NRR-PMDAPEm Resource

From: Watford, Margaret
Sent: Tuesday, April 14, 2015 9:41 AM
To: Thomas.N.Weber@aps.com
Subject: Palo Verde, Unit 3 - Request for Information Regarding Pressure Boundary Leakage in RCP 2A Pressure Instrumentation Nozzle (MF6083)
Attachments: Palo Verde, Unit 3 - Request for Information Regarding Pressure Boundary Leakage in RCP 2A Pressure Instrumentation Nozzle (MF6083).pdf

Tom,

On April 7, 2015, Arizona Public Service Company discovered boron deposits on the differential pressure instrumentation nozzle on the suction side of the 2A reactor coolant pump, while performing planned routine visual examinations of Palo Verde Nuclear Generating Station, Unit 3 components. A call was held between Palo Verde and NRC staff on April 9, 2015 to discuss the emergent situation and the potential for the licensee to request relief from the ASME Code, Section XI, requirements. The licensee provided presentation slides, which are available at Agencywide Documents Access and Management System (ADAMS) Accession No. ML15103A288.

Based on the licensee's slides, the NRC staff has questions regarding the licensee's proposed repair. Please see the attached document for the questions.

Due to the emergent nature of the situation, a clarification call will be held on April 15, 2015 to discuss the questions and repair schedule in detail.

Thank you,

Maggie Watford
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Recipients:
"Thomas.N.Weber@aps.com" <Thomas.N.Weber@aps.com>
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Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
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REQUEST FOR ADDITIONAL INFORMATION
REGARDING PRESSURE BOUNDARY LEAKAGE FOUND ON
REACTOR COOLANT PUMP 2A PRESSURE INSTRUMENTATION NOZZLE
PALO VERDE NUCLEAR GENERATING STATION, UNIT 3 (TAC NO. MF6083)

On April 7, 2015, Arizona Public Service Company discovered boron deposits on the differential pressure instrumentation nozzle on the suction side of the 2A reactor coolant pump, while performing planned routine visual examinations of Palo Verde Nuclear Generating Station, Unit 3 components. A call was held between Palo Verde and NRC staff on April 9, 2015 to discuss the emergent situation and the potential for the licensee to request relief from the ASME Code, Section XI, requirements. The licensee provided presentation slides, which are available at Agencywide Documents Access and Management System (ADAMS) Accession No. ML15103A288.

Based on the licensee's slides, the NRC staff has the following questions regarding the licensee's proposed repair.

1. Provide drawings of the original pressure instrument nozzle penetration that identify the following:
   (a) The essential components and parts of the nozzle penetration.
   (b) The bore of the reactor coolant pump (RCP) casing where the instrument nozzle is attached.
   (c) The nozzle itself (with drilled hole).
   (d) The J-groove weld.

   The drawings should identify the dimensions of all major components and parts of the original pressure instrument nozzles, such as the diameter of the bore, orifice, RCP base metal thickness, and cladding. If these drawings were submitted as part of a previous licensing action, please provide references.

2. Provide the following information on the half nozzle repair:
   (a) Describe the detailed steps of the half nozzle repair.
   (b) Provide drawings of the half nozzle repair with the dimensions of all major components and parts of the repaired pressure instrument nozzles, such as the diameter and the length of the bore and cladding. Identify the demarcation of ASME Code Classification for components (i.e., ASME Class 1 vs. Class 2) and the primary system pressure boundary on the drawings after the repair is completed.
   (c) Provide a detailed drawing which shows the intersection between the new nozzle and old nozzle (i.e., the location of the 0.6 inch gap).

3. Provide the following information on the new weld:
   (a) Discuss how the partial penetration weld will be made at the exterior RCP wall where the new nozzle is attached, including the welding process/method and the pre- and

post-welding examination (method and areas of examination). Provide information on any pre- or post-heat treatment and the relevant ASME Code Section and subarticle to which the welding will be complied.

(b) Provide the welding design drawing.

(c) Discuss the inservice inspection of the new attachment weld, including how often the weld will be examined and the inspection method that will be used.

4. Provide the applicability of the relief request, either by the month and year or the designated number (e.g., No. 11) of the next refueling outage.

5. Discuss the impact of the high speed flow of coolant inside the RCP impinging on the degraded J-groove weld of the instrument nozzle. Discuss whether such impact would cause fragments of the J-groove weld to fall into the flow stream. Address if the potential loose parts of the J-groove would cause damage to the RCP internals.

6. Discuss the condition (i.e., any degradation or leakage) of previously repaired Alloy 600 small bore instrumentation lines attached to hot leg.

7. By letter dated August 16, 2005, the licensee submitted Relief Request 31, Revision 1 (ADAMS Accession No. ML052550368). Based on the review of Relief Request No. 31, it appears that the licensee may need to calculate the metal loss of the bore in the RCP casing due to potential crevice corrosion as a result of the 0.6 inch gap existing between (1) the new nozzle and remnant nozzle in the flaw evaluation, (2) crack growth of existing flaw in the weld by thermal fatigue, and (3) growth of existing flaw in the weld into the RCP casing. Confirm that all flaw evaluations and crack growth calculations consider the period of extended operation.

8. In Relief Request 31, the licensee committed to track the time at cold shutdown conditions for each unit against the assumptions made in the corrosion analysis so that the overall general/crevice corrosion rate does not exceed the rate presented in WCAP-15973-P, Revision 1, “Low-Alloy Steel Component Corrosion Analysis Supporting Small Diameter Alloy 600/690 Nozzle Repair/Replacement Programs” dated May 2004 (ADAMS Accession No. ML041540232). The licensee made the commitment to ensure the allowable bore diameter is not exceeded over the life of the plant.

   (a) Discuss whether this commitment has been carried out since 2005. If yes, discuss how the cold shutdown conditions have been tracked and how the bore diameter is monitored to ensure that it does not exceed the allowable diameter.

   (b) Discuss how often the required action in the commitment is performed.

   (c) If the commitment has not been carried out, provide justification.