NRR-PMDAPEm Resource

From: Saba, Farideh
Sent: Wednesday, August 27, 2014 10:49 AM
To: ken.frehafer@fpl.com
Cc: eric.katzman@fpl.com; eric.katzman@fpl.com
Subject: Request for Additional Information (RAI) re. St. Lucie 2 - 3rd Interval Relief Request 14 (TAC MF4341)
Attachments: MF4341 St Lucie RR-14 RAI Rev 1.docx

Importance: High

Ken,

By letter dated June 30, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14203A046), Florida Power & Light Company (FPL, the licensee) requested relief from the examination requirements of the ASME Code, Section XI, 1998 Edition with Addenda through 2000, for the subject control element drive mechanism (CEDM) welds. The licensee submitted Relief Request Number 14 as an alternative to the ASME Code requirements.

To complete its review, the U.S. Nuclear Regulatory Commission (NRC) staff requests the following additional information. Please see the attached for the NRC staff request for additional information (RAIs). As we agreed during our conference call on August 25, 2014, please respond to these RAIs by October 31, 2014.

Thanks,

Farideh

Farideh E. Saba, P.E.
Senior Project Manager
NRC/ADRO/NRR/DORL
301-415-1447
Mail Stop O-8G9A
Farideh.Saba@NRC.GOV

Hearing Identifier: NRR_PMDA
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From: Saba, Farideh

Created By: Farideh.Saba@nrc.gov

Recipients:
"eric.katzman@fpl.com" <eric.katzman@fpl.com>
Tracking Status: None
"eric.katzman@fpl.com" <eric.katzman@fpl.com>
Tracking Status: None
"ken.frehafer@fpl.com" <ken.frehafer@fpl.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

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REQUEST FOR ADDITIONAL INFORMATION
RELIEF REQUEST NUMBER 14
EXAMINATION OF CONTROL ROD DRIVE MECHANISM HOUSING WELDS
ST LUCIE PLANT, UNIT NO. 2
FLORIDA POWER & LIGHT COMPANY
DOCKET NUMBER 50-389
TAC NO. MF4341

By letter dated June 30, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14203A046), Florida Power & Light (FPL) requests relief from the examination requirements of the ASME Code, Section XI, 1998 Edition with Addenda through 2000, for the subject CEDM welds. The licensee submitted Relief Request Number 14 as an alternative to the ASME Code requirements. To complete its review, the Nuclear Regulatory Commission (NRC) requests the following additional information.

RAI 1

Page 1 of the submittal stated that performing ASME Code required examinations for the control element drive mechanism (CEDM) housing welds will expose personnel significant radiation. The licensee did not provide specific radiation dose. Provide the radiation dose.

RAI 2

The second to the last paragraph on Page 8 of the submittal states that "...Because the replacement head was installed during the 2nd period of the 3rd ISI interval, FPL performed examinations of the lower weld (CEDM [weld No.] 5) on the 2 accessible periphery CRD [control rod drive] housings during the 3rd period to satisfy the IWB-2412(b)(2) requirement..."

(a) Table IWB-2500-1, Examination Category B-O, Item No. B14.10, requires volumetric or surface examination of the welds in 10 percent peripheral CRD housing. Page 9 of the submittal stated that the periphery consists of thirty-two (32) CEDM housings. As such, a total of 16 welds (5 welds / housing x 32 housing x 10 percent = 16 welds) would be in the population per Table IWB-2500-1. The licensee invoked IWB-2412(b)(2) which requires that when items or welds are added during the second period of an interval, at least 25% of the examinations required by the applicable Examination Category and Item Number for the added items or welds shall be performed during the third period of the interval. It appears that based on the 25 percent requirement. the total required welds to be examined would be 4 (16 welds x 25 percent). However, the NRC staff questions why IWB-2412(b)(2) is applicable in this case because the replacement CEDM housing is not "added" to the population of the original CEDM housing but a replacement. Please provide the exact number of welds that are required to be examined in accordance with the ASME Code, Section XI, and provide justification why IWB-2412(b)(2) is applicable.

(b) Discuss how the examination of two CEDM weld No, 5 welds can demonstrate the condition of the rest of welds in the CEDM housing that are not inspected by surface or volumetric examinations.

(c) Provide the month and year during the third period that the surface examination was performed on the two CEDM weld No, 5 welds.

RAI 3

The last paragraph on page 8 of the submittal states that "...For the remaining welds in each CEDM assembly, the configuration completely precluded accessibility for examination..." Clarify that the inaccessibility is referring to the surface examination, not the VT-2 examination, of the subject CEDM housing welds.

RAI 4

Page 9 of the submittal states that "...FPL replaced the complete Reactor Vessel Head (RVH) assembly including CEDMs during the SL2-17 (2007) refueling outage. The replacement occurred during the 2nd period of the 3rd ISI interval for PSL-2. The PSL-2 replacement reactor vessel head contains ninety-one (91) control element drive (CEDM) mechanisms. The periphery consists of thirty-two (32) CEDMs. Prior to assembly, preservice surface examinations of all 5 welds on the thirty-two (32) periphery CEDMs were performed. In addition a volumetric preservice examination was performed of the CEDM welds prior to the assembly..."

(a) If surface examinations were performed for all 5 welds on the 32 periphery CEDM housings in 2007, discuss whether welds on the remaining 59 CEDM housings (91 - 32 = 59) were surface examined in 2007. If not, provide justification. Discuss the surface examination technique performed in 2007.

(b) Discuss whether the pre-operational volumetric examination was performed for all 455 welds in 2007. If not, discuss which welds were volumetrically examined and justify why all 455 welds were not volumetrically examined.

(c) Discuss the volumetric examination techniques (e.g., ultrasonic or radiographic) and associated qualifications (i.e., cite the subarticles in the ASME Code, Section III to which the technique was qualified) that were used in the 2007 pre-operational examination.

RAI 5

The licensee stated that most of the CEDM housing welds cannot be surface or volumetrically examined because of hardship. In light of that, the NRC staff would like to explore the potential for degradation of these welds and requests the following information:

(a) Page 3 of the relief request identified the two base metals that were joined with CEDM housing weld No. 1. However, the base metals for some welds were not clearly identified. Provide the material specification (e.g., SA-276 F403) of base metals that were joined with CEDM weld numbers 2, 3, 4 and 5. Provide the material specification of the filler metal used in each of the CEDM housing welds. Discuss the base metal and weld metal used that would minimize the potential for degradation.

(b) Discuss the welding technique used to make the subject welds. Discuss the ASME Code requirements for the welding process and installation procedures such as post-weld heat treatment that would minimize fabrication defects.

(c) Discuss any operating experience of these welds in the CEDM housing in the industry fleet (any degradation of these welds?).

RAI 6

Last paragraph on Page 9 of the submittal states that "…FPL performed examinations of the accessible welds. Personnel and system engineers perform walk downs of the reactor head after shutdown and during startup looking for leakage or other abnormal conditions..."

(a) Confirm that in the ISI examinations performed during third period of the third ISI interval, only CEDM weld No. 5 on 2 accessible CEDM housing were surface examined and the remaining welds were examined by VT-2 visual examination during walkdowns. Discuss the type of surface examination that were performed during the third period and cite the specific ASME Code requirement for which the surface examination is qualified.

(b) Discuss exactly how the VT-2 examination is performed during walkdowns because almost all of the CEDM housing welds are inaccessible for visual examinations. How a leak from a weld can be properly identified during a walkdown when there are 5 welds in each of 91 housings?

(c) Discuss whether CEDM welds No. 2, 3, 4, and 5 are in contact with coolant and CEDM weld No. 1 weld is not in contact with coolant. Through-wall cracks in welds that are in contact with coolant can be detected based on leakage. Discuss how a through-wall crack can be detected in the weld (CEDM weld No. 1) that is not in contact with coolant and is inaccessible for any examinations.

(d) Discuss the potential of a guillotine break (a 360 degree circumferential break) of a CEDM housing weld (e.g., weld No. 4 or 5). Discuss consequence of such a guillotine break should it develops. Discuss whether the operator can detect such a large crack early so that corrective actions can be initiated.

RAI 7

Confirm that the proposed alternative in Relief Request 14 for the third ISI interval was to perform a surface examination of CEDM weld No. 5 on 2 accessible CEDM housing and a VT-2 visual examination of all remaining CEDM housing welds as required by the ASME Code, Section XI.