ENCLOSURE

OAR-1 FORMS (2)

CALLAWAY NUCLEAR PLANT
FORM OAR-1 OWNER'S ACTIVITY REPORT

Report Number 25

Plant Callaway Energy Center, 8315 County Road 459, Steedman, MO 65077

Unit No. 1 (if applicable) Commercial service date 12/19/1984 Refueling outage no. 25

Current inspection interval 4th Interval (ISI Program Plan) (1st, 2nd, 3rd, 4th, other)

Current inspection period 3rd Period (ISI Program Plan) (1st, 2nd, 3rd)

Edition and Addenda of Section XI applicable to the inspection plans 2007 Edition with 2008 Addenda

Date and revision of inspection plans ISI Program Plan: 7-December-2020, Rev. 002

Edition and Addenda of Section XI applicable to repair/replacement activities, if different than the inspection plans Same as inspection plan.

Code Cases used for inspection and evaluation: N-532-5, N-661-2 and N-716-1 (if applicable, including cases modified by Case N-532 and later revisions)

CERTIFICATE OF CONFORMANCE

I certify that (a) the statements made in this report are correct; (b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI; and (c) the repair/replacement activities and evaluations supporting the completion of 25 (refueling outage number) conform to the requirements of Section XI.

Signed 133511 ISI/Welding Eng. (Owner or Owner's Designee, Title) Date 25-August-2022

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by Hartford Steam Boiler Inspection and Insurance Co. of Hartford, Connecticut have inspected the items described in this Owner's Activity Report, and state that, to the best of my knowledge and belief, the Owner has performed all activities represented by this report in accordance with the requirements of Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the repair/replacement activities and evaluation described in this report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Inspector's Signature Commission NB 14725 Endorsements: C, I, N, R (National Board Number and Endorsement)

Date 08/25/2022

(06/11)

CALLAWAY NUCLEAR PLANT

TABLE 1
ITEMS WITH FLAWS OR RELEVANT CONDITIONS THAT REQUIRED
EVALUATION FOR CONTINUED SERVICE

<table>
<tr><th>Examination Category and Item Number</th><th>Item Description</th><th>Evaluation Description</th></tr>
<tr><td colspan="3">NO new Recordable-Indications or flaws were found during the Reactor Vessel Examination. All flaws and/or Recordable Indications listed below can be demonstrated to have been identified in previous Reactor Vessel inspections. Phased-Array Ultrasonic techniques, changes in recording methodology and procedures have allowed for better identification, resolution and measuring of the flaws and RIs.</td></tr>
<tr><td>B-A/B1.30
B-A/B1.12
B-A/B1.12
B-D/B3.90</td><td>The ISI Reactor Vessel 10-Year examination found the following 5 Recordable Indications (RI):
• 2-RV-101-121 (Flange to Vessel Weld) - 1 RI;
• 2-RV-101-122-B (Long Shell Weld @ 207°) - 2 RI;
• 2-RV-101-122-C (Long Shell Weld @ 326°) - 1 RI; and
• 2-RV-105-121-C (Inlet Nozzle F to RV Weld @ 247°) - 1 RI.

All Recordable Indications (RIs) were compared with the 2004 final report and were previously known RIs. No new RI were found, but resolution and technology allowed for better identification, resolution and measuring of the RIs. In all instances fewer flaw indications have been recorded during the present examination (2022, RF25). This does not mean that the vessel flaw population is changing as the indications are considered to be welding fabrication indications and have been there since manufacture or fabrication. It should be recognized that the examination performed in 2004 was different in technology, recording methodology, and procedure requirements. The main difference between the number of indications recorded in the previous examination and the current examination is a difference in recording thresholds and use of Phase-Array Ultra Sonic (PAUT) techniques.</td><td>All indications were evaluated as acceptable. The flaws were evaluated using ASME Code table IWB-3514-2 a/t (%) measured versus a/t (%) acceptable as listed:

• 2-RV-101-121 1.5% v 4.4%;
• 2-RV-101-122-B (1) 0.8% v 3.3%;
2-RV-101-122-B (2) 0.7% v 2.5%;
• 2-RV-101-122-C 1.4% v 3.3%;
• 2-RV-105-121-C 0.7% v 2.2%.

The previous 10-year examination results were reviewed prior to examination and areas containing previously recorded indications were investigated during this recent examination.</td></tr>
</table>

Examination Category and Item Number	Item Description	Evaluation Description
   R-A/R1.20 R-A/R1.20	The results of the Ultrasonic (UT) examinations performed during R25 revealed 3 detectable inside surface connected planer flaws and 2 embedded indications in the dissimilar welds listed below: • 2-BB-01-F202 (27-½" Elbow to Loop #2 RPV Inlet Safe-End) - 2 Embedded. • 2-BB-01-F302 (27½" Elbow to Loop #3 RPV Inlet Safe- End) - 3 detectable inside surface.	• Embedded flaws are considered fabrication flaws. These two flaws were not recorded in the prior examination (2017) and are included in this report for future reference and both are evaluated as acceptable to ASME Code table IWB-3514-2 using a/t (%) measured versus a/t (%) acceptable: • 2-BB-01-F202 (1) 2.7% v 9.6%; • 2-BB-01-F202 (2) 2.7% v 9.7%. • The inner surface was interrogated looking for service induced SCC using a qualified ASME Code, Section XI, Appendix VIII automated phased array procedure. • Eddy current was used in the 27-½" elbow to loop #3 RPV inlet safe-end (inlet nozzle azimuth 247°) similar metal weld to corroborate the ultrasonic observation of ID connection. • The Three ID surface connected indications detected in 27-½" elbow to loop #3 RPV inlet safe-end (inlet nozzle azimuth 247°) were evaluated as NOT acceptable to ASME Code table IWB-3514-2 by these examination techniques and required additional analysis. • A review of previous inspection reports indicates these flaws were previously shown to be present at this particular location based on the 2004, 2007, 2013, and 2017 inspections. There has been no growth in the flaws over time, and it can be concluded that these flaws were there since the initial welding of the safe-end to the cold leg elbow with a stainless-steel weld. Thus, the flaws are acceptable as fabrication flaws and not service induced flaws. • The ASME Section XI IWB-3600 evaluation performed in this report was based on plant-specific loading, geometry, and material properties. The maximum allowable end-of-evaluation flaw sizes were calculated per the Appendix C methodology of the ASME Code. New a/t (%) measured versus a/t (%) acceptable: • 2-BB-01-F302 (1) 12.5% v 39%; • 2-BB-01-F302 (2) 24.4% v 73%; • 2-BB-01-F302 (3) 14.0% v 30%.

Examination Category and Item Number	Item Description	Evaluation Description
N/A	The results of the ultrasonic examination revealed two recordable indications in the cladding of the Reactor Vessel: • Clad Bare Patch @ 185 • Clad Bare Patch @ 303 *The intent of the examination was to determine if the two known clad indications were exhibiting any detectable changes to the exposed carbon steel (i.e., base material). In addition, the clad layer and clad to base material interface was to be examined for cracking and dis-bonding respectively.*	Indication delta length and width measurements between the current examination technique and past examination campaigns for both clad patch locations are within the accuracy of the current technique's scan sync interval of 0.2", ***thus indicating an unchanging condition.*** Comparison of the depth measurements for clad patch location 303° are within the calibration tolerance of the current technique, which would indicate a static condition. For the clad patch at 187°, the delta between the current technique and past examination campaigns is greater than the calibration tolerance however it indicates a shallower depth than the previous measurement (2017). This more than likely due to the origination point being provided from the thinnest area of the remaining clad and the slight concavity that surrounds the area.

TABLE 2
ABSTRACT OF REPAIR/REPLACEMENT ACTIVITIES REQUIRED FOR CONTINUED SERVICE

Code Class	Item Description	Description of Work	Date Completed	Repair/Replacement Plan Number
1	Pipe Hanger/Support	Removed, Clean, Inspected and Re-installed struts of pipe Hanger/Support BB-04-C004/241. The traceability of the replace pipe Hanger/Support nut and bolt could not be fully verified due to the inability to find RO 0249843. CR 202205301 documents the non-conforming condition. The replacement nut and bolt were removed from a Clamp Assembly (MIN: 6327335). The manufacture of the Clamp Assembly, *Bergen-Power Pipe Supports*, provided a Certificate of Compliance based on the PO 581776 and manufacturer's part number 2600-7. The Certificate of Compliance provides reasonable assurance that the replacement nut and bolt have the proper pedigree and will provide adequately support to the design function of the support. The degraded condition will be resolve by the regenerated traceability documentation resulting from actions developed in CR 202205301.	2-May-2022	14510153.351 14510153.371

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Report Number 25

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Unit No. 1 (if applicable) Commercial service date 12/19/1984 Refueling outage no. 25

Current inspection interval 3rd (IWE and IWL Programs)
(1st, 2nd, 3rd, 4th, other)

Current inspection period 2nd (IWE and IWL Programs)
(1st, 2nd, 3rd)

Edition and Addenda of Section XI applicable to the inspection plans 2007 Edition with 2008 Addenda

Date and revision of inspection plans IWE Program: 10/10/2019, Rev. 4.1
IWL Program: 07/23/2018, Rev. 4

Edition and Addenda of Section XI applicable to repair/replacement activities, if different than the inspection plans Same as inspection plan.

Code Cases used for inspection and evaluation: N-532-5 and N-765 .
(if applicable, including cases modified by Case N-532 and later revisions)

CERTIFICATE OF CONFORMANCE

I certify that (a) the statements made in this report are correct; (b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI; and (c) the repair/replacement activities and evaluations supporting the completion of 25 (refueling outage number) conform to the requirements of Section XI.

Signed Haley Matson 147360
Owner or Owner's Designee, Title

Date 8/2/22

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by Hartford Steam Boiler Inspection and Insurance Co. of Hartford, Connecticut have inspected the items described in this Owner's Activity Report, and state that, to the best of my knowledge and belief, the Owner has performed all activities represented by this report in accordance with the requirements of Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the repair/replacement activities and evaluation described in this report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Inspector's Signature

Commission NB 14725 Endorsements: C, I, N, R
(National Board Number and Endorsement)

Date 08/25/2022

(06/11)

CALLAWAY NUCLEAR PLANT

TABLE 1
ITEMS WITH FLAWS OR RELEVANT CONDITIONS THAT REQUIRED
EVALUATION FOR CONTINUED SERVICE

Examination Category and Item Number	Item Description	Evaluation Description
L-B, L2.20	Tendon Wire	CR 202103224 - Containment Post Tension system tendon V39 wire did not meet the ultimate tensile strength acceptance criteria during the lab testing of the removed tendon wire. The lab test average was found to be 235.3 ksi whereas the ultimate tensile strength acceptance criteria is a minimum of 240 ksi. Reviews of the original containment design parameters, the containment tendon system design basis, and the containment response to a postulated severe accident has demonstrated there is significant margin in the original design. The original specification for the tendon wire required a yield stress value of 192 ksi which results in a containment pressure capacity of 152 psig. The average yield for the wire samples that failed the ultimate strength requirements were 217.97 ksi. Inryco designed the tendon system using an average wire stress of 156.9 ksi. Based on the final number of tendons installed, Bechtel calculated an actual wire minimum prestress of 127.16 ksi at design pressure. Bechtel also calculated a maximum containment pressure capacity of 152 psig vs. a design pressure of 60 psig. The minimum tested yield for all 6 samples was 213.2 ksi. This is 11% greater than the design basis yield stress of 192 ksi. The ultimate strength of the wire is not used as a design basis for the containment building tendons. Maximum design stress of 192 ksi is significantly less than the ultimate strength results from the sample wire, indicating that the tendon will not fail prior to the maximum design stress. The lift-off forces for all surveyed tendons were within or above the projected acceptance band at the 35th year surveillance point. This verifies that each of the tendons is operable by meeting its overall design function.

TABLE 2
ABSTRACT OF REPAIR/REPLACEMENT ACTIVITIES REQUIRED FOR CONTINUED SERVICE

Code Class	Item Description	Description of Work	Date Completed	Repair/Replacement Plan Number
None	None	None	None	None