Exelon Generation®

Dresden Nuclear Power Station
6500 North Dresden Road
Morris, IL 60450

February 13, 2020

SVPLTR #20-0010

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Dresden Nuclear Power Station, Unit 2
Facility Operating License No. DPR-19
NRC Docket No. 50-237

Subject: Fifth 10-Year Interval 2019 Refueling Outage Activities

This letter submits the Owner's Activity Report (i.e., Form OAR-1) for the Dresden Nuclear Power Station (DNPS) Unit 2 refueling outage (D2R26) that began on October 28, 2019 and was completed on November 14, 2019. This is the first refueling outage conducted in the Third (3rd) Inspection Period of the Fifth (5th) 10-Year Interval Inservice Inspection (ISI) Program and the first refueling outage conducted in the First (1st) Inspection Period of the Third (3rd) 10-Year Interval Containment Inservice Inspection (CISI) Program for DNPS Unit 2. A copy of the Owner's Activity Report is provided as Attachment 1 to this letter.

This Owner's Activity Report is submitted in accordance with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Case N-532-5, "Repair/Replacement Activity Documentation Requirements and Inservice Summary Report Preparation and Submission". Code Case N-532-5 requires an Owner's Activity Report Form OAR-1 to be prepared and certified upon completion of each refueling outage. In accordance with the conditions of Code Case N-532-5, this OAR-1 form is being submitted within ninety (90) days of the completion of the refueling outage. The 10 CFR 50.55a(b)(2)(ix)(A)(2) condition pertaining to evaluation of inaccessible areas is addressed in Attachment 2.

One (1) Category D weld was created within the Intergranular Stress Corrosion Cracking (IGSCC) program this outage as part of the replacement of motor-operated valve (MOV) 2-1201-1 in the reactor water cleanup (RWCU) system. Issue Report 04312639 documents a missed pre-service VT-1 exam required by Repair/Replacement plan # 2-19-055. However, actions have been created to perform a VT-1 examination next refueling outage. Should you have any questions concerning this letter, please contact Mr. Duane Avery, Acting Regulatory Assurance Manager at (815) 416-2804.

Respectfully,

Peter J. Karaba
Site Vice President
Dresden Nuclear Power Station

Enclosures

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NRR

bcc: Director – Licensing, Mid-West Regional Operating Group
Plant Manager – Dresden Nuclear Power Station
Regulatory Assurance Manager – Dresden Nuclear Power Station
Regulatory Assurance Manager – Quad Cities Nuclear Power Station
Manager - Licensing – Dresden and Quad Cities Stations
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Dresden Regulatory Assurance, SVP Letter File
SVP Numerical File – SVPLTR #20-0010

Attachment 1
Owner's Activity Report, Form OAR-1

## FORM OAR-1 OWNER'S ACTIVITY REPORT

Report Number: Refueling Outage D2R26 OAR-1

Plant: Dresden Nuclear Power Station, 6500 North Dresden Road Morris, IL 60450

Unit No. 2 (if applicable) Commercial Service Date 06/09/1970 Refueling Outage Number D2R26

Current Inspection Interval: 5th Inspection Interval (ISI), 3rd Inspection Interval (Containment) (1st, 2nd, 3rd, 4th, other)

Current Inspection Period: 3rd Inspection Period (ISI), 1st Inspection Period (Containment) (1st, 2nd, 3rd)

Edition and Addenda of Section XI applicable to the Inspection Plans: 2007 Edition and 2008 Addenda (ISI), 2013 Edition (Containment)

Date and Revision of Inspection Plans: 01/26/2018 and Revision 4

Edition and Addenda of Section XI applicable to repair/replacement activities, if different than the inspection plans: N/A

Code Cases used: N-62-7, N-508-4, N-526, N-532-5, N-552-1, N-578-1, N-600, N-613-2, N-702, N-747, N-765, N-778, N-805, N-825, N-845 (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 D2R26 (refueling outage number) conform to the requirements of Section XI

Signed [signature], Material Programs Engineer (Owner or Owner's designee. Title) Date 02/05/2020

### CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and

and employed by The Hartford Steam Boiler Inspection and Insurance Company 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.

[signature] Inspector's Signature Commissions NB10972 R, N, I (National Board Number and Endorsements)

Date 2/12/20

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

| Examination Category and Item Number | Item Description | Evaluation Description |
|---|---|---|
| E-A, E1.30 | IR 4294208 - D2R26 DRYWELL BASEMENT MOISTURE BARRIER RELEVANT CONDITIONS<br>IR 4295748 - D2R26 U2 DW BSMNT PRI CNMNT METALLIC LINER VT-1 EXAM RESULTS | EC 629967 - D2R26 ENGINEERING EVALUATION FOR MOISTURE BARRIER AND DRYWELL LINER DEGRADATION |
| B-A, B1.30 | IR 4294489 - D2R26 RPV VESSEL TO FLANGE WELD 2-SC4-FLG UT RESULTS | EC 629936 - DRESDEN U2 RPV TOP HEAD FLANGE FLAW EVALUATION FALL 2019 - D2R26 |

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

| Code Class | Item Description | Description Of Work | Date Completed | Repair/ Replacement Plan Number |
|---|---|---|---|---|
| 2/3 | WO 04739314 - 2Y D2 2B INSPECT & REPAIR WELD UPPER LPCI HT | Remove and repair indications on 2B LPCI heat exchanger support M-1164D-578 | 12/12/19 | RRP 2-19-070 |
| 2/3 | WO 04739287 - 2Y D2 2A INSPECT & REPAIR WELD UPPER LPCI HT | Remove and repair indications on 2A LPCI heat exchanger support M-1164D-580 | 12/12/19 | RRP 2-19-069 |
| 2/3 | WO 01886628 - MM REPAIR 2A LPCI HX DUE TO D2R24 INSP FINDINGS | Repair eroded area on 2A LPCI heat exchanger lower channel. | 1/27/20 | RRP 2-19-066 |
| 1 | WO 01894778 - UNIT 2 SRM 22 DRY TUBE PLUNGER ENGAGEMENT | Remove/replacement SRM 22 NI Flange | 1/27/20 | RRP 2-19-086 |
| 1 | WO 04977143 - RPV Head Piping Flange Indications | Replace socket flange 1" | 1/29/20 | RRP 2-19-087 |

## ATTACHMENT 2

## CONTAINMENT ISI (IWE) RESULTS

As required by 10 CFR 50.55a(b)(2)(ix)(A), "*Metal containment examinations: First provision," for Class MC applications, the applicant or licensee must evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or could result in degradation to such inaccessible areas. For each inaccessible area identified for evaluation, the applicant or licensee must provide the following in the ISI Summary Report required by IWA-6000:*

***(i) Description of the type and estimated extent of degradation, and the conditions that led to the degradation:***

During D2R26 CISI visual examinations, more than 50% of Unit 2 Drywell moisture barrier was found degraded (Ref. 3). Inaccessible areas of the liner plate were made accessible by removing 100% of the moisture barrier. A supplemental VT-1 exam of liner behind moisture barrier showed surface corrosion, pitting, peeling paint, flaking, blistering, discoloration, tears and missing coating (Ref. 5). The maximum pit depth was measured as 3/16" or 0.1875 inches (Ref. 4).

The drywell atmosphere is inerted with nitrogen during normal operation, however drywell oxygen is limited to less than 4% per Technical Specifications. The drywell experiences a bulk average temperature of $135^0$ F (Ref. 2). This area locally sees temperatures much below the average, is most susceptible to wetting due to its location at the bottom of the drywell, experiences repeated wetting and drying and is thus susceptible to accelerated corrosion if left unprotected.

***(ii) An evaluation of each area, and the result of the evaluation:***

Engineering evaluation EC 629967 addresses all the indications identified on the containment liner plate in D2R26 since the corrosion leading to the degraded condition have the same contributors affecting the same component. None of the degraded liner locations identified in D2R26 exceeded 10% of the nominal thickness as specified in Subparagraph IWE-3122.3(a) (Ref. 1).

Plus, calculation No. 8.5.0-1 (Ref. 6) shows that drywell shell thickness in the region of sand pocket may be reduced to approximately 1/4" or 0.25 inches below the nominal thickness and still be within ASME Code allowable stress limits (Ref. 2).

Furthermore, UT thickness measurements are performed on Unit 3 drywell steel liner, as part of Generic Letter 87-05, where the thickness corrosion rate has been conservatively estimated based on the given data to be no greater than 7.2 mil/year, and this is less than the conservatively worst-case corrosion rate of 10 mil/year for fresh river water (Ref. 7). This conservatively worst-case corrosion rate of 10 mil/year can be applied to Unit 2 since both units are identical in design and experience similar corrosion environment, where approximately 3.75 years of service life would remain on the location of the deepest pit measurement of 3/16" before it would reach below the ASME Code allowable stress limits. This meets the 10% nominal thickness requirement of Subparagraph IWE-3122.3(a) (Ref. 1) for one (1) cycle (i.e. two years) of operation.

*(iii) A description of necessary corrective actions:*

Removal and replacement of 100% moisture barrier was performed during D2R26 (Ref. 4). Engineering evaluation EC 629967 was completed to provide justification for the acceptability of the containment liner plate at its thinnest location and for the operation of Unit 2 until the next CISI period without additional repair or replacement activities on the containment liner.

References


1. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI, 2013 Edition
2. Dresden UFSAR Revision 13, June 2019
3. Issue Report No. 04294208
4. Work Order No. 04745711
5. Issue Report No. 04295748
6. Calculation No. 8.5.0-1 – "Minimum Required Containment Thickness at Sand Pockets"
7. EC 373104 Rev. 003 - Evaluation of U3 Drywell Steel Liner NDE Data