



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 7, 2011

Mr. John T. Carlin
Vice President R.E. Ginna Nuclear Power Plant
R.E. Ginna Nuclear Power Plant, LLC
1503 Lake Road
Ontario, NY 14519

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING RELIEF
REQUEST ISI-04, ALTERNATE DEPTH SIZING QUALIFICATION – R.E. GINNA
NUCLEAR POWER PLANT (TAC NO. ME5120)

Dear Mr. Carlin:

By letter dated November 24, 2010, R.E. Ginna Nuclear Power Plant, LLC, the licensee, submitted Relief Request ISI-04 from selected requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) at the R.E. Ginna Nuclear Power Plant. Specifically, the ASME Code specifies that the acceptance depth sizing criterion for performance demonstrations not exceed 0.125-inch root mean square error (RMSE) for personnel, equipment, and procedure qualifications. The licensee proposed to use an alternative RMSE depth sizing criterion for qualification purposes.

The Nuclear Regulatory Commission staff has reviewed the information provided and has determined that additional information is needed to complete its review. Enclosed is the staff's request for additional information (RAI). As discussed with your staff, we understand that you intend to respond to this RAI by February 28, 2011.

Please contact me at 301-415-1364 if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Douglas V. Pickett".

Douglas V. Pickett, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-244

Enclosure:
As stated

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REQUEST FOR ADDITIONAL INFORMATION

REQUEST ISI-04

R.E. GINNA NUCLEAR POWER PLANT, LLC

R.E. GINNA NUCLEAR POWER PLANT

DOCKET NO. 50-244

By letter dated November 24, 2010, (Reference 1), R.E. Ginna Nuclear Power Plant, LLC (the licensee) submitted Relief Request ISI-04 from selected requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) at the R.E. Ginna Nuclear Power Plant (Ginna). Specifically, the ASME Code specifies that the acceptance depth sizing criterion for performance demonstrations not exceed 0.125-inch root mean square error (RMSE) for personnel, equipment, and procedure qualifications. The licensee proposed to use an alternative RMSE depth sizing criterion for qualification purposes. The Nuclear Regulatory Commission (NRC) staff has reviewed the information submitted along with information from a prior submittal, Relief Request 19 (Reference 2). From the available information, the NRC staff has determined that the following information is needed to complete the review and evaluation.

1. If cladding is on the inside diameter (ID) scanning surface, provide a representative sketch showing the cross section of the weld, butter, cladding, and base metal.
2. The Electric Power Research Institute (EPRI) – Performance Demonstration Initiative (PDI) program tests candidates on large diameter, thick wall representative mockups containing rough and wavy, ID surfaces (Reference 3). Smaller diameter, thinner wall mockups are available for add-on performance demonstrations. Provide the nominal inside diameter and nominal wall thickness (the thickness used to determine inspection volume) for the components in Reference 1, Table A. For the three different weld configurations, discuss the ID surface roughness/waviness and scanning restrictions, if any (counter bore, field weld bead, etc).
3. Starting in 2004 (Reference 4), EPRI has requested licensees to make surface profilometry measurements of dissimilar metal (DM) welds and adjacent similar metal welds to identify scanning gaps greater than 1/32-inch between the transducer and ID surface. The last ID examination of the subject welds occurred prior to DM weld performance-based qualification requirements. Discuss the transducer footprint on the inspection subject weld areas (i.e., curvature gaps, contoured transducers, etc.). Discuss Ginna's effort to identify and record surface roughness/waviness of the selected welds and to locate scanning gaps greater than 1/32-inch between the transducer and ID surface.
4. Discuss the nondestructive examination (NDE) methods and techniques used for examining the subject welds during the 2011 refueling outage (RFO). Discuss the NDE improvements (over prior examinations) that will be used for the 2011 RFO examinations, such as, performance-based qualifications, video camera records, surface waviness records, supplemental eddy current examinations, visual examinations, etc.

Enclosure

5. Some vendors have performed supplemental, configuration specific, non-blind depth sizing demonstrations on smooth ID surfaces of reactor coolant mockups containing statistically significant number of flaws (Example, Reference 5). Excluding the ASME Code required blind performance demonstrations (administered by the EPRI-PDI), discuss demonstrations that Ginna's vendor performed that supported depth sizing effectiveness on configurations similar to the subject weld configurations. Include in the discussion mockup dimension (ID diameter and wall-thickness), materials, through-wall flaw distributions, flaw types and quantities, blind/non-blind demonstrations, and RMSE's.
6. The submittal was based on Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i). However, the industry has been unable to achieve the ASME Code required depth sizing RMSE requirement which was imposed on DM welds on November 22, 2002. The RMSE performance demonstration acceptance requirement occurred after Ginna was constructed and after the last examinations of the subject welds. However, the blind DM weld performance demonstrations administered by the EPRI-PDI program have not qualified any ultrasonic testing personnel, equipment, or procedures for ID depth sizing. The NRC staff has determined that the appropriated 10 CFR Part 50 paragraph for this request (Reference 1) is 10 CFR 50.55a(g)(5)(iii). Provide a discussion on the difficulties Ginna would experience trying to meet the RMSE requirement.
7. The licensee's proposed alternative (Reference 1) is to use Code Case N-695 qualifications for Appendix VIII, Supplement 10 qualifications. The proposal also contains words in the "Reason for the Request" that reference Supplement 2. If Supplement 2 is part of this relief request, provide the information to support the proposed alternative RMSE; if not, provide clarification.
8. From prior Relief Request 19 (Reference 2), Ginna identified the likely failure mechanism for the subject welds as fatigue cracking. In a response (Reference 6) to an NRC request for additional information, Ginna provided a crack depth divided by crack length (aspect ratio) of 6 to support a discussion on crack growth. The ASME Code, Section XI, Table IWB-3514-2, "Allowable Planar Flaw," in austenitic material gives a range of aspect ratios for acceptable flaw depths. The most conservative aspect ratio in this range is 0.05. The fatigue crack length is measured by ultrasonic testing and/or eddy current testing which can be used to estimate fatigue crack depth.

The proposal is for a crack depth sizing criterion that is based on the vendor's RMSE from a non-qualified performance demonstration. The criterion is being applied as a tolerance for determining crack depth. Since fatigue is the likely failure mechanism, the crack depth sizing proposal should include a comparison between values based on a conservative aspect ratio (assuming measured crack length by one or more methods) with values derived by adding the vendor's RMSE tolerance adjustment to the fatigue crack depth. Provide a discussion on using an aspect ratio for fatigue crack depth determinations. Provide application criteria for aspect ratio and RMSE performance demonstration tolerance adjustment that result in selecting the more conservative fatigue crack depth for disposition.

References:

1. Letter from Paul Swift, Constellation Energy, to NRC dated November 24, 2010, "10 CFR 50.55a Request ISI-04: Request for use of an Alternate Depth Sizing Qualification," Agencywide Documents Access and Management System (ADAMS) Accession No. ML103350217.
2. Letter from Mark G. Kowal, NRC, to John T. Carlin, R.E. Ginna Nuclear Power Plant, LLC dated February 17, 2009, "Fourth Interval Inservice Inspection Program Relief Request No. 19 – Deferral of Reactor Pressure Vessel Category B-F Exams from 2009 to 2011 - R.E. Ginna Nuclear Power Plant," ADAMS Accession No. ML090330300.
3. Letter from Ali Rezai, NRC, to Timothy R. Lupold, NRC dated July 30, 2010, "Summary of Meeting Held on June 17 and 18, 2010 with the Electric Power Research Institute Performance Demonstration Initiative Representatives," ADAMS Accession No. ML102110443.
4. Letter from Donald G. Naujock, NRC, to Terence L. Chan, NRC dated January 18, 2005, "Summary of Public Meeting Held October 19 & 20, 2004 with EPRI-PDI Representatives," ADAMS Accession No. ML050690198.
5. Letter from James R. Becker, Pacific Gas and Electric Company, to NRC dated August 12, 2010, "ASME Section XI Inservice Inspection Program Relief Request NDE-RCS-SE-2R16 Use of Alternate Sizing Qualification Criteria through a Protective Clad Layer," ADAMS Accession No. ML102350295.
6. Letter from Joseph E. Pacher, Constellation Energy, to NRC dated October 31, 2008, "Response to Request for Additional Information Pertaining to Fourth 10-Year Inservice Inspection Program Relief Request Number 19," ADAMS Accession No. ML083110415.

February 7, 2011

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Vice President R.E. Ginna Nuclear Power Plant
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Sincerely,
/RA/
Douglas V. Pickett, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-244
Enclosure:
As stated
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