



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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LISLE, IL 60532-4352

October 22, 2015

Mr. Bryan C. Hanson  
Senior VP, Exelon Generation Company, LLC  
President and CNO, Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

**SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 – NRC INTEGRATED  
INSPECTION REPORT 05000237/2015003; 05000249/2015003**

Dear Mr. Hanson:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Dresden Nuclear Power Station, Units 2 and 3. The enclosed report documents the results of this inspection, which were discussed on October 1, 2015, with Mr. S. Marik, and other members of your staff.

Based on the results of this inspection, three NRC-identified findings of very low safety significance (Green) were identified. These findings involved violations of NRC requirements. Additionally, a licensee-identified violation is listed in Section 4OA7 of this report. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission-Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Dresden Nuclear Power Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Dresden Nuclear Power Station.

B. Hanson

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In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Jamnes Cameron, Chief  
Branch 4  
Division of Reactor Projects

Docket Nos. 50-237; 50-249  
License Nos. DPR-19; DPR-25

Enclosure:  
Inspection Report 05000237/2015003;  
05000249/2015003 w/Attachment:  
Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 05000237; 05000249  
License Nos: DPR-19; DPR-25

Report No: 05000237/2015003; 05000249/2015003

Licensee: Exelon Generation Company, LLC

Facility: Dresden Nuclear Power Station, Units 2 and 3

Location: Morris, IL

Dates: July 1, 2015 through September 30, 2015

Inspectors: G. Roach, Senior Resident Inspector  
D. Lords, Resident Inspector  
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Management Agency

Approved by: J. Cameron, Chief  
Projects Branch 4  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

Inspection Report (IR) 05000237/2015003, 05000249/2015003; 06/01/2015 – 09/30/2015; Dresden Nuclear Power Station, Units 2 & 3; Triennial Heat Sink Performance, Maintenance Risk Assessments and Emergent Work Control.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings were identified by the inspectors. The findings were considered non-cited violations (NCV) of NRC regulations. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas" dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 5, dated February 2014.

### Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance, and an associated NCV of Title 10, *Code of Federal Regulations* (CFR), Part 50, Appendix B, Criterion III, "Design Control," for the failure to verify the adequacy of the diesel generator cooling water (DGCW) pumps' design. Specifically, the licensee failed to evaluate the net positive suction head (NPSH) available to the DGCW pumps at the most limiting ultimate heat sink (UHS) level after a postulated dam failure where they are expected to perform a safety function. The licensee entered this finding into their Corrective Action Program (CAP) and, after a review of their DGCW pump NPSH calculation and an evaluation, concluded that the DGCW pumps had adequate NPSH available to them at the most limiting UHS level after a postulated dam failure, and therefore remained operable.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance, and adversely affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as very low safety significance (Green) because although it affected the design or qualification of the DGCW pumps, it did not result in the loss of operability or functionality of the pumps. The inspectors did not identify a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency. (Section 1R07.1.b(1))

- Green. The inspectors identified a finding of very low safety significance, and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure to perform surveys of the UHS in accordance with the Quality Assurance Program. Specifically, the licensee failed to ensure that: (1) the requirements and acceptance limits in the Updated Final Safety Analysis Report (UFSAR) and other applicable design documents for the high points of the intake and discharge canals were incorporated into the UHS test; (2) the evaluation of the bathymetric survey results accounted for the instrument uncertainty of the test equipment; and (3) the UHS

bathymetric survey results were evaluated in accordance with the Quality Assurance Program to assure that the UFSAR required UHS volume was satisfied. The licensee entered this finding into their CAP and, after a review of past bathymetric surveys and other information, determined that: (1) the discharge canal high point had not degraded and was not expected to significantly degrade; and (2) the UHS remained operable because the available UHS water volume still remained above the UFSAR required volume.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of procedure quality, and adversely affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as very low safety significance (Green) because although it affected the design or qualification of the UHS, it did not result in the loss of operability or functionality of the UHS. The inspectors determined this finding had an associated cross-cutting aspect in the area of Human Performance, Design Margins, because the licensee did not pay special attention to maintaining the safety-related UHS. Specifically, special attention was not placed on guarding the design margin of the UHS, and a test program that did not meet all the quality assurance requirements was accepted to demonstrate the adequacy of the UHS. [H.6] (Section 1R07.1.b(2))

- Green. The inspectors identified a finding of very low safety significance, and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to implement all necessary prescribed risk management actions as required by licensee procedure OP-AA-108-117, "Protected Equipment Program," during a Unit 3 low pressure coolant injection (LPCI) logic system functional test (LSFT) maintenance window. Specifically, the licensee failed to post protected equipment signs for the Unit 3 2203-28 instrument rack whose unavailability impacts the high pressure coolant injection (HPCI) system and would have taken the unit into a licensee-defined Orange risk condition and Technical Specification (TS) Limiting Condition for Operations (LCO) 3.0.3.

The performance deficiency was determined to be more than minor because the licensee failed to implement prescribed risk management actions which if left uncorrected could have become a more significant safety concern. Specifically, operators inadvertently removed the protected equipment postings on instrument rack 2203-28 which could have significantly degraded the key safety function of reactor coolant inventory control if both the HPCI and LPCI systems became unavailable simultaneously and were required to mitigate the consequences of an accident that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines. The finding screened as very low safety significance (Green) because the inspectors answered "No" to all of the Mitigating Systems Screening Questions. The inspectors determined this finding had a cross-cutting aspect in the area of Human Performance, Work Management, because the licensee failed to implement risk management actions in accordance with procedure OP-AA-108-117. Specifically, the licensee inappropriately removed protected equipment postings prior to commencing maintenance activities which required the risk management activity to be in place. [H.5] (Section 1R13)

## **Licensee-Identified Violations**

### **Cornerstone: Barrier Integrity**

A violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. This violation and associated CAP tracking number are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

#### **Unit 2**

The unit operated at or near full power for the entirety of the inspection period.

#### **Unit 3**

The unit operated at or near full power for the entirety of the inspection period.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R04 Equipment Alignment (71111.04)

##### .1 Quarterly Partial System Walkdowns

##### a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- 3C instrument air compressor (IAC) aligned to unit 2 with the 2A IAC out-of-service;
- U3 emergency diesel generator (EDG) during a 2/3 EDG work window; and
- 2/3A standby gas treatment (SBGT) during 2/3B SBGT work window.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS) requirements, outstanding work orders (WOs), issue reports, system health reports, maintenance rule reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the Corrective Action Program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three partial system walkdown samples as defined in Inspection Procedure (IP) 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Fire Zone: 8.2.6E, fire protection contingency actions during the repair of a pinhole leak in the turbine building fire header, Unit 3 turbine building, elevation 538’;
- Fire Zone 11.2.2, Unit 2 southeast corner room, elevation 476’;
- Fire Zone 9.0C, Unit 2/3 EDG room, elevation 517’;
- Fire Zone 14.6, max recycle, elevations 519-570’; and
- Fire Zone 1.1.1.1, Unit 3 torus basement, elevation 476’.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee’s fire plan.

The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant’s Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant’s ability to respond to a security event.

Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee’s CAP.

Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly fire protection inspection samples as defined in IP 71111.05–05.

b. Findings

No findings were identified.

## 1R06 Flooding (71111.06)

### .1 Internal Flooding

#### a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a review of the following plant area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- impact of fire protection system leaks on safety related equipment with specific emphasis on Unit 3, Division II Low Pressure Coolant Injection (LPCI) and core spray components located in reactor building elevation 476'.

Documents reviewed during this inspection are listed in the Attachment to this report. This inspection constituted one internal flooding sample as defined in IP 71111.06–05.

#### b. Findings

No findings were identified.

## 1R07 Heat Sink Performance (71111.07T)

### .1 Triennial Review of Heat Sink Performance

#### a. Inspection Scope

The inspectors reviewed completed surveillances, vendor manual information and associated calculations with the containment cooling service water (CCSW) vault room cooler (3-5700-30D). This cooler was chosen based on its risk significance in the licensee's probabilistic safety analysis, its important safety-related mitigating system support functions and its operating history.

For the CCSW vault room cooler (3-5700-30D), the inspectors reviewed the methods and results of heat exchanger performance inspections. The inspectors verified the methods used to inspect and clean the heat exchanger were consistent with as-found conditions identified and expected degradation trends and industry standards, and the as-found results were recorded, evaluated, and appropriately dispositioned such that the as-left condition was acceptable.

In addition, the inspectors verified the condition and operation of the CCSW vault room cooler (3-5700-30D) was consistent with design assumptions in heat transfer calculations and as described in the UFSAR. This included verification that the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. The inspectors verified the licensee evaluated the potential for water hammer and established adequate controls and operational limits to prevent heat exchanger degradation due to excessive flow-induced vibration during operation.

The inspectors verified the performance of ultimate heat sink (UHS) and safety-related service water systems, the CCSW and the diesel generator cooling water (DGCW) systems, and their subcomponents (such as piping, intake screens, pumps, valves, etc.) by tests or other equivalent methods to ensure availability and accessibility to the in-plant cooling water systems. Specifically, the inspectors reviewed the UHS in accordance with Sub-Sections d.2, d.5, and d.6, of Section 02.02, "Triennial Review," of IP 71111.07, "Heat Sink Performance."

The inspectors reviewed the results of the licensee's inspection of the UHS to determine whether they were comprehensive and of significant depth to ensure sufficient reservoir capacity.

The inspectors reviewed the licensee's performance testing of service water system and UHS results. This included the review of the licensee's performance test results for key components and service water flow balance test results. In addition, the inspectors compared the flow balance results to system configuration and flow assumptions during design basis accident conditions. The inspectors also verified that the licensee ensured adequate isolation during design basis events and consistency between testing methodologies and design basis leakage rate assumptions.

The inspectors performed a system walk down of service water systems to evaluate the structural integrity of the systems. In addition, the inspectors reviewed available licensee testing and inspections results, the licensee's disposition of any active thru wall pipe leaks, and the history of thru wall pipe leakage to identify any adverse trends since the last NRC inspection. For buried or inaccessible piping, the inspectors reviewed the licensee's inspection and monitoring program to verify structural integrity, and ensured that any leakage or degradation has been appropriately identified and dispositioned by the licensee. The inspectors verified that the periodic piping inspection program adequately detected and corrected protective coating failure, corrosion and erosion.

In addition, the inspectors reviewed issue reports related to CCSW vault room cooler (3-5700-30D) and heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. The documents that were reviewed are included in the Attachment to this report.

These inspection activities constituted two heat sink inspection samples as defined in IP 71111.07-05.

b. Findings

(1) Failure to Evaluate the Available Net Positive Suction Head for the Diesel Generator Cooling Water Pumps Following a Dam Failure

Introduction: The inspectors identified a finding of very low safety significance (Green), and an associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion III, "Design Control," for the failure to verify the adequacy of the DGCW pumps' design. Specifically, the licensee failed to evaluate the net positive suction head (NPSH) available to the DGCW pumps at the most limiting UHS level after a postulated dam failure where they are expected to perform their safety function.

Description: The DGCW system at Dresden provides cooling water to each of the three EDGs. Part of it is an open cycle service water system that consists of three pumps (one for the Unit 2 EDG, one for the Unit 3 EDG, and one for the shared 2/3 EDG) in the crib house, the components cooled by the system, and the associated piping and valves. The DGCW pumps take a suction from the UHS and transfer the water to their respective EDG heat exchangers. The water is then discharged into the service water system discharge header.

In addition to cooling the EDGs, the DGCW system provides an alternate water supply for the CCSW keep fill system. The Unit 2 DGCW system, via hose connections on its discharge piping, also provides a seismically-qualified emergency supply of water to either the A or B isolation condenser makeup pump if all other sources of makeup to the isolation condenser shells are unavailable. This seismically qualified path was developed prior to 2003.

The capability of Dresden's UHS was reassessed in 2001 prior to their extended power uprate. The adequacy of the UHS following a postulated dam failure is documented in Section 9.2.5.3.1 of the UFSAR. In that scenario the normal heat sink for the station (the river) is unavailable and the credited UHS is the volume of water trapped in the intake canal above the suction of the DGCW pumps (at an elevation of 487'-8"). This credited UHS water volume, two million gallons, was determined to be sufficient to support the safe shut down of Units 2 and 3 for approximately 4 days without the need for off-site power or additional make-up water. At the end of the 4 days, the UHS volume could be exhausted, and the UHS water level could drop to the 487'-8" elevation. Since the DGCW pumps are relied upon to cool the EDGs for the 4 day time period, they are expected to operate with the UHS (their suction source) down to a minimum water level elevation of 487'-8".

Calculation 87-0870/915 Revision 001B, "Unit 3 Diesel Cooling Water Pump NPSH, Fuel Oil Line Pressure Head and Air Start Receiver Valve Pressure Rating Evaluation," is the licensee's calculation of record that verifies the DGCW pumps have adequate NPSH available to them so they can operate properly. While reviewing the calculation, the inspectors noted that it did not appear to consider the UHS level following a postulated dam failure because it assumed a minimum UHS level of 501', which is higher than the minimum UHS level of 487'-8" following a postulated dam failure. Therefore, the licensee did not have a calculation that demonstrated the DGCW pumps would have adequate NPSH available to them for the 4 day time period following a postulated dam failure.

The licensee captured the inspectors' concern in their CAP as Issue Reports (IRs) 2532555, "UHS Inspection – Calculation for DGCW Pumps Based at 501 Elevation," IR 2532734, "UHS NRC Inspection – Basis for UHS Volume (2 Million Gallons)," and IR 2533713, "Further Information for IR 0253255." The licensee's immediate corrective actions included a review of their DGCW pump NPSH calculation, pump curves and an evaluation of the NPSH available to the pumps given the deficiency described above. The licensee's planned corrective actions include revising their calculation of record, Calculation 87-0870/915, to address the deficiency described above. The licensee concluded that the DGCW pumps had adequate NPSH available to them at the most limiting UHS level after a postulated dam failure, and therefore remained operable. However, the licensee had to make some less conservative assumptions in their calculation to ensure margin remained above the minimum required NPSH.

Analysis: The inspectors determined the failure to evaluate the NPSH available to the DGCW pumps at the most limiting UHS level after a postulated dam failure, was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. The performance deficiency was determined to be more than minor, because it was associated with the Mitigating Systems cornerstone attribute of equipment performance, and adversely affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to verify that the DGCW pumps had adequate NPSH available to them after a postulated dam failure did not ensure their availability, reliability, or capability to perform their safety function to respond to the initiating event.

The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," issue date April 29, 2015, Attachment 0609.04, "Initial Characterization of Findings," issue date June 19, 2012. Because the finding impacted the Mitigating Systems cornerstone, the inspectors screened the finding through IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," issue date June 19, 2012, using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as very low safety significance (Green) because although it affected the design or qualification of the DGCW pumps, it did not result in the loss of operability or functionality of the pumps. Specifically, the licensee completed an evaluation that demonstrated the DGCW pumps had adequate NPSH available to them and could perform their safety function under the most limiting UHS level after a postulated dam failure, and therefore remained operable.

The inspectors did not identify a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency. Specifically, the calculation that evaluated the NPSH available to the DGCW pumps was last revised in 2005.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the licensee provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

Contrary to the above, from at least 2001 until July 22, 2015, the licensee failed to verify the adequacy of the design of the DGCW pumps. Specifically, the licensee failed to verify that the DGCW pumps had adequate NPSH available to them at the most limiting UHS level after a postulated dam failure where they are relied upon to perform a safety function.

The licensee's immediate corrective actions included a review of their DGCW pump NPSH calculation, pump curves, and an evaluation of the NPSH available to the pumps given the violation described above. The licensee's planned corrective actions include revising their calculation of record, Calculation 87-0870/915, to address the violation. The licensee concluded the DGCW pumps had adequate NPSH available to them at the most limiting UHS level after a postulated dam failure and therefore remained operable.

Because this violation was of very low safety significance, and was entered into the licensee's CAP as IR 2532555, IR 2532734, and IR 2533713, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000237/2015003-01; 05000249/2015003-01; "Failure to Evaluate the Available Net Positive Suction Head for the Diesel Generator Cooling Water Pumps Following a Dam Failure")**.

(2) Failure to Perform Ultimate Heat Sink Surveys in Accordance With Quality Assurance Program

Introduction: The inspectors identified a finding of very low safety significance (Green), and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure to perform surveys of the UHS in accordance with the Quality Assurance Program. Specifically, the licensee failed to ensure that: (1) the requirements and acceptance limits in the UFSAR and other applicable design documents for the high points of the intake and discharge canals were incorporated into the UHS test; (2) the evaluation of the bathymetric survey results accounted for the instrument uncertainty of the test equipment; and (3) the UHS bathymetric survey results were evaluated in accordance with the Quality Assurance Program to assure that the UFSAR required UHS volume was satisfied.

Description: The normal heat sink for the Dresden station is the river. After a postulated dam failure, this heat sink would not be available because the river level would fall below the high point of the intake and discharge canals (the 495' and 498' invert elevations, respectively). Water would be trapped in both canals between their high points and the plant, but only the water volume in the intake canal above the suction of the DGCW pumps (at an elevation of 487'-8") is credited as the UHS, as described in Section 9.2.5 of the UFSAR. This credited UHS water volume (2 million gallons) was determined to be sufficient to support the safe shut down of Units 2 and 3 for approximately 4 days without the need for off-site power or additional make-up water. Although the water in the discharge canal is not credited as part of the UHS, it would still be hydraulically connected to the intake canal for any of the following reasons: (1) leakage through the flow diverter gates in the discharge canal; (2) backflow through circulating water system piping; and (3) opening of the deicing line.

In addition to supporting the safe shut down of Units 2 and 3 following a postulated dam failure, the current licensing basis of the UHS also includes its ability to support the safe shut down of Units 2 and 3 following a seismically induced dam failure coupled with a

small break loss of coolant accident, as described in Section 9.2.5.3.3 of the UFSAR, and supported by Calculation DRE03-0026, "Analysis of the Intake Canal, CCSW Heat Exchanger, and Temporary Pumps Following a Dam Failure and 1 Loss of Coolant Accident." Section 9.2.5.3.3 of the UFSAR was added through UFSAR Change Number 03-006 to document a licensee commitment to the NRC made in 2001 as part of the extended power uprate licensing process, as discussed in Exelon Letter RS-01-208 (ADAMS Accession Number ML012760060), and the Safety Evaluation Report for Amendments 191 (Unit 2) and 185 (Unit 3) (ADAMS Accession Number ML013540187) of the Dresden license. The DRE03-0026 calculation models the available UHS volume as a function of the intake canal water elevation. At the onset of the postulated event, the calculation assumes an UHS volume based on an intake canal water elevation of 495', which corresponds to the high point of the intake canal.

The licensee performs periodic testing of the UHS to meet the requirements of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," in order to demonstrate that the UHS can perform its safety function when required. The most recent test performed was completed under Work Order (WO) 01707193 with a closure date of April 17, 2015. It consisted of bathymetric surveys performed by a contractor. The bathymetric surveys provided topographical information of the intake canal that was then used by the contractor to calculate the available volume of water in the credited UHS. The licensee then compared this calculated volume of water to the UFSAR credited UHS volume to demonstrate that the UHS could perform its safety function when required.

Through a review of the test documentation and interviews of licensee personnel, the inspectors identified several deficiencies with the testing of the UHS. First, the testing of the UHS failed to incorporate the acceptance limits contained in the UFSAR and other applicable design documents (i.e., Calculation DRE03-0026) for the intake and discharge canal high points (the 495' and 498' invert elevations, respectively). As discussed in the UFSAR and other applicable design documents, these high points are relied upon to ensure the credited UHS water volume is trapped following a postulated dam failure. The inspectors noted, from a review of the bathymetric survey results, that the high point of the intake canal was actually at an elevation of 494.2' versus the 495' described in the UFSAR and other applicable design documents, which results in a negative impact to the margin of the credited UHS. In addition, there was no verification of the discharge canal high point because the licensee determined it was not necessary since the discharge canal volume was not credited as part of the UHS. However, that determination was incorrect because the discharge canal high point is still relied upon to trap the water in the credited UHS since the intake and discharge canals remain hydraulically connected after a postulated dam failure. Therefore, the licensee failed to comply with the requirements of 10 CFR Part 50, Appendix B, Criterion XI, because their testing of the UHS did not incorporate all of the requirements and acceptance limits contained in the UFSAR and other applicable design documents.

Second, the licensee failed to correctly evaluate the UHS test results to ensure that test requirements had been satisfied. Specifically, the licensee failed to account for the instrument uncertainty of the bathymetric survey test equipment when comparing the calculated available UHS volume to the UFSAR required volume (2 million gallons). If the instrument uncertainty had been accounted for in the last test for the UHS, the available UHS volume would be about 100,000 gallons less than that reported by the contractor. In addition, due to instrument uncertainty, the reported value for the high point of the intake canal could be about 0.1' less, which could also negatively impact

the margin available for the UHS. Therefore, by failing to account for the instrument uncertainty, the licensee failed to correctly evaluate the UHS test results to ensure that test requirements had been met, as required by 10 CFR Part 50, Appendix B, Criterion XI. The licensee determined that, even after considering the instrument uncertainties described above, the available UHS water volume in the intake canal (based on the latest UHS survey) remained above the UFSAR required volume.

Third, since the UHS performs a safety-related function as it is relied upon to safely shut down the reactor and maintain it in a safe shutdown condition following a design basis event, it is subject to the requirements of 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." Title 10 CFR Part 50, Appendix B, requires that testing, among other things, be performed in accordance with an Appendix B Quality Assurance Program. Since the contractor performing the UHS testing did not have an Appendix B Quality Assurance Program, the licensee was required to implement their own Quality Assurance Program for the UHS testing. Through a review of the WO which performed the testing, the inspectors identified that it had a nonsafety-related designation, and that a quality assurance review of the contractor provided test results had not been completed. Specifically, there was no quality assurance review of the UHS volume that was calculated by the contractor. Therefore, the licensee failed to evaluate the UHS test results to assure that test requirements had been met in accordance with their Quality Assurance Program, as required by 10 CFR Part 50, Appendix B, Criterion XI.

The licensee captured the inspectors' concerns in their CAP as IR 2532533, "NRC: UHS Sounding PM Needs Evaluated for QA Requirements," IR 2532734, "UHS NRC Insp. – Basis for UHS Vol. (2 Million Gallons)," IR 2533516, "NRC UHS Inspection: Discharge Canal Elevation," IR 2533519, "NRC UHS: Discharge Canal Elevation," and IR 2539946, "NRC Question UHS Inspection – Tolerance/Margins." The licensee's immediate corrective actions included: (1) a review of the 2009 bathymetric survey results and other documents to determine that the high point (498' invert elevation) of the discharge canal had not degraded and is not expected to significantly degrade because the canal was cut out from bedrock; and (2) a review of the results of the last UHS bathymetric survey to verify that, even with the deficiencies noted above, the available UHS water volume in the intake canal remained above the UFSAR required volume.

The licensee's planned corrective actions include evaluating: (1) the impact of the lower high point of the intake canal on the UHS and whether applicable design documents and calculations need to be revised to account for it; (2) whether intake canal modifications are required to restore the high point to the UFSAR described elevation; (3) whether the UFSAR and other applicable design documents need to be updated to reflect the current intake canal high point elevation; (4) whether the discharge canal high point needs to be trended; (5) whether instrument uncertainty is accounted for in UHS calculations and/or UHS survey results; and (6) the appropriate quality assurance classification of the UHS bathymetric surveys.

Analysis: The inspectors determined the failure to perform surveys of the UHS in accordance with the Quality Assurance Program was contrary to 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," and was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of procedure quality,

and adversely affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to perform surveys of the UHS in accordance with the Quality Assurance Program is associated with maintenance and testing procedures and the survey did not ensure the UHS availability, reliability, or capability to perform its safety function to respond to an initiating event.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," issue date April 29, 2015, Attachment 0609.04, "Initial Characterization of Findings," issue date June 19, 2012. Because the finding impacted the Mitigating Systems cornerstone, the inspectors screened the finding through IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," issue date June 19, 2012, using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as very low safety significance (Green) because, although it affected the design or qualification of the UHS, it did not result in the loss of operability or functionality of the UHS. Specifically, the licensee demonstrated that the UHS could still perform its safety function because it contained sufficient water volume to meet the UFSAR required volume.

The inspectors determined this finding had an associated cross-cutting aspect in the area of Human Performance, Design Margins, because the licensee did not pay special attention to maintaining the safety-related UHS. Specifically, special attention was not placed on guarding the design margin of the UHS and a test program that did not meet all the quality assurance requirements was accepted to demonstrate the adequacy of the UHS. [H.6]

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that: (1) a test program be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents; and (2) that test results be documented and evaluated to assure that test requirements have been satisfied.

Contrary to the above, on April 17, 2015, the licensee failed to assure that: (1) testing required to demonstrate that the UHS would perform satisfactorily in service was identified and performed in accordance with written test procedures which incorporated the requirements and acceptance limits contained in applicable design documents; and (2) test results were evaluated to assure that test requirements were satisfied. Specifically, the licensee failed to ensure that: (1) the requirements and acceptance limits in the UFSAR and other applicable design documents for the high points of the intake and discharge canals were incorporated into the UHS test; (2) the evaluation of the bathymetric survey results accounted for the instrument uncertainty of the test equipment; and (3) the UHS bathymetric survey results were evaluated in accordance with the Quality Assurance Program to assure that the required UHS volume, as described in UFSAR and other applicable design documents, was satisfied.

The licensee's immediate corrective actions included: (1) a review of the 2009 bathymetric survey results and other documents to determine that the high point (498' invert elevation) of the discharge canal had not degraded and is not expected to significantly degrade, and (2) a review of the results of the last UHS bathymetric survey

to verify that, even with the deficiencies noted above, the available UHS water volume in the intake canal remained above the UFSAR required volume. The licensee's planned corrective actions include evaluating: (1) the impact of the lower high point of the intake canal on the UHS and whether applicable design documents and calculations need to be revised to account for it; (2) whether intake canal modifications are required to restore the high point to the UFSAR described elevation; (3) whether the UFSAR and other applicable design documents need to be updated to reflect the current intake canal high point elevation; (4) whether the discharge canal high point needs to be trended; (5) whether instrument uncertainty is accounted for in UHS calculations and/or UHS survey results; and (6) the appropriate quality assurance classification of the UHS bathymetric surveys.

The inspectors determined that the continued non-compliance does not present an immediate safety concern because even though the bathymetric surveys were not performed in accordance with the Quality Assurance Program, they provide reasonable assurance that the available UHS water volume meets the UFSAR required volume.

Because this violation was of very low safety significance, and was entered into the licensee's CAP as IR 2532533, IR 2532734, IR 2533516, and IR 2533519, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000237/2015003-02; 05000249/2015003-02; "Failure to Perform Ultimate Heat Sink Surveys in Accordance With Quality Assurance Program")**.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification (71111.11Q)

a. Inspection Scope

On August 19 – 20, 2015, the inspectors observed a crew of licensed operators in the classroom and plant's simulator during licensed operator regualification training with specific emphasis on recent changes the plant's emergency operating procedures. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program simulator sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation During Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On August 8, 2015, the inspectors observed operators during a Unit 3 down power and recovery to full power for rod pattern adjustment. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications (if applicable).

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- Z39-2 cooling water to plant systems; and
- Z49 miscellaneous sumps and drains.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted or could have resulted in valid or invalid automatic actuations of engineered

safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly maintenance effectiveness samples as defined in IP 71111.12–05.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Unit 3 Yellow risk during repairs in LPCI suction valve 3-1501-3B;
- emergent ground isolation on the Unit 3 125 volts direct current (VDC) bus;
- Unit 3 Yellow risk during LPCI emergency core cooling system (ECCS) loop select logic system functional test (LSFT);
- Unit 2 Yellow risk during high pressure coolant injection (HPCI) work window; and
- Unit 3 Yellow risk during Division I CCSW emergent unavailability.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's

probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Documents reviewed during this inspection are listed in the Attachment to this report. These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13-05.

b. Findings

(1) Failure to Post Protected Pathway Signs

Introduction: The inspectors identified a finding of very low safety significance, and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to implement all necessary prescribed risk management actions as required by licensee procedure OP-AA-108-117, "Protected Equipment Program," during a Unit 3 LPCI LSFT maintenance window. Specifically, the licensee failed to post protected equipment signs for the Unit 3 2203-28 instrument rack whose unavailability impacts the HPCI system and would have taken the unit into a licensee-defined Orange risk condition and TS Limiting Condition for Operations (LCO) 3.0.3.

Description: On September 9, 2015, during a protected pathway walkdown for the Unit 3 LPCI LSFT work window, the inspectors identified that the Unit 3 2203-28 instrument rack was not protected with the appropriate protected equipment signs or stanchions in the field. This system was, however, listed in the PARAGON on-line risk assessment software program as equipment that would turn on-line risk to Orange if made unavailable during the current plant configuration and would have required entry into LCO 3.0.3, therefore the equipment should have been protected in accordance with the station's Protected Equipment Program procedure, OP-AA-108-117.

During the day shift on September 9, 2015, the licensee removed Unit 3 Divisions I and II LPCI from service in order to perform DIS 1500-32, "Division I & II Low Pressure Coolant Injection Emergency Core Cooling System (ECCS) Loop Selection Circuitry Logic System Functional Test," under WO 01644886-01. In accordance with the pre-outage on-line and outage risk assessment, the licensee properly declared Unit 3 on-line risk Yellow when LPCI was made unavailable due to LPCI injection valves being closed and de-energized for the duration of the test. However, during the previous midnight shift the U3 Isolation Condenser (IC) was initially posted as a protected pathway, but was later determined by the licensee to not be required to be protected. The Unit 3 IC protected equipment postings were removed by the same shift that had hung them. That shift had failed to identify that the 2203-28 instrument rack was on both the Unit 3 HPCI system and Unit 3 IC protected equipment schemes, so when the Unit 3 IC protected equipment postings were removed there was nothing protecting the 2203-28 instrument rack for Unit 3 HPCI. This missed action prevented the licensee from protecting the equipment in accordance with procedure OP-AA-108-117, "Protected Equipment Program," as a predetermined risk management action (RMA) for approximately 8 hours until the inspectors identified the discrepancy. The inspectors noted that the 2203-28 instrument rack appeared to be properly configured and no work was being performed on it which could affect its availability. The licensee immediately

posted protected equipment barriers around the equipment when the inspectors brought this condition to their attention.

Analysis: The inspectors determined that the licensee's failure to post protected equipment signs for the Unit 3 2203-28 instrument rack, whose unavailability would have necessitated entry into LCO 3.0.3, was contrary to the station's protected equipment program procedure, OP-AA-108-117, and is a performance deficiency. The inspectors determined that this finding is more than minor because the licensee failed to implement prescribed risk management actions which if left uncorrected could have become a more significant safety issue. Specifically, operators inappropriately removed the protected equipment postings on instrument rack 2203-28 which could have significantly degraded the key safety function of reactor coolant inventory control if both the HPCI and LPCI systems became unavailable simultaneously and were required to mitigate the consequences of an accident that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," issue date April 29, 2015, Attachment 0609.04, "Initial Characterization of Findings," issue date June 19, 2012. Because the finding impacted the Mitigating Systems cornerstone, the inspectors screened the finding through IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," issue date June 19, 2012, using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as very low safety significance (Green), because the inspectors answered "No" to all of the Mitigating Systems Screening Questions.

This finding has a cross-cutting aspect in the area of Human Performance, Work Management, because the licensee failed to implement risk management actions in accordance with procedure OP-AA-108-117. Specifically, the licensee inappropriately removed protected equipment postings prior to commencing maintenance activities which required the risk management activity to be in place. [H.5]

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that "activities affecting quality be prescribed by documented instructions, procedures, and drawings of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, and drawings."

Contrary to the above, on September 9, 2015, the licensee failed to accomplish activities affecting quality as prescribed by documented instructions, procedures, and drawings of a type appropriate to the circumstances. Specifically, licensee procedure OP-AA-108-117, "Protected Equipment Program," requires, in part, that "protected equipment and systems are to be clearly identified in the field to prevent inadvertent work on or near the protected equipment." During Unit 3 LPCI system unavailability as a result of logic system functional testing on September 9, 2015, the licensee declared the Unit 3 HPCI system protected equipment, including the Unit 3 instrument rack 2203-28. The licensee failed to clearly identify the Unit 3 instrument rack 2203-28 in the field as protected equipment to prevent inadvertent work on or near the instrument rack. The licensee entered this issue into their CAP as IR 2553431.

Corrective actions planned and completed by the licensee included immediately protecting the Unit 3 2203-28 instrument rack and producing an operations communication covering the event, lessons learned, and protected pathway walkdown requirements. In addition, two shift operations crew clocks were reset.

Because the licensee has entered the issue into their CAP and the finding is of very low safety significance, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000249/2015003-03, “Failure to Post Protected Pathway Signs”)**

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- 10 CFR Part 21, “Potential Failure of Electromatic Relief Valve Cutout Switch”;
- EDG largest load rejection testing strategy;
- reserve auxiliary transformer undervoltage logic fast transfer;
- foreign material impact on reactor fuel pin springs;
- 10 CFR Part 21, high contact resistance affecting main steam line low pressure logic relays; and
- Unit 3, Division II CCSW operations without keep fill water aligned due to emergent work on Division I CCSW.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee’s evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted six samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- WO 1736511, Unit 1 condensate storage tank non-destructive testing following repairs;
- WO 1813735, Unit 2, Division I LPCI post maintenance run and non-destructive testing following FLEX modification work window;
- WO 1775057, "Diesel Fire Pump and Discharge, 2/3 Relief Valve following maintenance window";
- WO 1852241, Unit 2 drywell equipment drain sump containment isolation valve 2-2001-5 following repair;
- WO 01738368, "OPS Post Maintenance Testing (PMT), LPCI Division II Fukushima Flex Modification Branch Connections"; and
- WO 1862704, "U3 3B SBLC Pump Run with Low Suction Pressure."

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted six PMT samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

## 1R22 Surveillance Testing (71111.22)

### .1 Surveillance Testing

#### a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- WO 1820520, "Dresden 3 Quarterly Technical Specification HPCI Pump Operability Test and In-service Test (IST) surveillance"; (IST)
- WO 1827237, "Unit 2 Average Power Range Monitor Scram and Rod Block Surveillance"; (routine)
- WO 1648946-01, "Unit 2, 24 Month Intermediate Range Monitor Rod Block and Scram Calibration"; (routine)
- Surveillance Test Interval Change Request DRE-14-003, IR 2527941; (routine)
- WO 1840213, "Dresden 3 Quarterly Technical Specification Electromatic/T-Rock Relief Valves: Pressure Switch Calibration and Function Check"; (routine) and
- WO 1835516, "Dresden 3 Quarterly Technical Specification Main Steam Line High Flow Switch Calibration." (routine)

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;

- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted five routine surveillance testing samples and one in-service test sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

Licensee identified finding documented in Section 4OA7.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on August 20, 2015, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06–06.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

This inspection constituted one complete sample as defined in IP 71124.08-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the UFSAR, the Process Control Program, and the Recent Radiological Effluent Release Report for information on the types, amounts, and processing of radioactive waste disposed.

The inspectors reviewed the scope of quality assurance audits in this area since the last inspection to gain insights into the licensee's performance and inform the "smart sampling" inspection planning.

b. Findings

No findings were identified.

.2 Radioactive Material Storage (02.02)

a. Inspection Scope

The inspectors selected areas where containers of radioactive waste are stored, and evaluated whether the containers were labeled in accordance with Title 10 CFR 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR 20.1905, "Exemptions to Labeling Requirements."

The inspectors assessed whether the radioactive material storage areas were controlled and posted in accordance with the requirements of 10 CFR Part 20, "Standards for Protection against Radiation." For materials stored or used in the controlled or unrestricted areas, the inspectors evaluated whether they were secured against unauthorized removal and controlled in accordance with 10 CFR 20.1801, "Security of Stored Material," and 10 CFR 20.1802, "Control of Material Not in Storage."

The inspectors evaluated whether the licensee established a process for monitoring the impact of long term storage (e.g., buildup of any gases produced by waste decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) that was sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspectors selected containers of stored radioactive material, and assessed for signs of swelling, leakage, and deformation.

b. Findings

No findings were identified.

.3 Radioactive Waste System Walkdown (02.03)

a. Inspection Scope

The inspectors walked down accessible portions of select radioactive waste processing systems to assess whether the current system configuration and operation agreed with the descriptions in the UFSAR, Offsite Dose Calculation Manual, and the Process Control Program.

The inspectors reviewed administrative and/or physical controls (i.e., drainage and isolation of the system from other systems) to assess whether the equipment which is not in service or is abandoned in place would contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors assessed whether the licensee reviewed the safety significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments."

The inspectors reviewed the adequacy of changes made to the radioactive waste processing systems since the last inspection. The inspectors evaluated whether changes from what is described in the UFSAR were reviewed and documented in accordance with 10 CFR 50.59, as appropriate, and to assess the impact on radiation doses to members of the public.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers, and assessed whether the waste stream mixing, sampling procedures, and methodology for waste concentration averaging were consistent with the Process Control Program, and provided representative samples of the waste product for the purposes of waste classification as described in 10 CFR 61.55, "Waste Classification."

For those systems that provide tank recirculation, the inspectors evaluated whether the tank recirculation procedures provided sufficient mixing.

The inspectors assessed whether the licensee's Process Control Program correctly described the current methods and procedures for dewatering and waste stabilization (e.g., removal of freestanding liquid).

b. Findings

No findings were identified.

.4 Waste Characterization and Classification (02.04)

a. Inspection Scope

The inspectors selected the following radioactive waste streams for review:

- DW-14-017; Radioactive Material, Type B(U) Package, 7, UN2916; Reactor Water Clean Up Resin;
- DW-14-032; Radioactive Material, Type A Package, 7, UN2915; Unit-3 Fuel Pool Resin-2010;
- DW-15-015; Radioactive Material, Low Specific Activity (LSA-II); 7, UN3321; and
- DW-14-012; Radioactive Material, Low Specific Activity (LSA-II); 7, UN3321; Dry Active Waste to Bear Creek Facility.

For the waste streams listed above, the inspectors assessed whether the licensee's radiochemical sample analysis results (i.e., "10 CFR Part 61" analysis) were sufficient to support radioactive waste characterization as required by 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The inspectors evaluated whether the licensee's use of scaling factors and calculations to account for

difficult-to-measure radionuclides was technically sound and based on current 10 CFR Part 61 analysis for the selected radioactive waste streams.

The inspectors evaluated whether changes to plant operational parameters were taken into account to: (1) maintain the validity of the waste stream composition data between the annual or biennial sample analysis update; and (2) assure that waste shipments continued to meet the requirements of 10 CFR Part 61 for the waste streams selected above.

The inspectors evaluated whether the licensee had established and maintained an adequate Quality Assurance Program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56, "Waste Characteristics."

b. Findings

No findings were identified.

.5 Shipment Preparation (02.05)

a. Inspection Scope

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. The inspectors assessed whether the requirements of applicable transport cask certificate of compliance had been met. The inspectors evaluated whether the receiving licensee was authorized to receive the shipment packages. The inspectors evaluated whether the licensee's procedures for cask loading and closure procedures were consistent with the vendor's current approved procedures.

The inspectors observed radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation and receipt activities. The inspectors assessed whether the shippers were knowledgeable of the shipping regulations, and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to:

- as appropriate, the licensee's response to U.S. Nuclear Regulatory Commission (NRC) Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979; and
- Title 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans," Subpart H, "Training."

Due to limited opportunities for direct observation, the inspectors reviewed the technical instructions presented to workers during routine training. The inspectors assessed whether the licensee's training program provided training to personnel responsible for the conduct of radioactive waste processing, and radioactive material shipment preparation activities.

b. Findings

No findings were identified.

.6 Shipping Records (02.06)

a. Inspection Scope

The inspectors evaluated whether the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number for the following radioactive shipments:

- DW-14-017; Radioactive Material, Type B(U) Package, 7, UN2916; Reactor Water Clean Up Resin;
- DW-14-032; Radioactive Material, Type A Package, 7, UN2915; Unit 3 Fuel Pool Resin-2010;
- DW-15-015; Radioactive Material, Low Specific Activity (LSA-II); 7, UN3321; and
- DW-14-012; Radioactive Material, Low Specific Activity (LSA-II); 7, UN3321; Dry Active Waste to Bear Creek Facility.

Additionally, the inspectors assessed whether the shipment placarding was consistent with the information in the shipping documentation.

b. Findings

No findings were identified.

.7 Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by the licensee at an appropriate threshold, were properly characterized, and were properly addressed for resolution in the licensee CAP. Additionally, the inspectors evaluated whether the corrective actions were appropriate for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

The inspectors reviewed results of selected audits performed since the last inspection of this program, and evaluated the adequacy of the licensee's corrective actions for issues identified during those audits.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES

##### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety**

#### 40A1 Performance Indicator Verification (71151)

##### .1 Mitigating Systems Performance Index—Heat Removal System

###### a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Heat Removal System Performance Indicator (PI) (MS08) for Dresden Nuclear Power Station, Units 2 and 3, covering the period from the 2<sup>nd</sup> quarter 2014 through 1<sup>st</sup> quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, MSPI derivation reports, and NRC Integrated Inspection Reports for the period of April 2014 through March 2015 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI heat removal system samples as defined in IP 71151-05.

###### b. Findings

No findings were identified.

##### .2 Mitigating Systems Performance Index—Residual Heat Removal System

###### a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Residual Heat Removal System PI (MS09) for Dresden Nuclear Power Station, Units 2 and 3, covering the period from the second quarter 2014 through the first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of April 2014 through March 2015 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified

with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI residual heat removal system samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index—Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Cooling Water Systems PI (MS10) for Dresden Nuclear Power Station, Units 2 and 3, covering the period from the second quarter 2014 through first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of April 2014 through March 2015 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee’s issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI cooling water system samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.4 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system (RCS) specific activity PI (BI01) for Dresden Nuclear Power Station, Units 2 and 3, for the period from the first quarter 2014 through the first quarter 2015. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 2013, to determine the accuracy of the Performance Indicator data reported during those periods. The inspectors reviewed the licensee’s RCS chemistry samples, technical specification requirements, issue reports, event reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee’s issue report database to determine if any problems had been identified with the Performance Indicator data collected or transmitted for this indicator.

In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two RCS specific activity samples as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Follow-Up Sample for In-Depth Review: Review of Corrective Actions Not Yet Completed when Supplemental Inspection 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area" was Performed for a White Unplanned Scrams per 7000 Critical Hours Performance Indicator

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents, specifically Root Cause Investigation Reports IR 2480399, "Dresden Exceeded Threshold for Initiating Events – White Performance Indicator"; IR 1646633, "Main Power Transformer Failure Due to an Indeterminate Cause"; IR 1655458, "Dresden D2F54 Mid-Cycle Forced Outage due to Automatic Voltage Regulator Failure"; and IR 2448891, "Two Reactor Scrams from a Feedwater Level Control (FWLC) System Failure with a Reactor Recirculation Pump Runback". The inspectors verified the completion of and assessed the adequacy of long-term corrective actions taken in response to the four reactor scram events and their causes.

The inspectors' review was predominantly focused on:

- The adequacy of the case studies developed by the licensee covering the events and actions taken or missed which directly contributed to the scrams. In addition, the inspectors verified the successful completion of examinations and training associated with these case studies for the working groups affected by these events which included senior management, operations, engineering, and maintenance;
- The adequacy of changes made to licensee procedure MA-AA-716-004, "Conduct of Troubleshooting" which included adding formality to the complex troubleshooting process in part by increasing management involvement in the process with the creation of the Troubleshooting Team Manager and the Technical Team Lead; and
- Enhancements to the licensee's risk assessment process through additions made to the HU-AA-1212, "Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party Review, and Post-Job Review" and AD-AA-3000, "Nuclear Risk Management Process" with focus on digital systems and systems requiring significant vendor support with regards to troubleshooting.

This review constituted a single follow-up inspection sample for in-depth review as defined in IP 71152-05.

b. Background

Dresden, Unit 2 experienced reactor scram events on April 12, 2014, May 3, 2014, January 13, 2015 and February 6, 2015. The April 12, 2014 scram was associated with a failed main power transformer high voltage winding, the May 3, 2014 scram was a result of a failed fuse in the controlling channel of the main generator voltage regulator, and the January 13, 2015 and February 6, 2015 scrams occurred due to improperly landed leads in a FWLC power supply.

The NRC conducted a Supplemental Inspection in accordance with Inspection Procedure 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area" from June 22-26, 2015 to assess the licensee's evaluation associated with the four reactor scram events that took place on Unit 2 between April 2014 and February 2015. These four scram events resulted in the licensee exceeding the White threshold of the Unplanned Scrams per 7000 Critical Hours performance indicator in the first quarter of 2015. At the conclusion of this inspection period, the licensee had not fully implemented all of its corrective actions. This inspection sample reviewed the remaining open corrective actions from the Supplemental Inspection.

c. Observations

As discussed in the "Inspection Scope" section above, the inspectors' reviews were focused on the licensee's actions to enhance troubleshooting procedures and manage risk-related decision making. In addition, the training products produced to describe the events and the corrective actions undertaken and their roll out to the licensee's staff was reviewed.

The inspectors verified that licensee procedural changes adequately included implications to plant risk associated with operating, maintaining, and troubleshooting digital systems and systems requiring additional vendor support. In addition, the inspectors noted the addition of required management full time oversight of complex troubleshooting evolutions with a direct tie to the previously mentioned enhanced operational risk decision making. The inspectors observed the licensee implement the procedural and management oversight changes to the complex troubleshooting process during emergent troubleshooting and repairs to the Unit 2 HPCI speed sensing circuit and motor gear unit. The inspectors determined the developed training to include case studies and examinations for the participants was considered acceptably challenging and inclusive of the working groups affected. The training products included a timeline of events, decisions made, and the resulting changes to site's processes. Licensee effectiveness reviews for corrective actions to prevent recurrence identified in Root Cause Investigation Reports 164663, 1655458, and 2448891 are due to be completed by the licensee in January 2017, February 2017, and March 2016 respectively. These effectiveness reviews will undergo NRC inspection during biennial Problem Identification and Resolution inspections scheduled in 2016 and 2018.

d. Findings

No findings were identified.

.4 Follow-Up Sample for In-Depth Review: Review of Adverse Trend in Foreign Material Exclusion Events

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents, specifically Apparent Cause Investigation Report IR 2525632, "Maintenance Requesting an ACE on FME Practices"; IR 2524205, "Adverse Trend IR Identified in FME Program"; and IR 2507110, "FME – Performance Analysis Recommendation." The inspectors

verified the completion of assigned corrective actions and assessed the effectiveness of the corrective actions. The inspectors' review was predominantly focused on:

- The adequacy and thoroughness of the licensee's apparent cause evaluation (ACE) to include extent of condition considerations, contributing causes, recent trends, and organizational weaknesses. Inspectors verified the adequacy of the data set of issue reports analyzed and that there were no significant issues neglected;
- The adequacy of corrective actions taken, in particular the new site foreign material exclusion (FME) plan, tailgate briefings provided to maintenance department personnel, training conducted on various thread sealants and Teflon tape, and the performance of FME challenge boards to determine the adequacy of knowledge levels; and
- Procedural development for the proper use of pipe sealants to include a newly developed matrix to address the use and application of approved pipe sealants.

This review constituted a single follow-up inspection sample for in-depth review as defined in IP 71152-05.

b. Background

Dresden Station's internal performance indicator dropped below the licensee's self-imposed goal in early July. This condition was the result of several FME issues which identified a potential weakness in craft and supervisor knowledge in the requirements of MA-AA-716-008, "Foreign Material Exclusion Program."

The NRC documented a self-revealing Green finding in Integrated Inspection Report 05000237; 05000249/2015002 (ADAMS Accession Number ML15219A500) due to foreign material (Teflon tape) in the bellows of a Unit 2 Emergency Diesel Generator pressure switch which resulted in the pressure switch's sluggish response to lowering lube oil pressure, and a failure to meet the TS hot restart criteria and a failure of a surveillance test. In addition, Unit 3 has recently experienced a fuel failure which has been determined to be most likely caused by improper FME controls during the D3R23 refueling outage. Both Unit 2 and Unit 3 will undergo planned outages during the 4<sup>th</sup> quarter of this year at which time highly risk significant systems will be opened up to allow access for maintenance, creating an elevated risk of additional FME events.

c. Observations

As discussed in the "Inspection Scope" section above, the licensee has implemented numerous corrective actions to address the recent adverse trends in FME practices. Inspectors have noted several FME issue reports generated after the completion of many of the corrective actions associated with the ACE, suggesting these actions have not yet shown the intended effect. Due to this and the upcoming outages on Units 2 and 3, as well as the high number of contract personnel potentially new to Dresden Station and to the licensee's FME processes, inspectors intend to pay particular attention to this area in the next few months to help ensure repeat events do not occur.

d. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Supplemental Licensee Event Report 249/2014–001–02, “Electromatic Relief Valve Failed to Actuate During Surveillance Testing”

On November 6, 2014, with the reactor in Mode 5 (cold shutdown with the reactor head not fully tensioned) an electromatic relief valve (ERV) failed to open during a scheduled surveillance test on Unit 3. The operators in the field reported an audible click when the manual actuation was initiated. However, when the demand signal was given the actuator plunger did not move and the valve did not open. The cause of the failure was binding of the actuator due to excessive wear of the actuator guide posts.

Exact failure time for the ERV could not be determined, however, based on actuator design vulnerability and the visual inspection and measurements of failure, it has been estimated that the valve would not have been able to perform its function some time during the previous operating cycle. Licensee subsequent review of operations logs and equipment history showed that there were occasions where, during surveillance testing, an additional ERV would have been inoperable. Having two of the five relief valves inoperable could challenge the ability of the ERV's to provide pressure control. The ERVs in conjunction with the safety valves and the Target Rock valve provide overpressure protection during Anticipated Transient Without Scram (ATWS) scenarios.

This event was reported in accordance with 10 CFR 50.73(a)(2)(i)(B), as any operation or condition which was prohibited by the plant's Technical Specifications and 10 CFR 50.73(a)(2)(V)(D), any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident as discussed in the Technical Specification basis.

The NRC issued a White Finding and Notice of Violation in Inspection Report Number 05000249/2015008, (ADAMS Accession Number ML15085A273) dated March 26, 2015 for this deficiency.

Licensee Event Report (LER) 249/2014–001–00, and Supplemental Licensee Event Report 249/2014–001–01, “Electromatic Relief Valve Failed to Actuate During Surveillance Testing” were both previously closed in Integrated Inspection Report 05000237/2015001; 05000249/2015001, (ADAMS Accession Number ML15117A595) dated April 27, 2015.

This LER is closed.

This event follow up review constituted one sample as defined in IP 71153–05.

.2 (Closed) Supplemental Licensee Event Report 237/2015–002–02, “2C ERV Failed to Actuate During Extent of Condition Testing”

On February 7, 2015, with the reactor in Mode 4 (cold shutdown with the reactor vessel head fully tensioned) an ERV failed to open during performance of an extent of condition test on Unit 2. The operators in the field reported an audible click when the manual actuation was initiated. However, when the demand signal was given the actuator plunger did not move and the valve did not open. The cause of the failure was determined to be a lack of maintenance procedural guidance to align the ERV actuator subcomponents and characterize wear of the ERV actuator subcomponents to

determine whether the wear was excessive. The absence of this guidance allowed binding of the actuator due to excessive wear of the actuator subcomponents and plunger assembly.

Exact failure time for the ERV could not be determined, however, based on actuator design vulnerability and the visual inspection and measurements of failure, it has been estimated that the valve would not have been able to perform its function some time during the previous operating cycle. Licensee subsequent review of operations logs and equipment history showed that there were occasions where, during surveillance testing, an additional ERV would have been inoperable. Having two of the five relief valves inoperable could challenge the ability of the ERV's to provide pressure control. The ERVs in conjunction with the safety valves and the Target Rock valve provide overpressure protection during ATWS scenarios.

This event was reported in accordance with 10 CFR 50.73(a)(2)(i)(B), as any operation or condition which was prohibited by the plant's Technical Specifications and 10 CFR 50.73(a)(2)(V)(D), any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident as discussed in the Technical Specification basis.

The NRC issued a White Finding and Notice of Violation in Inspection Report Number 05000237/2015010, (ADAMS Accession Number ML15260A508) dated September 16, 2015 for this deficiency.

Licensee Event Report 237/2015-002-00, and Supplemental Licensee Event Report 237/2015-002-01, "2C ERV Failed to Actuate During Extent of Condition Testing" were both previously closed in Integrated Inspection Report 05000237/2015002; 05000249/2015002, (ADAMS Accession Number ML15219A500) dated August 7, 2015.

This LER is closed.

This event follow up review constituted one sample as defined in IP 71153-05.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On October 1, 2015, the inspectors presented the inspection results to Mr. S. Marik, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

## .2 Interim Exit Meetings

Interim exits were conducted for:

- On July 17, 2015, the inspectors presented the inspection results for the areas of radioactive solid waste processing and radioactive material handling, storage, and transportation; and the RCS specific activity PI verification to Mr. S. Marik and other members of the licensee staff. The licensee acknowledged the issues presented.
- On July 28, 2015, the inspectors presented the inspection results for the Triennial Heat Sink Performance to Mr. S. Marik and other members of the licensee staff. The licensee acknowledged the issues presented.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

### 4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

A violation of TS 3.3.6.1(A.1), "Primary Containment Isolation Instrumentation" was identified by the licensee during a review of recent operations logs and CAP documents on September 7, 2015 by on-shift operators. On September 5, 2015, operators performing shiftly TS rounds identified that the Unit 3, 'A' main steam line (MSL) steam flow detector, 3-0261-2A, was reading more than 25 pounds per square inch differential (psid) lower than the other three steam flow detectors on the 'A' MSL contrary to Surveillance Requirement 3.3.6.1.1. This issue was entered into the licensee's CAP at this time as IR 2551890, where the on-shift Senior Reactor Operator (SRO) recommended performing DIS 0250-01, "Dresden Unit 3 Quarterly Main Steam Line High Flow Switch Calibration" and incorrectly assessed TS 3.3.6.1 function 1.d Main Steam Line Flow – High as being inoperable but not requiring the failed channel to be placed in trip for the failed steam flow switch. The SRO incorrectly applied the operable logic of two required channels on each MSL per trip system and did not recognize that one failed channel would require entry into TS 3.3.6.1(A.1). TS 3.3.6.1(A.1) requires that operators place the failed channel in trip within 24 hours of discovery. Operations on-shift reviews of recent logs and issue reports identified the missed entry into TS 3.3.6.1(A.1) on September 7, 2015 more than 24 hours later. The missed TS entry was entered into the licensee's CAP as IR 2552152. Subsequent performance of DIS 0250-01 identified two additional channels outside of TS required trip values for MSL high steam flow. The failure to enter a required TS action statement when declaring 'A' MSL flow detector 3-0261-2A inoperable was considered a performance deficiency. The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, if left uncorrected, a separate single failure could have prevented the safety function of isolating the 'A' MSL on a steam line rupture casualty. The inspectors evaluated the finding using IMC 0609, Significance Determination Process, Attachment 0609.04, "Initial

Characterization of Findings,” Tables 2 and 3, and Appendix A, The Significance Determination Process (SDP) for Findings at Power, Exhibit 3, “Barrier Integrity Screening Questions,” dated June 19, 2012. The inspectors answered ‘No’ to the Appendix A, Exhibit 3 Barrier Integrity Screening Questions, therefore, the finding was determined to be of very low safety significance (Green). Licensee corrective actions included disqualifying the SRO from shift duties pending remedial training, performing an apparent cause evaluation concerning the missed TS action statement entry, replacing the failed ‘A’ MSL flow switch, and calibrating all other channels which were outside the required operating band of DIS 0250-01.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

S. Marik, Site Vice President  
J. Washko, Station Plant Manager  
L. Antos, Security Manager  
J. Biegelson, Plant Engineering Manager  
P. DiSalvo, Senior Engineer  
D. Doggett, Emergency Preparedness Coordinator  
B. Franzen, Regulatory Assurance Manager  
H. Gabal, Health Physicist, Radwaste Shipper  
D. Glick, Radioactive Material Shipping Specialist  
F. Gogliotti, Engineering Director  
G. Graff, Nuclear Oversight Manager  
M. Hosain, Site EQ Engineer  
B. Kapellas, Maintenance Director  
J. Kish, ISI Programs Engineering  
G. Morrow, Operations Director  
P. O'Brien, Regulatory Assurance – Corrective Action Program Coordinator  
M. Overstreet, Radiation Protection Manager  
M. Pavey, Health Physicist, Radwaste Shipper  
P. Prater, Operations Training Manager  
A. Pullam, Training Director  
J. Quinn, Work Control Director  
R. Schmidt, Chemistry  
D. Walker, Regulatory Assurance – NRC Coordinator  
D. Wolverton, Engineering Manager

#### Nuclear Regulatory Commission

P. Loudon, Director, Division of Reactor Projects  
J. Cameron, Chief, Division of Reactor Projects, Branch 4  
C. Lipa, Division of Reactor Safety, Branch 2 Chief  
L. Rodriguez, Reactor Inspector  
T. Go, Health Physicist

#### Illinois Emergency Management Agency

M. Porfirio, Resident Inspector

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000237/2015003-01; 05000249/2015003-01	NCV	Failure to Evaluate the Available Net Positive Suction Head for the Diesel Generator Cooling Water Pumps Following a Dam Failure (Section 1R07.1.b(1))
05000237/2015003-02; 05000249/2015003-02	NCV	Failure to Perform Ultimate Heat Sink Surveys in Accordance With Quality Assurance Program (Section 1R07.1.b(2))
05000249/2015003-03	NCV	Failure to Post Protected Pathway Signs (Section 1R13)

### Closed

05000237/2015003-01; 05000249/2015003-01	NCV	Failure to Evaluate the Available Net Positive Suction Head for the Diesel Generator Cooling Water Pumps Following a Dam Failure (Section 1R07.1.b(1))
05000237/2015003-02; 05000249/2015003-02	NCV	Failure to Perform Ultimate Heat Sink Surveys in Accordance With Quality Assurance Program (Section 1R07.1.b(2))
05000249/2015003-03	NCV	Failure to Post Protected Pathway Signs (Section 1R13)
05000249/2014-001-02	LER	Electromatic Relief Valve Failed to Actuate During Surveillance Testing (Section 4OA3.1)
05000237/2015-002-02	LER	2C ERV Failed to Actuate During Extent of Condition Testing (Section 4OA3.2)

## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### 1R04 Equipment Alignment (71111.04)

- IR 2548524, "Entered DOA 4700-01 (Instrument Air Failure)"
- IR 2548530, "Entered DOA 4700-01 (Instrument Air Failure)"
- DOP 4700-08, "3C Instrument Air System Operation," Revision 37
- DOP 4700-M4, "3C Instrument Air Compressor (3-4732) Checklist," Revision 05
- Drawing: M-367, Diagram of 3C Instrument Air Piping
- IR 2525100, "One Time NDE UT Inspection Needed for 'B' SBTG Inlet Piping"
- IR 2541412, "SBGT Spare Charcoal Trays Need to be Available for Fragnet"
- IR 2543272, "Clasps Not Engaged on SBTG Access Panels
- IR 2544453, "Evaluation of DAP 15-10 for SBTG Testing Required"
- IR 2546599, "SBGT Fan PM Comment Not Addressed"
- IR 2546608, "NOS ID: DTS 7500-13 Without Acceptance Criteria"
- IR 2552293, "Corrections Needed – DIS 7500-05"
- IR 2554270, "2/3-7509 SBTG X-Tie Damper Limit Switch Not Closed"
- IR 2555625, "PMC: 2/3-7504-A Leaking Oil"
- IR 2558780, "DAP 07-44 Requires Revision"
- IR 2558843, "'B' SBTG Flow Controller Setpoint Knob Broke"
- Apparent Cause Report 1637704-02, "2/3A SBTG Unexpectedly Started When C/S Was Taken to Standby"
- Maintenance Rule Functional Failure for System 75-1 (IR 1599538)
- Drawing: 26100-001, Standby Gas Treatment"
- DOP 7500-01, "Standby Gas Treatment System Operation," Revision 35
- DOP 7500-M1/E1, "Unit 2/3 Standby Gas Treatment," Revision 06
- DOP 6600-E1, "Standby Diesel Generator," Revision 06
- DOP 6600-M1, "Unit 3 Standby Diesel Generator Checklist," Revision 27

### 1R05 Fire Protection (71111.05)

- DFPS 4114-03, "Unit 3 and 2/3 Radwaste Fire System Inspection," Revision 26
- DFPA 4114-02, "Unit 2 Fire System Inspection," Revision 28
- IR 2522833, "Fire Header Piping Leak – U3 TB 538"
- IR 2522849, "Follow on to U3 Fire Header Leak IR 2522833"
- Dresden Generating Station Pre-Fire Plan – FZ 11.2.2
- Fire Load Calculation No. DRES 97-0105, Revision 09
- IR 2552046, "2/3 Max Recycle"
- IR 2552011, "NRC ID: Possible Transient Combustibles"
- IR 2550808, "Housekeeping Issue / Transient Combustibles Identified by NRC"
- Dresden Generating Station Pre-Fire Plan – FZ 14.6
- Fire Load Calculation No. DRES 97-0105, Revision 09
- Dresden Generating Station Pre-Fire Plan – FZ 9.0C, Revision 4
- Dresden Generating Station Pre-Fire Plan – FZ 1.1.1.1
- IR 2564563, "NRC ID: Fire Protection Issues During W/D"
- EC 368672, "Fabricate a New Cover Plate for LPCI Door"

- CA-AA-211, "Fire Protection Program," Revision 6
- OP-AA-201-008, "Pre-Fire Plan Manual," Revision 3

#### 1R06 Flooding (71111.06)

- Information Notice 98-31: "Fire Protection System Design Deficiencies and Common-Mode Flooding of Emergency Core Cooling System Rooms at Washington Nuclear Project Unit 2"
- Smart Sample, OpEss FY 2007-02, "Flooding Vulnerabilities Due to inadequate Design and Conduit / Hydrostatic Seal Barrier Concerns"
- IR 1216263, "U3 Fire Prot Vlv Packing Leak"
- IR 1240098, "2/3-4199-160F Fire Protection Valve Has Packing Leak"
- IR 1240732, "Leak at Weld Downstream of SV to Hose Cab. #21"
- IR 1240736, "Bonnet Cracked on SV to Hose Cabinet #23"
- IR 1282791, "2-4101-D-500 Requires Replacement in D2R23"
- IR 1286189, "Packing Leak on FP Valve 2-4199-195"
- IR 1333599, "Unit Two Fire Header Has Leak Identified"
- IR 1343219, "Fire Protection Vlv Leak"
- IR 1351057, "Fire Protection Pipe Appears to be Leaking Thru-Wall"
- IR 1351969, "1-4199-333 Has a Seat Leakage"
- IR 1356111, "2-4199-178 Valve Repair Packing Leak"
- IR 1376487, "Leaking Fire Protection Valve Discovered During DFPS 4123-04"
- IR 1443325, "Pipe Leaking Downstream of 2-4199-385"
- IR 1443359, "Leak in Fire Protection Hdr Grooved Coupling"

#### 1R07 Triennial Heat Sink Performance (71111.07T)

- ATD-0253, "Determination of Flow Restricting Orifices for CCSW Pump Room Cooler and CR Refrigeration Condenser in the CCSW System," Revision 2
- ATD-0067, "CCSW Pump Coolers," Revision 0
- DFL 03-006, "Discussion of New Hose Connections on CCSW Piping and Capability to Shutdown Following a Seismic Event that Fails the Dresden Lock & Dam," January 8, 2004
- DR-029-M-001, "CCSW System Design Input for the Balance Heat Transfer Performance Utility," Revision 1
- DRE03-0026, "Analysis of the Intake Canal, CCSW Heat Exchanger, and Temporary Pumps Following a Dam Failure and 1-inch LOCA," Revision 0
- DRE277LN001, "Containment Cooling Service Water (CCSW)," December 8, 2013
- "Dresden Station Pre-NRC (EN) Triennial Heat Sink and GL 89-13 Program FASA," July 14, 2014
- "Dresden, Units 2 & 3, Safety Evaluation, Amendments 191 & 185 Related to Extended Power Uprate," December 21, 2001 (ADAMS Accession Number ML013540187)
- DOA 0010-01, "Dresden Lock and Dam Failure," Revision 32
- EC 378042, "Dresden Unit 2/3 Ultimate Heat Sink Evaluation"
- EC 382082, "Licensing Basis of the Ultimate Heat Sink (UHS) and the Impact of Silting"
- "Guided Wave Inspection Report Exelon Corporation-Dresden Site 2-1510-16" (Unit #2), 3-1514-16" (Unit #3), 3-1512-24" (CribHouse)," May 12, 2015
- "Guided Wave Inspection Report Exelon Corporation-Dresden Site 2-1514-16"(Unit #2), 3-1510-16" (Unit #3)," June 5, 2015
- IR 1529459, "2D CCSW Suction Pressure Line Plugged & IST Not Completed"
- IR 2497065, "Pin Hole Leak Identified on Unit 3 CCSW Div. I Piping"
- IR 1550403, "U2 CCSW Piping Leak"
- IR 1501211, "Engineering Review on OWA for CCSW Pumps"
- IR 2532533, "NRC: UHS Sounding PM Needs Evaluated for QA Requirements"
- IR 2532534, "NRC UHS Inspection Scaffold 50.59 Screening"

- IR 2532555, "UHS Insp. – Calc for DGCW Pumps Based at 501 Elevation"
- IR 2532734, "UHS NRC Insp. – Basis for UHS Vol. (2 Million Gallons)"
- IR 2533489, "NRC UHS: Regarding CCSW Vault Cooler DP"
- IR 2533516, "NRC UHS Inspection: Discharge Canal Elevation"
- IR 2533519, "NRC UHS: Discharge Canal Elevation"
- IR 2533713, "Further Information for IR 02532555"
- IR 2539946, "NRC Question UHS Inspection – Tolerance / Margins"
- Letter, "Bathymetric Survey of the Intake Canal at Exelon Generation Company's Dresden Generating Station – EA Project No. 6157817," December 9, 2013
- Letter, "Bathymetric Survey of the Intake Canal at Exelon Generation Company's Dresden Generating Station – EA Project No. 1500405," December 15, 2014
- M-29 Sheet 2, "Diagram of L.P. Coolant Injection Piping", Revision BG
- M-22, "Diagram of Service Water Piping," Revision EO
- M-360 Sheet 2, "Diagram of L.P. Coolant Injection Piping," Revision BD
- RS-01-208, "Additional Information Supporting the License Amendment Request to Permit Upgraded Power Operation at Dresden Nuclear Power Station," September 26, 2001 (ADAMS Accession Number ML012760060)
- VV-10, "Effects on the Cooling Capacity of CCSW Room Coolers Due to Reverse Air Flow," Revision 1
- VV-13, "Calculation for CCSW Cooler Performance and Coil Effectiveness Curve," Revision 1B
- VV-14, "Calculation for CCSW Cooler Performance and Coil Effectiveness Curve," Revision 1C
- WO 1291846 01, "D2 2Y COM UFSAR CCSW Loop Flow Verification"
- WO 1396599 01, "D3 2Y COM UFSAR CCSW Loop Flow Verification"
- WO 1508189 02, "2CCSW17 UT Examination"
- WO 1626234, "CM Work Order Required for CCSW Div. II Buried Piping Insp."
- WO 1686337 01, "3DG19 UT Examination"
- WO 1707193, "D2/3 RFL COM (LR) Soundings of 2/3 Forebay (Intake Canal)"
- WO 1740574 02, "2CCSW66 UT Examination"
- WO 1760951 01, "DG Cooling Line 2-3930-8" (Zone G) UT Examination"
- WO 1794897 01, "D2 QTR TS CCSW PMP Operability Test and IST Surv"
- WO 1795671 01, "D3 QTR TS CCSW PMP Operability Test and IST Surv"
- WO 1818617 01, "D2 QTR TS CCSW PMP Operability Test and IST Surv"
- 87-0870/915, "Unit 3 Diesel Cooling Water Pump NPSH, Fuel Oil Line Pressure Head and Air Start Receiver Valve Pressure Rating Evaluation," Revision 001B

#### 1R11 Licensed Operator Regualification Program (71111.11)

- As Left Out of the Box Evaluation 15-1A; Isolation Condenser Tube Leak, Stator Cooling Runback, HPCI Steam Line Break, ATWS with Emergency Depressurization
- IR 2544936, "LORT OBE Delayed Due to Simulator Program Issue"
- IR 2539447, "Rec'v Alarm 903-4 C-22, Torus Narrow Range Wtr LVL Hi"

#### 1R12 Maintenance Effectiveness (71111.12)

- WO 1271971, "D2 10Y Com Service Water PP B Overhaul (2-3901B)"
- IR 2488444, "2B SWP Operation (Low Amps – No Discharge Pressure)"
- IR 2495238, "MRule: A1 Determination Required for U2 Function 39-2"
- Maintenance Rule Functional Failure for IR 2488444
- Minutes from Maintenance Rule Expert Panel, June 10, 2015
- IR 2495238, "MRule: A1 Determination Required for U2 Function 39-2"

- WO 1796548-01, "Replace CR3 Relay in 2B RB Floor Drain Sump Pump Control Pnl (Panel 2202-80B)"
- Work Planning Instructions for EC 391644, Rev. 005, "Unit 3 Reactor Building Piping Replacement (RPR) Interlock Doors"
- 50.59 Screening Form No. 2013-0024, Revision 42 for EC 391644
- Technical Task Pre-Job Brief Form, "EC 391644 – Reactor and Diesel Building Flood Barriers," dated December 12, 2012
- Design Consideration Summary for EC 391644, "Reactor and Diesel Building Flood Barriers," Revision 005
- IR 2429864, "U3 East RBFDS Pumps Not Running in Auto"
- IR 2436232, "Maintenance Rule Function 49-1 Requires A(1) Determination"
- IR 2442838, "New Failure Mode Identified for RBFDS Sump Level Switches"
- IR 2518254, "What Good Are Flood Barriers if Water Comes in Through the Floor Drains"
- IR 2526028, "2/3 CH Sump Pmp a Run Time Meter Elec Issue"
- IR 2526579, "U2 HPCI Drain Clogged"
- IR 2534947, "IEMA/NRC Questions – Floor Drains"
- IR 2538906, "Misclassification of an MRFF"
- IR 2539963, "Water Backed Up Out of D3 RX 517 Floor Drains"
- IR 2541729, "Floor Drain Clogged"
- IR 2545291, "2B RBFDS Discharge Piping Possibly Plugged"
- DEP 2100-06, "Crimping and Termination of Low Voltage Small Insulated Lugs and Connectors," Revision 08
- Assigned Failure Review Log for Miscellaneous Sumps and Drains
- Exelon Maintenance Rule – Failure Classification Form for IR 1613613
- Exelon Maintenance Rule – Failure Classification Form for IR 1621751
- Exelon Maintenance Rule – Failure Classification Form for IR 1682063
- Exelon Maintenance Rule – Failure Classification Form for IR 2429534
- Exelon Maintenance Rule – Failure Classification Form for IR 2429588
- MRC package for ICES# 317276, dated June 29, 2015
- MRule Expert Panel minutes dated June 23, 2014
- MRule Expert Panel minutes dated August 28, 2014
- MRule Expert Panel minutes dated February 19, 2015
- MRule Expert Panel minutes dated August 4, 2015
- MRule Expert Panel minutes dated August 12, 2015
- Information Notice 83-44, Supplement 1: Potential Damage to Redundant Safety Equipment as a Result of Backflow Through Equipment and Floor Drain System"
- DWG: M-27, Diagram of Core Spray Piping
- DWG: M-39, Diagram of Reactor Building Equipment Drains

#### 1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

- Protected Equipment List of Unit 3, Div 1 CCSW
- Protected Equipment List for Unit 2, 2A – ASD – A NXG controller
- Protected Equipment List for Unit 2, 2B Fuel Pool Cooling
- Protected Equipment List for Unit 3, 3B Fuel pool Cooling
- WO 1855699, "Intermittent U3 125V DC Ground"
- IR 2546378, "DOP 6900-07 Evaluation/Revision Request"
- IR 2547693, "U3 125V Ground Troubleshooting Results"
- IR 2402014, "NOS ID: Missing Protected Equipment Sign – 3C Circ Water"
- IR 2406145, "NOS ID: Scaffolding Crossing Protected Pathway Boundary"
- IR 2459378, "Crew 3 Crew Clock Reset"
- IR 2487553, " IEMA Identified Incorrect PPW Posting for U3 LPCI Fragnet"
- IR 2503197, "Protected Pathway Not Posted When Required"

- IR 2524457, "NOS ID: Inconsistencies in Protected Pathway Schemes"
- IR 2551552, "Inadequate Protected Pathway for U2 Circ Water Pumps"
- IR 2553431, "NRC and IEMA Walk Down PPW"
- OP-AA-108-117-1001, "Protected Equipment and Pathway Program," Revision 6
- OP-AA-108-117, "Protected Equipment Program," Revision 4
- DIS 1500-05, "Division I & II, Low Pressure Coolant Injection ECCS Initiation Circuitry Logic System Functional Test," Revision 33
- DIS 1500-32, "Division I & II Low Pressure Coolant Injection ECCS LOOP Selection Circuitry Logic System Functional Test," Revision 8
- Unit 2(3), Appendix X, "Technical Specification Action Statement Initiated Surveillances," Revision 34
- Protected Equipment List for Unit 3, HPCI
- Protected Equipment List for Unit 3, ADS
- Protected Equipment List for Unit 3, Div 1 Core Spray
- Protected Equipment List for Unit 3, Div 2 Core Spray
- Protected Equipment List for Unit 3, Div II CCSW
- Protected Equipment List for Unit 3, Div II LPCI
- Protected Equipment List for Unit 3, DW Spray Div II
- Protected Equipment List for Unit 3, Torus Spray Div II
- Protected Equipment List for Unit 3, Torus Cooling Div II
- Protected Equipment List for Unit 2/3, 345kv Switchyard
- Protected Equipment List for Unit 2, Div 2 Core Spray
- Protected Equipment List for Unit 2, ADS
- Protected Equipment List for Unit 2, Div II LPCI
- Protected Equipment List for Unit 2, Isolation Condenser
- Protected Equipment List for Unit 2, Div I LPCI
- Protected Equipment List for Unit 2, Div 1 Core Spray
- IR 2556802, "Free Climbing Required to Open 3-1599-128A to Drain U3 CCSW"
- OP-DR-201-012-1001, Attachment 12, "RMA Checklist #12 Auxiliary Electrical Equipment Room and 2/3 Computer Room," Revision 03
- Dresden Station Pre-Fire Plan - FZ 2.0
- Dresden Station Pre-Fire Plan - FZ 6.2
- Protected Equipment List for Unit 3 EDG
- Protected Equipment List for Div II CCSW
- System status log for Fire Suppression System XL3 for September 18, 2015 12:01 - 12:02

#### 1R15 Operability Determinations and Functional Assessments (71111.15)

- WO 01661343-02, "Replace ERV Solenoid Valve 3-0203-3B (EC 394702)"
- WO 01661347-02, "Replace ERV Solenoid Valve 2-0203-3B"
- IR 2514064, "GEH Part 21 60 Day Interim Report"
- IR 2515733, "Inspect ERV 2-0203-3B and Repair as Necessary"
- IR 2515742, "Inspect ERV 2-0203-3C and Repair as Necessary"
- IR 2515744, "Inspect ERV 2-0203-3D and Repair as Necessary"
- IR 2515750, "Inspect ERV 2-0203-3E and Repair as Necessary"
- IR 2515752, "Inspect ERV 2-0203-3B and Repair as Necessary"
- IR 2515753, "Inspect ERV 2-0203-3C and Repair as Necessary"
- IR 2515755, "Inspect ERV 2-0203-3D and Repair as Necessary"
- IR 2515767, "Inspect ERV 3-0203-3E and Repair as Necessary"
- IR 2515773, "Inspect ERV 2-0203-3B and Repair as Necessary"
- MA-DR-EM-4-00200, "Dresser Electromatic Solenoid Actuator Rebuild Instructions," Revision 01

- EC 402550, "Evaluate Using Core Spray Pump for EDG Largest Single Load Reject Test," Revision 000
- IR 2501498, "TSSR 3.8.1.10: EDG Largest Load Reject"
- Part 21 Review for Event Number 51053, " Potential Part 21 Involving Struthers Dunn Relays with Contact Resistance Greater Than One Ohm"
- Work Orders Using Struthers Dunn Relay in Units 2 and 3, dated 24 September 2015
- IR 2531880, "TR22(32) Undervoltage Logic"
- IR 2546280, "Engineering Review of IR 2531880: TR22(32) UV Logic"
- DGA-12, "Partial or Complete Loss of AC Power," Revision 73
- SEL-311L Line Current Differential Protection and Automation System Data Sheet
- Drawings:
  - 12E-6652G, Schematic Diagram Primary Protection Relaying on 138kv Line LRA722 at TR22
  - 12E-710, Schematic Diagram of 138kv Bus Differential Tripping
  - 12E-2343, Schematic Diagram 4160V Bus 24 main & Reserve Feed G.C.B.'S
  - 12E-2333, Relay & Metering Diagram Reserve Auxiliary Transformer 22 & 4160V Switchgear 23 & 24
  - 12E-709B, Current Schematic Diagram 138kv Current Differential Line LRAT22 at RAT22
  - 12E-3501, Schematic Diagram Primary Containment Isolation System Sensor & Trip Logic
  - IR 2537368, "Potentially Contaminated Plenum Springs in BWR Fuel Rods"
  - IR 2537896, "Potentially Contaminated Plenum Springs in BWR Fuel Rods"
  - EC 342944, "Containment Cooling Service Water (CCSW) System Water hammer Loss of Keep-Fill Analysis"
  - IR 2556224, "Leak Identified Coming From U3 Div I CCSW Discharge Line"
  - IR 2556308, "Valve 3-3999-337 Will Not Close"
  - "Engineering Operational Problem Response/Troubleshooting Plan 95-3-15-67," Revision 0, dated 11/23/95
  - DWG: M-360, Diagram of L.P. Coolant Injection Piping
  - IR 2554802, "Event 51053 part 21 Involving Struthers Dunn Relay"
  - WO 1440866, "Failure Analysis for Main Steam Line Low Pressure Relay"
  - WO 1687444, "Unexpected Alarm 903-5 A-9"
  - DIP 0261-01, "Main Steam, Line Low Pressure Switch Replacement, Relay Replacement, and Time Delay Relay Replacement"
  - DAN 902(3) – 8 E-6, "Res Aux TR 22/32 Undervoltage," Revision 05

#### 1R19 Post-Maintenance Testing (71111.19)

- IR 2525491, "U1 CST Tank NDE Results"
- IR 2524934, "Work Execution Delay on U1 CST Patch Plate Installation"
- IR 2504234, "U1 CST Above Ground Storage Tank Inspection Results"
- WO 1736511, "D1 SY 5Y PM Clean and Inspect Unit 1 Condensate Storage Tank"
- OE 32055, "Condensate Storage Tank Leak Results in On-Site Tritium Release (LaSalle Station)"
- EC 400535, "1-3300-T105A Contaminated Demin Water Storage Tank Bottom UT Inspection – Acceptance Criteria & Repair," Revision 0
- UT Test Report 15-124 for 1A CST,
- NDE Report 15-123, "Eddy Current Examination Final Report for Unit 1 Condensate Storage Tank," May 2015
- EC 401050, "Install LPCI Branch Lines 2-1589-4"-DX for FLEX Connection from EC 394205," Revision 0
- IR 2526197, "2A LPCI PP Suction Flex Tap Installation"
- IR 2525225, "Change Needed to LPCI Cross Tie Vent Piping Configuration"
- IR 2525618, "As Found Condition"
- IR 2524949, "1 Inch Piping Touching New Valve Bonnet"

- WO 1813735, "D2 NDD Div 1 LPCI System Venting / Backfill / UT"
- WO 1798718, "Fukushima U2 Mechanical Flex Mod"
- DOP 1400-03, "ECCS Fill System," Revision 60
- Drawing: M-29, Diagram of L.P. Coolant Injection Piping
- Ultrasonic Test Examination, 15-154, Unit 2 LPCI System Weld Examination
- WO 1771711, "2/3 Diesel Fire Pump Discharge Relief Valve Degraded"
- IR 2533968, "2/3 DFP Discharge Indication Slow Response"
- IR 2534064, "2/3 DFP Fail to Start"
- IR 2534794, "2/3 DFP Failed to Start Troubleshooting"
- IR 2385082, "2/3 Diesel Fire Pump Discharge Relief Valve Degraded"
- DFPS 4123-05, "2/3 Diesel Fire Pump Operability," Revision 52
- Drawing: M-23, Sheet 1, Diagram of Fire Protection Piping
- WO 1852241, "AOV 2-2001-5 Failed Closed Due to SOL Air Leak"
- IR 2539571, "During PMT on WO 1852241-01 Air Leak Discovered"
- IR 2539566, "AO 2-2001-5 Air Leak From Solenoid Fittings"
- IR 2539413, "AOV 2-2001-5 Failed Closed Due to SOL Air Leak"
- DES 0040-08, "ASCO Solenoid Valve Surveillance / Replacement." Revision 11
- DWG: M-39, Diagram of Reactor Building Equipment Drains
- WO 01798718-22, "OPS PMT Flex Mod Branch Connection 2-1590-4" – DX"
- WO 01853257-01, "D2 NDD Div 2 LPCI System Venting / Backfill / UT"
- IR 2555676, "U2 Flex Mod Work Order Not Completed"
- DOS 1400-07, "ECCS Venting," Revision 30
- DOP 1500-02, "Torus Water Cooling Mode of Low Pressure Coolant Injection System," Revision 66
- WO 1862704, "U3 3B SBLC Pump Run with Low Suction Pressure"
- IR 2558121, "U3 3B SBLC Pump Run with Low Suction Pressure"
- IR 2558824, "U3 Standby Liquid Control Discharge Pressure Gauge Loose"
- DOS 1100-04, "Standby Liquid Control System Quarterly/Comprehensive Pump Test for the Inservice Testing (IST) Program," Revision 49

#### 1R22 Surveillance Testing (71111.22)

- WO 01820520, "D3 Qtr TS HPCI Pump Oper Test and IST Surv"
- EC Eval # 401652, "Evaluation of Elevated Vibration Readings on U3 HPCI Aux Oil Pump Motor," Revision 000
- IR 2476615, "NRC Id'd Housekeeping in U3 HPCI Room"
- IR 2476080, "U3 HPCI Aux Oil Pump Elevated Vibration"
- IR 2475554, "Unexpected Alarm 903-3 C-11, HPCI TURB EXH DRN Pot LVL HI"
- IR 2472408, "3-2301-30, HPCI Inlet Drain Pot to Main Condenser Operation"
- DOS 2300-03, "High Pressure Coolant Injection System Operability and Quarterly IST Verification Test," Revision 108
- DWG: M-374, Diagram of High Pressure Coolant Injection Piping
- DOS 0500-03, "APRM Rod Block and Scram Functional Test," Revision 62
- DIS 0700-04, "IRM [intermediate range monitor] 11 Rod Block and Scram Calibration," Revision 24
- IR 2532354, "IRM 11 Hi-Hi Trip Found OOT High, No Tech Spec Violation"
- IR 2532606, "IRM11 Recorder Selector Switch"
- Drawings:
  - 12E-2451, Start-up Range Neutron Monitoring System Notes & References Sheet 1
  - 12E-2452, Start-up Range Neutron Monitoring System Notes & References Sheet 2
  - 12E-2456, Start-up Range Neutron Monitoring System SRM & IRm Computer Circuits Sheet 6
  - 12E-2457, Start-up Range Neutron Monitoring System Protection System Trips & Withdrawal Sheet 7

- 12E-2458, Start-up Range Neutron Monitoring System Relay Tabulation Sheet 6
- 12E-2459, Start-up Range Neutron Monitoring System Relay Tabulation Sheet 9
- IR 2527941, "50.59 Review Pulled From PORC Agenda"
- IR 2529180, "Operations Staff Crew Clock Reset"
- Regulatory Guide 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," Revision 4
- WO 1489071, "D2 2Y/RFL TS Bus 24-1 UV and ECCS Integrated Func Test"
- Dresden Surveillance Frequency Control Program, Appendix 1, Revision 1
- DOS 6600-05, "Bus Undervoltage and ECCS Integrated Functional Test for Unit 2 Diesel Generator," Revision 65
- DR-STI-05, "Risk Evaluation of Surveillance Interval Extension for Bus Undervoltage and ECCS Integrated Functional Tests for Diesel Generators," Revision 0
- 50.59 Review for DRE 14-003, "STI Change Request for DRE-14-003 – Periodic Undervoltage Testing of EDG LOOP/LOCA," Revision 000
- PORC Meeting Minutes for 7/28/2015, "PORC 15-031, Surveillance Frequency Control Program (SFCP) Surveillance Test Interval"
- Risk Management Documentation No. DR-STI-03, "Surveillance Test Interval Change Assessment – Cumulative Log," Revision 2
- DIS 0250-03, "Electromatic Relief Valve/Target Rock Valve Pressure Switches Calibration," Revision 53
- IR 2550231, "PS 2-0203-3A Out of Tolerance for Reset"
- WO 1840213-01, "D3 QTR TS Electromatic/T-Rock RVS: PC/PS Calibration & Funct"
- OPEX 16584 (Update to OE16400), "Electromatic Relief Valve (ERV) Pressure Switches Outside Technical Specification and Analytical Valves"
- Drawings:
  - 12E-3461, Schematic Diagram Auto Blowdown Target Rock Valve 203-3A, Sheet 1
  - 12E-3461A, Schematic Diagram Auto Blowdown Electromatic Relief Valve 203-3B, Sheet 1
  - 12E-3462, Schematic Diagram Auto Blowdown Part 2, Sheet 1
  - 12E-3462A, Schematic Diagram Auto Blowdown Electromatic Relief Valve 203-3C, Sheet 1
- IR 2551890, "3A MSL Hi Flow Switch Failed Channel Check"
- IR 2552152, "Tech Spec 3.3.6.1 Entry Due to MSL Flow Switch"
- IR 2552211, "3B Main Stm Line Flow DPIS DP IS Elevated But Still in Spec"
- IR 2553710, "D3 MSL Hi Flow SW High OOT Tech Spec During DIS 0250-01"
- IR 2553711, "D3 MSL Hi Flow SW OOT During Dis 0250-01"
- IR 2553732, "DPIS 3-0261-2E Found OOT"
- IR 2553733, "DPIS 3-0261-2F Found OOT"
- IR 2553734, "DPIS 3-0261-2G Found OOT"
- IR 2553733, "DPIS 3-0261-2F Found OOT"
- IR 2554112, "D3 MSL Hi Flow SW OOT During DIS 0250-01" (equipment tag 3-0261-2P)
- IR 2554123, "D3 MSL Hi Flow SW OOT During DIS 0250-01" (equipment tag 3-0261-2J)
- IR 2554125, "D3 MSL Hi Flow SW OOT During DIS 0250-01" (equipment tag 3-0261-2K)
- IR 2554131, "D3 MSL Hi Flow SW OOT During DIS 0250-01" (equipment tag 3-0261-2L)
- IR 2554137, "D3 MSL Hi Flow SW OOT During DIS 0250-01" (equipment tag 3-0261-2N)
- IR 2554206, "D3 MSL Hi Flow SW OOT During DIS 0250-01" (equipment tag 3-0261-2R)
- IR 2554207, "D3 MSL Hi Flow SW OOT During DIS 0250-01" (equipment tag 3-0261-2S)
- IR 2559455, "Operations Crew 4 Clock Reset Missed TS"
- WO 1835516, "D3 QTR TS Main Steam Line High Flow Isolation"
- DIS 0250-01, "Main Steam Line High Flow Isolation Switch Channel Calibration and Channel Functional Test," Revision 35
- Technical Specification 3.3.6.1, "Primary Containment Isolation Instrumentation"
- Appendix A, "Unit Daily Surveillance Log, Attachment A," Revision 133

- DWG: 12E-3501, Schematic Diagram Primary Containment Isolation System Sensor & Trip Logic

1EP6 Drill Evaluation (71114.06)

- Utility Message No.2 and No. 3
- Technical Support Center 3rd Quarter 2015 Datasets #1 through #5

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

- DW-14-017, Radioactive Material, Type B(U) Package, 7, UN2916, Reactor Water Clean Up Resin, to Energy Solutions, Clive Disposal Facility, Utah
- DW-14-032, Radioactive Material, Type A Package, 7, UN2915, Unit-3 Fuel Pool Resin-2010
- DW-15-015, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321
- DW-14-012, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, Dry Active Waste (DAW) to Bear Creek Facility, Oak Ridge, Tennessee
- DM-14-061, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, Westinghouse Equipment to Madison, Pennsylvania
- DW-14-115, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, Twelve Packages of GE Outage Equipment to GE Wilmington, North Carolina
- DW-15-006, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, Reactor Services Equipment to Peach Bottom, Pennsylvania
- DW-15-049, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, Noble Metal Coupon to GE Facility, Valecitos, Sunol, California
- 71-9166, Certificate of Compliance for Radioactive Material Packages No.9168, USA/9168/B(U)-96, dated August 23, 2012
- RP-AA-605, Waste Stream Results Review, U2/3 DAW-2013, dated February 27, 2014
- RW-AA-100, Process Control Program for Radioactive Waste, Revision 11
- RP-AA-600, Radioactive Material Waste Shipments, Revision 13
- RP-AA-600-1006, Radioactive Material and Non Disposal Site Waste Shipments, Revision 17
- RP-AA-6002, Packaging of Radioactive Material Shipments, Revision 19
- RP-AA-602-1001, Packaging of Radioactive Materials/Waste Shipments, Revision 16
- RP-AA-603, Inspection and Loading of Radioactive Material Shipments, Revision 9
- AD-AA-101-F-01, Referenced Energy Solutions Procedure FO-OP-023-161024, Waste Transfer and Bead Resin/Activated Carbon Dewatering Procedure for Energy Solutions 14-215 or Smaller Liners at Dresden Station, Revision 4
- Inventory of Class A and B/C Liners Stored in the Intermediate Radwaste Storage Facility (IRSF) Building, dated July 15, 2015
- IR-01653727, "Condensate Filter Housing was Damaged due to Mishandling of the Filter Housing"
- IR-02389416, "FRAC Tank Line Leak"
- IR-02427890, "Water Found inside Radwaste Liner"
- IR-01665829, "Unit-1 DAW Vault Demolition Delayed due to Ground Water"
- IR-02121991, "FRAC Tank Posted as Rad Material – Leaking Water Out"
- IR-01657007, "Water Found in East Sump of Mausoleum"
- IR-01680378, "Energy Solutions (Vendor) Procedure not Approved for Use at the Station"
- IR-02430293, "Discovered Leak on 2/3 B Concentrator in 2/3 Max Recycle Building due to Broken Sight Glass"
- IR-02517128, "Low Levels of Radionuclides Identified in Set ENV Tanker T37 from the Overflow of Oil Separator Pit"
- IR-02520204, "Observation of Radwaste Issues"
- IR-02504351, "Observation of Radwaste Capacity is Diminished"

- IR-02512707, "Category 2 RAMQC Shipment not Shipped because of Lacked Additional Driver Requirements"
- IR-01687196, "Delay Cask Shipment 8-120B due to Backup Work"
- IR-01690597, "Water Leaking Out of 4200 Lbs. Pump Being Loaded in Seavan"

#### 4OA1 Performance Indicator Verification (71151)

- DR-MSPI-01, "Reactor Oversight Program MSPI Bases Document Dresden Nuclear Generating Station," Revision 10
- NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7
- ER-AA-2008, "Mitigating Systems Performance Index (MSPI) Monitoring and Margin Evaluation," Revision 4
- LS-AA-2200, "Mitigating System Performance Index Data Acquisition & Reporting." Revision 5
- DIS 1300-01, "Sustained High Reactor Pressure Calibration," Revision 35
- IR 1644954, "Found Power Wire Broken"
- IR 1645343, "LPCI CCSW DP Controller Failed to Full Stroke MOV"
- IR 1645448, "Time Delay Relay 3-0595-115C OOT and Unrepeatable"
- IR 1645725, "Leak on 3-1501-11A When a LPCI LOOP is Running"
- IR 1645743, "PMC: CCSW Vault Drain Lines"
- IR 1648684, "2A LPCI Flow Did Not Indicate Flow as Required"
- IR 1657332, "Scaffold Too Close to U2 ISO Condenser"
- IR 1659155, "Unexpected Alarm 902-3 D-4 ISO Cond LVL Hi/Lo"
- IR 1659552, "Degraded Unit 2 CCSW Piping Identified"
- IR 1660525, "Degraded Unit 2 CCSW Piping"
- IR 1660696, "Scaffold Built Within 2 Inches of 3C and 3D LPCI Pump Motors"
- IR 1661967, "Broken Lube Oil Cooling Coil Inlet Pipe on 3D LPCI Motor"
- IR 1662354, "3-1502-D LPCI Motor Cooling Coil Leak"
- IR 1662803, "Grade 3 Stem Lube on MOV 3-1501-20B"
- IR 1665669, "Received Unit 2 Isolation Condenser Temp Hi Alarm"
- IR 1667962, "Operability Evaluation Revision Is Needed"
- IR 1672855, "Recommend More Conservative Isolation Cond Steam Flow – Hi Isolation"
- IR 1675372, "Rework Needed for 3-1501-11A Packing Leak"
- IR 1688618, "Handwheel for 3-1501-20A Fell Off"
- IR 1691168, "Unit 2 Isolation Condenser West End Bell Leak"
- IR 1691661, "2A LPCI Motor Oil Leak"
- IR 1691752, "Potential Issue with Isolation Cond Heat Capacity Test"
- IR 1854476, "MOV 2-1301-3 Stroke Length Found Longer Than Expected"
- IR 2119365, "Inadequate Design Input Found In Calculation DRE12-0080"
- IR 2382306, "Perform Diagnostic Testing on MOV 2-1301-3 in D2R24"
- IR 2382482, "NRC Resident Requests Additional Info Relating to IR 1854476"
- IR 2383567, "NRC Resident Inspector Concern Over Op Evaluation 13-010"
- IR 2386185, "3A LPCI Pump Cooling Line Leak"
- IR 2386575, "Leak on 3A LPCI Pump Cooling Line"
- IR 2391400, "Historical: Incomplete Test Data on MOV 2-1301-3"
- IR 2391469, "Perform Modified Diagnostic Testing on MOV 2-1301-3"
- IR 2393837, "MSPI Basis Document Enhancement"
- IR 2395050, "U2 Iso Cond High Level"
- IR 2395903, "PMC—D2 Isolation Condenser Level Increase"
- IR 2400384, "U2 Isolation Cond High Level Alarm"
- IR 2407379, "NRC Concern: LPCI HX Weld Indication"
- IR 2408789, "NDE UT for IC Shell, WO 1404898-11"
- IR 2412214, "U2 Isolation Condenser Level High"
- IR 2412482, "Weld Repairs Complete on 2A LPCI HX Support"

- IR 2412509, "Weld Repairs Complete on 3A LPCI HX Support"
- IR 2413291, "Weld Repairs Complete on 3B LPCI HX Support"
- IR 2423781, "Historical Operability of LPCI HXs 2A, 2B, 3A, & 3B"
- IR 2425499, "Results of In-Line Inspection for Unit 3 CCSW Buried Piping"
- IR 2433986, "3A LPCI Heat Exchanger Performance Trend"
- IR 2438243, "(DPIS 3-1350-A) Found Out of Tech. Spec."
- IR 2440540, "DTP-09 Small Leak on 2C LPCI Motor Cooler Discharge Line"
- IR 2450932, "Results of Engineer Review – IR 2434985 for Historic Operability"
- IR 2462295, "Degraded Torque Switch Identified During PM Inspection"
- IR 2456350, "Unexpected Alarm: U2 Isolation Condenser Level High"
- IR 2459257, "Decrease in Travel Margin on MOV 2-1301-3"
- IR 2460911, "Unexpected Alarm – Isolation Cond Level Hi"
- IR 2463092, "Follow up to WGE in IR 0245925 – MOV 2-1301-3"
- IR 2470606, "Change in LPCI Valve Operability Requirements"
- IR 2547012, "NRC Question on MSPI Zero Unavailability Index"
- LS-AA-209, Monthly Data Elements for NRC Reactor Coolant System (RCS) Specific Activity of Dose Equivalent Iodine (DEI), Inspectors Reviewed Data Elements DEI from January 2014 through April 2015.
- CY-AA-130-3010-F-03, Dose Equivalent Iodine Determination, Sampling that was Observed on July 15, 2015, at Unit-2/3

#### 4OA2 Identification and Resolution of Problems (71152)

- Self-Assessment for SARB Challenge for IR 2502429, "FASA (EN): Technical Conscience Principles"
- IR 2532393, "Deficiencies From IP 95001 Prep FASA"
- IR 2480399, "Exceeded Threshold for Initiating Events – White PI"
- IR 2437067-36, "FWLC 2-0640-33 Failed; Resulting in loss of Bailey FWLC Sys"
- IR 1646633, "Main Power Transformer Failure Due to an Indeterminate Cause"
- AD-AA-3000, "Nuclear Risk Management Process," Revision 57
- MA-AA-716-004, "Conduct of Troubleshooting," Revision 13
- Unit 2 HPCI (IR 2559585), MA-AA-716-004, Attachment 1, "Troubleshooting Log," Revision 13
- HU-AA-1212, "Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party Review, and Post-Job Review," Revision 6
- Root Cause Investigation (Final) for IR 2480399, "Dresden Exceeded Threshold for Initiating Events – White Performance Indicator"
- Root Cause Investigation Report for IR 1646633-08, "Main Power Transformer Failure Due to an Indeterminate Cause"
- Root Cause Investigation Report for IR 1655458, "Dresden D2F54 Mid-Cycle Forced Outage Due to Automatic Voltage Regulator (AVR) Failure"
- Root Cause Investigation Report for IRs 2437067 & 2448891, "Two Reactor Scrams from a Feedwater Level Control System Failure with a Reactor Recirc Pump Runback"
- FW Level Control Systems Scrams Case Study, Revision 0
- Facilitator Copy, FW Level Control Systems Scrams Case Study, Attachment 1
- Facilitator Guide, FW Level Control Systems Scrams Case Study, Attachment 3
- Attendance List for FW Level Control Systems Scrams Case Study
- IR 1363039, "FME: Found in 2/3 Security UPS 125V Batteries"
- IR 1366260, "FME in U3 Skimmer Surge Tank"
- IR 1377194, "Foreign Material Found in 2-2499-3B Valve Disc Upon Removal"
- IR 1380993, "FME: U3 Stator Cooling – Results of Dark Particulate Matter"
- IR 1383315, "DCS Hi-Trac FME Issue Identified"
- IR 1389636, "Foreign Material Found in ETBV Inlet Plenum"
- IR 1394024, "FME: Missing Bolt on U2 Refuel Bridge"

- IR 1500749, "FME to be Removed Within Cell 24 of the U2 125V Alt Battery"
- IR 1502092, "Attention to Detail Deficiency in Common Cause Analysis"
- IR 1668354, "FME: Foreign Material in System Due to CHK VLV Disc Failure"
- IR 2409252, "FME Found Inside MCC 38-7 Cubicle C-3"
- IR 2432136, "Roof Leak Leaking Into U3 Fuel Pool"
- IR 2440291, "Process for Receiving Safety Related Diesel Fuel"
- IR 2449609, "FME Discovered Upon Dis Assembly of 2-3509-A Valve"
- IR 2502625, "FME: U2 FPC Skimmer Tank FME Cover Torn"
- IR 2524205, "Adverse Trend Identified in FME Program"
- IR 2525173, "FME: Potential Missing Hardware U2 Refuel Bridge"
- IR 2526342, "Pipe Liner FME Investigation Results"
- IR 2537057, "FME Prevention: Improve FME Practices Crew IM2B"
- IR 2543348, "3B Service Water Pump Bearing Lube Water Line Restricted"
- IR 2550493, "Unit 2 SBLC Test Tank Unknown Substance Sample Results"
- IR 2563661, "RX Mgmt FASA Deficiency – FME Performance"
- ACE 2525632, "Maintenance Requesting an ACE of FME Practices"
- Exelon OPEX, "Maintenance Requesting an ACE on FME Practices"
- Prompt Investigation for IR 2539413

#### 4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

- Supplemental Licensee Event Report 249/2014–001–02, "Electromatic Relief Valve Failed to Actuate During Surveillance Testing"
- Supplemental Licensee Event Report 237/2015–002–02, "2C ERV Failed to Actuate During Extent of Condition Testing"

## LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
ATWS	Anticipated Transient Without Scram
AVR	Automatic Voltage Regulator
CAP	Corrective Action Program
CCSW	Containment Cooling Service Water
CFR	<i>Code of Federal Regulations</i>
DAW	Dry Active Waste
DEI	Dose Equivalent Iodine
DGCW	Diesel Generator Cooling Water
DRP	Division of Reactor Projects
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
ERV	Electromatic Relief Valve
FME	Foreign Material Exclusion
FWLC	Feedwater Level Control
HPCI	High Pressure Coolant Injection
IAC	Instrument Air Compressor
IC	Isolation Condenser
IEMA	Illinois Emergency Management Agency
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IR	Issue Report
IRM	Intermediate Range Monitor
IRSF	Intermediate Radwaste Storage Facility
IST	In-Service Test
LER	Licensee Event Report
LCO	Limiting Condition for Operations
LLC	Limited Liability Corporation
LOCA	Loss of Coolant Accident
LPCI	Low Pressure Coolant Injection
LSFT	Logic System Functional Test
MSL	Main Steam Line
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NPSH	Net Positive Suction Head
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post-Maintenance Testing
psid	Pounds per Square Inch Differential
RCS	Reactor Coolant System
RMA	Risk Management Actions
SBGT	Standby Gas Treatment
SBLC	Standby Liquid Control
SDP	Significance Determination Process
SFCP	Surveillance Frequency Control Program
SRO	Senior Reactor Operator

SSCs	Structures, Systems, and Components
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UHS	Ultimate Heat Sink
VDC	Volts Direct Current
WO	Work Order

B. Hanson

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Sincerely,

**/RA/**

Jamnes Cameron, Chief  
Branch 4  
Division of Reactor Projects

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