From: Mahesh Chawla
To: Dale.Vincent@nmcco.com
Date: 5/1/06 10:27AM
Subject: Third 10-Year ISI Program Plan Request for Relief No. 21 for PINGP Unit 2

In reference to the above Relief Requests, the NRC staff would like to discuss the following information with you. Please arrange a teleconference to the discuss the following request for additional information:

Request for Relief No. 21, Items 1 through 4, Examination Category B-D, Item B3.90, Full Penetration Welded Nozzles in Vessels

1) The licensee stated that examinations of the RPV primary outlet nozzle-to-shell welds were limited in both the parallel and perpendicular scans from the vessel ID to 78.56% of the required ASME Code volume. However, a review of the Wesdyne Report for Welds N-7 and N-10 show that nearly 100% volumetric coverage for scans performed perpendicular to the welds was obtained. This included scans from the bore side of the nozzle, and it is assumed, also from the vessel side ("Star" scan).

a) Please clarify whether the coverage reported (99.52%) for scans performed perpendicular to these welds is correct.

b) Also, further define the "Star" scan, as reported in the Wesdyne document.

c) Provide further explanation as to how the proximity of the nozzle protrusion limited the parallel, or tangential, scans for the primary outlet nozzle-to-shell welds.

2) For RPV safety injection nozzle-to-shell Welds N-8 and N-11, only 59.26% coverage was reported by the licensee. The reason for limited coverage was listed as "the proximity of the outlet nozzle protrusion to the nozzle to shell weld."

a) Provide further explanation as to how the RPV primary outlet nozzle protrusions caused limited scans on the safety injection nozzles.

b) Describe why the weld volumes exhibited such limited coverages for the 45 shear (15.55%), 45 longitudinal single (0%), and 45 longitudinal dual (0%) transducers on the circumferential (tangential) scans.

Request for Relief No. 21, Item 5, Examination Category B-F, Item B5.70, Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles, Steam Generator

1) Confirm whether dissimilar metal Weld W-5 is on the primary outlet or inlet nozzle of Steam Generator 22.

2) The licensee stated that Weld W-5 is an elbow-to-safe end weld, and that the materials for the elbow and safe end are SA 351-CF8 cast austenitic stainless steel, and 308L stainless. The cross-sectional drawing and coverage sketch included in the submittal show the carbon steel steam generator nozzle to have a stainless steel buttering, with the full penetration dissimilar metal weld joining this buttering to a statically cast short radius elbow. Therefore, the "safe end" is assumed to be the 308L stainless steel buttering. However, the photograph of this weld (DSC01640.JPG) appears to show a second circumferential weld crown approximately 6-8-inches upstream of Weld W-5. Confirm that there is no actual wrought or cast safe end pipe segment in this configuration. Also provide the nominal pipe outside diameter and wall thickness for each component associated with Weld W-5.

3) The licensee stated that dissimilar metal Weld W-5 was examined to ASME Code, Appendix III requirements. However, 10 CFR 50.55a(g)(6)(ii)(C)(1) and (2), Implementation of Appendix VIII to Section XI, specifically require the 1995 Edition, with 1996 Addenda, and

Appendix VIII, Supplement 10, Qualification Requirements for Dissimilar Metal Piping Welds, to be implemented for all dissimilar metal weld examinations conducted after November 22, 2002. The licensee conducted this examination on May 23, 2005. Therefore, it appears the licensee may have failed to meet the requirements of the Code of Federal Regulations.

The licensee's reason for not meeting the performance demonstration requirements of Appendix VIII, Supplement 10, is that the configuration of Weld W-5 is not covered by the demonstration samples currently available at the Electric Power Research Institute (EPRI) Performance Demonstration Initiative (PDI) center. The licensee further stated that because of the design of the weld joint, no mock-up could be created to demonstrate performance in accordance with Appendix VIII, Supplement 10. While this configuration is not a typical, or generic, design for Westinghouse PWRs, and may not for this reason presently be available under PDI, it is incumbent on each licensee to meet CFR requirements, or propose an alternative in accordance with 10 CFR 50.55a(a)(3).

a) The NRC staff disagrees with the licensee's contention that the weld design could not be re-created in a mock-up. In many cases, licensees have built site-specific mock-ups due to unique designs or weld configurations at their plants. Explain why Nuclear Management Company, LLC could not fabricate a mock-up and conduct a performance demonstration for the procedure, personnel, and equipment to be used when examining the subject weld, given the time available between the implementation date in CFR (November 22, 2002), and the examination date (May 23, 2005).

b) The ASME Code provides minimum prescriptive-based examination criteria in Section XI, Appendix III. In Appendix III, Supplement 4, Paragraph 4(c), the ASME Code recommends that, for austenitic and dissimilar metal welds, licensees qualify examiners and procedures using welded samples, and simulated or actual flaws located in positions where geometry may make them more difficult to detect. The purpose of the examination procedure qualification is to determine that the proposed examination technique is capable of detecting the specified flaws of interest and that the examination capabilities and limitations are identified. Discuss why this type of qualification could not be performed at Prairie Island 2.

Note: Presentations concerning the use of qualification "add-ons" and site-specific mock-ups been made at recent EPRI PDI meetings (Summary of Public Meeting - ADAMS ML052580153 and Dissimilar Metal Weld Qualification - ADAMS ML05265166).

c) The licensee stated that the examination was performed using 45-degree refracted longitudinal wave transducers. However, the licensee did not provide transducer frequency and other information necessary to assess whether this technique may be adequate to penetrate the coarse-grained cast material in the short radius elbow. Provide the center frequency and bandwidth of the transducers used, describe the calibration block used and discuss the amplitude and shape of the DAC curve established from the calibration block responses. Include reference and scan gain settings, and the typical screen height of material baseline noise observed during the examination of W-5.

d) The ASME Code, Appendix III provides minimum criteria for performing prescriptive-based UT. However, licensees may use additional equipment and expertise to perform an examination. Extensive research, round-robin testing, and demonstrations have been performed on cast austenitic material using different transducer configurations [phased array, Synthetic Aperture Focusing (SAFT-UT), low frequency twin crystals, etc.] and data manipulation (post processing via computer) techniques. These methods have been shown to dramatically improve inspection capability in cast stainless steel piping welds. Discuss any advanced equipment and UT techniques that were considered and were determined to be ineffective for this application.

Note: Preliminary results of research in advanced UT methods for coarse-grained materials have been published in several recent conference proceedings (Notes 1,2,3).

e) The staff is aware that during each refueling outage, the steam generator channel heads are opened to provide robotic access for tubing examinations. This may also provide access to the subject weld from the inside surface of the nozzle/piping. If a qualified examination from the outside diameter is not considered feasible, discuss whether access to examine this weld is available from the inside of the steam generator channel head. Also discuss whether the PDI mock-up specimens for inside diameter examination on the RPV nozzles may be used to support an examination from the inside of the steam generator.

Request for Relief No. 21, Item 6, Examination Category B-J, Item B9.11, Pressure Retaining Welds in Piping

a) The licensee stated that valve-to-pipe Weld W-11 was examined using procedures, personnel, and equipment qualified in accordance with ASME Code, Appendix VIII, Supplement 2. Please confirm that the 1995 Edition, 1996 Addenda of the ASME Code was applied for this examination.

b) It was stated that 45 and 60-degree transducers were used. It appears from the coverage sketch included in the submittal, that the 45-degree examination was a shear wave and the 60-degree was a refracted longitudinal wave. Please confirm.

Request for Relief No. 21, Item 7, Examination Category C-F-2, Item C5.80, Pressure Retaining Welds in Carbon or Low Alloy Steel Piping

a) The licensee stated that flange-to-tee Weld W-14 was examined using procedures, personnel, and equipment qualified in accordance with ASME Code, Appendix VIII, Supplement 3. Please confirm that the 1995 Edition, 1996 Addenda of the ASME Code was applied for this examination.

b) In the licensee's submittal, the cross-sectional sketch of the access limitation caused by the outside surface geometry of the flange is adequately depicted. Page 4 of 4 of the supplemental report also states scans were limited by interference from a piping support, and photographs of the weld are shown. However, these photographs and brief comments on the supplemental report do not adequately describe the limitation to scans caused by support interference. Please describe the support, and how it impacts the ASME Code-required scans for this weld.

Notes:

1. A.A. Diaz, M.T. Anderson, S.E. Cumblidge, S.R. Doctor, NDE Assessments of Cast Stainless Steel reactor Piping Components, Proceedings for the 4th International Conference on NDE in Relation to Structural Integrity for Nuclear and Pressurized Components, EPRI/JRC, London, U.K., December 2004.

2. S.R. Doctor, M.T. Anderson, A.A. Diaz, S.E. Cumblidge, Progress in the Reliable Inspection of Cast Stainless Steel Reactor Piping Components, 18th International Conference on Structural Mechanics in Reactor Technology (SMiRT 18), Beijing, China, August 2005.

3. M.T. Anderson, S.E. Cumblidge, S.R. Doctor, An Assessment of Low Frequency Phased Array Methods to Detect and Characterize Cracks in Cast Stainless Steel Piping, Proceedings of 4th EPRI Phased Array Conference, Miami, FL, December 2005.

CC: Thomas McLellan

Mail Envelope Properties (44561ABE.A68 : 2 : 35732)

Subject: Third 10-Year ISI Program Plan Request for Relief No. 21 for PINGP Unit 2
Creation Date: 5/1/06 10:27AM
From: Mahesh Chawla

Created By: MLC@nrc.gov

Recipients	**Action**	**Date & Time**
TWGWPO01.HQGWDO01	Delivered	05/01/06 10:27 AM
TKM CC (Thomas McLellan)	Opened	05/01/06 12:07 PM
nmcco.com	Transferred	05/01/06 10:27 AM
Dale.Vincent (Dale.Vincent@nmcco.com)		

Post Office	**Delivered**	**Route**
TWGWPO01.HQGWDO01	05/01/06 10:27 AM	nmcco.com

Files	**Size**	**Date & Time**
MESSAGE	14455	05/01/06 10:27AM

Options

Auto Delete:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened