry

In accordance with the provisions of Generic Letter (GL) 92-01, Revision 1, Supplement 1, the NRC requests the following:

- 1. An evaluation of the information in the references above and an assessment of its applicability to the determination of the best-estimate chemistry for all of your RPV beltline welds. Based upon this reevaluation, supply the information necessary to completely fill out the data requested in Table 1 for each RPV beltline weld material. Also provide a discussion for the copper and nickel values chosen for each weld wire heat, noting what heat-specific data were included and excluded from the analysis and the analysis method chosen for determining the best-estimate. If the limiting material for your vessel's PTS/PT limits evaluation is not a weld, also include the information requested in Table 1 for the limiting material. Furthermore, you should consider the information provided in Section 2.0 of this RAI on the use of surveillance data when responding.*

RESPONSE:

Reference 1, provided to RG&E by FTI, contains evaluation results of new data that were provided to the NRC. Due to ongoing testing and evaluation of Linde 80 class of materials, new data have been generated which were not included in previous reports of the B&W Owner's Group.

Review of the new data revealed that the best-estimate for Ni of Ginna Linde 80 welds that were fabricated with copper-coated wires (Heats No. 61782 and 71249) has changed. As mentioned in previous RG&E submittals in response to GL 92-01, Revision 1, Supplement 1, Heat No. 61782 is the limiting material for the Ginna RPV. The new data and its effect on the adjusted reference temperature (ART) at end of life (EOL) for heats 61782 and 71249 are supplied in Table 1. It should be noted that the new data was utilized for calculating the value of EOL ART that was previously reported to the NRC (References 3 & 5).

Reference 6 describes the B&W Reactor Vessel Integrity Program developed for 10 utilities including RG&E, which has been submitted to the NRC. It reiterates that the best estimate chemistry composition of RPV welds or surveillance weld materials such as those reported in

Reference 1, is based on mean values of multiple analyses of welds from the same filler wire heat. Consequently, in grouping sets of chemistry data, multiple welds made from common filler wire heats was the technique utilized by the B&W Owner's Group.

Section 2.0: Evaluation and Use of Surveillance Data

Consistent with the provisions of GL 92-01, Revision 1, Supplement 1, the NRC request the following:

- 2. That (1) the information listed in Table 2, Table 3, and the chemistry factor from the surveillance data be provided for each heat of material for which surveillance weld data are available and a revision in the RPV integrity analyses (i.e., current licensing basis) is needed, or (2) a certification that previously submitted evaluations remain valid. Separate tables should be used for each heat of material addressed. If the limiting material for your vessel's PTS/PT limits evaluation is not a weld, include the information requested in the tables for the limiting material (if surveillance data are available for the material).*

Response:

The new information or data that was the basis for the results outlined in Reference 1 have been submitted to the NRC by the B&W Owner's Group per Reference 7. This information updates the surveillance capsule data that was previously submitted by RG&E to the NRC in response to GL 92-01, Revision 1, Supplement 1 (References 2 & 4).

The new surveillance data for the limiting weld material of the Ginna RPV (Weld Wire Heat No. 61782) was utilized in calculating the Chemistry Factor reported in Table 1. Furthermore, this new data was also previously used in generating the Pressure-Temperature (PT) Limits and Low Temperature Overpressure Limits as reported in Reference 3 and submitted to the NRC per Reference 5.

It should be noted that the ratio procedure has been utilized in the calculation of the Chemistry Factor that is reported in Table 1 in accordance with RG 1.99, Revision 2. Details are provided in Reference 3.

Section 3. PTS/PT Limit Evaluation

- 3. If the limiting material for your plant changes or its adjusted reference temperature (ART) for the limiting material increases as a result of the above evaluations, provide the revised RT_{PTS} value for the limiting material in accordance with 10 CFR 50.61. In addition, if the adjusted RT_{NDT} value increased, provide a schedule for revising the PT and LTOP limits. The schedule should ensure that compliance with 10 CFR 50 Appendix G is maintained.*

Response:

To assess its impact on important parameters related to the limiting material (Weld Wire Heat No. 61782), RG&E reviewed previous calculations for ART (RT_{PTS}), Pressure-Temperature (PT) limits, and Low Temperature Overpressure (LTOP) limits that were previously submitted to the NRC (References 3&5). It was ascertained that the new data did not affect the ART (RT_{PTS}), nor the PT/LTOP limits due to the following reasons:

1. The limiting material for the Ginna RPV did not change.
2. The new best estimate for Cu and Ni (0.25% and 0.56% respectively) and additional surveillance data per Reference 7 for the limiting material were used to calculate the Chemistry Factor (utilizing the ratio procedure) and consequently values of ART (RT_{PTS}) in accordance with Position 2.1 of RG 1.99, Rev. 2. The end of life value for ART remained less than the screening criterion for circumferential welds of 300°F.
3. The resulting ART was subsequently utilized in generating the Pressure/Temperature limits per ASME Section XI, Appendix G methodology.

Therefore the PT and LTOP limits that were submitted to the NRC per References 3 and 5 remain valid since the most recent data had already been utilized to generate the limits.

REFERENCES

1. Framatome Technologies, Inc. Letter, D. L. Howell (FTI) to B&W Owner's Group Reactor Vessel Working Group, R. E. Jaquin (RG&E), P. S. Askins (TVA), INS-97-2526, June 30, 1997.
2. RG&E Letter, R. C. Mecredy (RG&E) to A. R. Johnson (NRC), "Six Month Response to NRC Generic Letter 92-01, Rev. 1, Supplement 1, 'Reactor Vessel Structural Integrity ' ", November 20, 1995.
3. Westinghouse Energy System Report, WCAP-14684, "R. E. Ginna Heatup and Cooldown Curves for Normal Operation", June 1996.
4. RG&E Letter, R. C. Mecredy (RG&E) to A. R. Johnson (NRC), "Response to Request for Additional Information on Pressurized Thermal Shock (PTS) Assessment for Ginna Reactor Vessel", December 21, 1995.
5. RG&E Letter, R. C. Mecredy (RG&E) to Guy S. Vissing (NRC), "Application for Ammendment to Facility Operating License, Revision to Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR), September 13, 1996.
6. BAW 1543, Rev. 4, "Master Integrated Reactor Vessel Surveillance Program", B&W Owner's Group, February 1993.
7. BAW 2325, " Response to Request for Additional Information (RAI) Regarding Pressure Vessel Integrity", B&W Owner's Group, May 1998.

TABLE 1

Facility: Ginna
 Vessel Manufacturer: B&W

Information requested on RPV Weld and/or Limiting Materials

RPV Weld Wire Heat ⁽¹⁾	Best-Estimate Copper	Best-Estimate Nickel	EOL ID Fluence (x 10 ¹⁹)	Assigned Material Chemistry Factor (CF)	Method of Determining CF ⁽²⁾	Initial RT _{NDT} (RT _{NDT(U)})	σ ₁	σ _A	Margin	ART or RT _{PTS} at EOL
⊗ 61782	0.25 ^{1**}	0.56 ¹	3.49 ³	160.7F	Surveillance Data	-4.8 ⁴	19.7	14	48.3	256.58F
71249	0.26 ¹	0.61 ¹	0.372 ²	181.6F	RG 1.99 Tables	10 ²	0	28	56	197.95F

(1) or the material identification of the limiting material as requested in Section 1.0 (1.)

(2) determined from tables or from surveillance data

⊗ RPV Limiting Material

** Denotes references provided in the response

Discussion of the Analysis Method and Data Used for Each Weld Wire Heat

Weld Wire Heat

Discussion

61782

Best estimate Cu same as original submittal; Best estimate Ni changed from 0.54% to 0.56%.

71249

Best estimate Cu same as original submittal; Best estimate Ni changed from 0.6% to 0.61%