



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION III
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LISLE, IL 60532-4352

July 1, 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 - EVALUATIONS OF CHANGES,
TESTS, AND EXPERIMENTS AND PERMANENT PLANT MODIFICATIONS
BASELINE INSPECTION REPORT 05000237/2015007; 05000249/2015007**

Dear Mr. Hanson:

On May 29, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications inspection at your Dresden Nuclear Power Station. The enclosed inspection report documents the inspection results, which were discussed on May 29, 2015, with Mr. Shane Marik, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

NRC inspectors documented two NRC-identified findings of very-low safety significance (Green) in this report. These findings were determined to involve violations of NRC requirements. However, because of their very-low safety significance, and because these issues were entered into your Corrective Action Program, the NRC is treating these 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 the NCVs, 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 copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at 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 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/

Dariusz Szwarc, Acting Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-237, 50-249; 72-037
License Nos. DPR-19; DPR-25

Enclosure:
Inspection Report 05000237/2015007; 05000249/2015007

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000237/2015007; 05000249/2015007

Licensee: Exelon Generation Company, LLC

Facility: Dresden Nuclear Power Station

Location: Morris, IL

Dates: May 11 - 29, 2015

Inspectors: George M. Hausman, Senior Engineering Inspector (Lead)
Jorge J. Corujo-Sandin, Engineering Inspector
Mark T. Jeffers, Engineering Inspector

Observer: Christopher A. Hunt, Reactor Engineer

Approved by: Dariusz Szwarc, Acting Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY

Inspection Report 05000237/2015007; 05000249/2015007; 05/11/2015 – 05/29/2015; Dresden Nuclear Power Station; Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications.

This report covers a 2-week announced baseline inspection on evaluations of changes, tests, and experiments, and permanent plant modifications. The inspection was conducted by Region III based engineering inspectors. Two findings of very-low safety significance were identified by the inspectors. The findings were considered Non-Cited Violations of U.S. Nuclear Regulatory Commission (NRC) regulations. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Cross-cutting aspects were determined using IMC 0310, "Aspects within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green, or be assigned a severity level after NRC management review. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated July 9, 2013. 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 Non-Cited Violation (NCV) of Title 10, *Code of Federal Regulations* (CFR), Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure that applicable regulatory requirements and the isolation condenser's (IC's) design bases were correctly translated into procedures. Specifically, the licensee added steps to the IC control procedures which directed operators to secure the IC in order to prevent the water level in the shell from going below 3.5 feet. The added steps would result in the IC being shutdown when required to operate per the IC's design bases. The licensee entered the issue into their Corrective Action Program (CAP) as Action Request 02506445, "NRC MOD/5059 Inspection: ISCO [Isolation Condenser] Operating Procedures," dated May 28, 2015.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of Procedure Quality, and affected the cornerstone's objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the inadequate procedures would drive the operators to stop the IC during a design bases event and prevent the IC from performing its design function of removing decay heat from the reactor. The finding has a cross-cutting aspect in the area of Human Performance; Teamwork, because the licensee did not communicate and coordinate activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, the Operations Department failed to communicate and coordinate with the Engineering Department when developing the procedural changes. [H.4] (Section 1R17.1b)

- Green. The inspectors identified a finding of very-low safety significance, and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to account for increased fuel oil consumption during the development of the Emergency Diesel Generator (EDG) Calculation 10553-CALC-07, "Dresden Station

Emergency Diesel Generators Endurance Calculations,” Revision 2, which resulted in non-conservative Technical Specifications (TS). Specifically, the licensee failed to account for the increased fuel oil consumption at an EDG frequency of 61.2 Hertz (Hz), and ensure that the minimum fuel oil level in the EDG day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs’ mission time at 110 percent for one hour. The licensee entered the issue into their CAP as Action Request 02506869, “NRC MOD/5059 Inspection: Emergency Diesel Generator Fuel Consumption,” dated May 28, 2015.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone’s objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to account for the increased fuel oil consumption resulting from operation at a higher EDG frequency. Therefore, the licensee did not ensure that the minimum fuel oil level in the day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs’ mission time at 110 percent for one hour. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution; Identification, because the licensee did not thoroughly evaluate the EDG fuel oil consumption when considering EDG frequency variation. Specifically, the licensee failed to translate applicable design bases into specifications which resulted in non-conservative TS. [P.1] (Section 1R17.2b)

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R17 Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications (71111.17T)

.1 Evaluation of Changes, Tests, and Experiments

a. Inspection Scope

The inspectors reviewed 7 evaluations performed pursuant to Title 10, *Code of Federal Regulations* (CFR), Part 50, Section 59, to determine if the evaluations were adequate, and that prior U.S. Nuclear Regulatory Commission (NRC) approval was obtained as appropriate. The inspectors also reviewed 15 screenings, where licensee personnel had determined that a 10 CFR 50.59 evaluation was not necessary. The inspectors reviewed these documents to determine if:

- the changes, tests, and experiments performed were evaluated in accordance with 10 CFR 50.59, and that sufficient documentation existed to confirm that a license amendment was not required;
- the safety issue requiring the change, tests or experiment was resolved;
- the licensee conclusions for evaluations of changes, tests, and experiments were correct and consistent with 10 CFR 50.59; and
- the design and licensing basis documentation was updated to reflect the change.

The inspectors used, in part, Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Implementation," Revision 1, to determine acceptability of the completed evaluations, and screenings. The NEI document was endorsed by the NRC in Regulatory Guide (RG) 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," dated November 2000. The inspectors also consulted Part 9900 of the NRC Inspection Manual, "10 CFR Guidance for 10 CFR 50.59, Changes, Tests, and Experiments."

This inspection constituted 7 samples of evaluations, and 15 samples of screenings and/or applicability determinations as defined in Inspection Procedure (IP) 71111.17-04.

b. Findings

Procedure Revisions Resulted in Isolation Condenser Unable to Meet Design Basis

Introduction: The inspectors identified a finding of very-low safety significance (Green), and an associated Non-Cited Violation (NCV) of 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure that applicable regulatory requirements and the isolation condenser's (IC's) design bases were correctly translated into procedures. Specifically, the licensee added steps to the IC control procedures which directed operators to secure the IC in order to prevent the water level in the shell from going below 3.5 feet. The added steps would result in the IC being shutdown when required to operate per the IC's design bases.

Description: The safety-related IC system functions as a heat sink for decay heat removal from the reactor vessel following a reactor scram, and isolation from the main condenser. Each IC (one per unit) consists of two tube bundles immersed in a large water storage tank. The IC system operates by natural circulation. During operation, the IC tube side will contain reactor coolant water, and the shell side will contain clean demineralized water.

The inspectors observed that the licensee made changes to three IC control procedures. The procedure changes directed operators to secure the IC on a low-shell side level condition. Specifically, the IC would be secured if the shell side level could not be maintained above 3.5 feet. At this height, the water level in the shell is just above the top of the tube bundles. The purpose of the procedure change was to prevent uncovering of the tube bundles in order to protect the IC for future availability (i.e., when the shell side level could be restored to ensure the IC would be available to respond to a Beyond Design Basis External Event). The procedures affected were as follows:

- DOP 1300-02, "Automatic Operation of Isolation Condenser," Revision 25, Step G.4.a;
- DOP 1300-03, "Manual Operation of the Isolation Condenser," Revision 34, Step G.9.a; and
- DAN 902(3)-3D-4, "Isolation Condenser Level Hi/Low Annunciator Respond Procedure," Revision 12, Step B.2.a.

In the Updated Final Safety Analysis Report (UFSAR), Section 5.4.6 and the Technical Specifications (TS) Bases 3.5.3, the IC design basis was described as: (1) remove 252.5 Million British thermal units (MBtu)/hour, which is equivalent to the decay heat rate 8.8 minutes after the scram; and (2) provide sufficient decay heat removal capability for 20 minutes of operation without makeup water to the shell. The TS requires a number of surveillance requirements (SRs) be performed to ensure these bases are met, including the following:

- SR 3.5.3.1: Verify the IC system shellside water level ≥ 6 feet, and shellside water temperature $\leq 210^{\circ}\text{F}$; and
- SR 3.5.3.4: Verify the IC system heat removal capability to remove design heat load [i.e., 252.5MBtu/hour].

The licensee maintains the shell water level above 7 feet via administrative controls and monitors the temperature in an effort to remain well below the temperature limits. However, the licensing bases of the isolation condenser states that water level of the shell is expected to go below 3.5 feet in order to mitigate a credited event under design bases conditions. As a result, procedural guidance, which would prevent the isolation condenser shell water level from going below 3.5 feet, would preclude the component from performing its design function under design bases conditions.

As part of immediate corrective actions the licensee marked the procedures for review in order to determine required changes. In addition, the licensee demonstrated the shell water temperature was monitored in order to maintain it well below TS requirements and the water level was administratively maintained at or above 7 feet. This provides additional margin to the IC to perform its design function prior to reaching the 3.5 foot limit.

The licensee documented the inspectors' concern under AR 02506445, "NRC Mod/5059 Inspection: ISCO [Isolation Condenser] Operating Procedures," dated May 28, 2015. The licensee plans to evaluate the IC procedural changes and determine what modifications are needed. In addition, the licensee is considering performing an Apparent Cause Evaluation to evaluate the concern. The inspectors concluded that procedural changes were performed by the Operations Department without engaging the Engineering Department to ensure there were no adverse impacts to the IC or associated design and licensing bases.

Analysis: The inspectors determined that the licensee added steps to the IC control procedures which directed operators to secure the IC in order to prevent the water level in the shell from going below 3.5 feet, which was contrary to 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. Specifically, the added steps would result in the IC being shutdown when required to operate per the IC's design bases.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of Procedure Quality, and affected the cornerstone's objective of ensuring the availability, reliability and capability of the systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the inadequate procedures would drive the operators to stop the IC during a design bases event and prevent the IC from performing its design basis function of removing decay heat from the reactor.

In accordance with Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Table 2, the inspectors determined the finding affected the Mitigating Systems cornerstone. As a result, the inspectors determined the finding could be evaluated using Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, for the Mitigating Systems cornerstone. The performance deficiency affected the design or qualification of mitigating structures, systems, and components (SSC); however, the SSC maintained its operability or functionality as applicable. Specifically, the licensee administratively maintains the shell water level at or above 7 feet and the temperature is maintained below 210 degrees Fahrenheit. This provides additional margin to the IC to perform its design function prior to reaching the 3.5 foot limit. Therefore, the inspectors answered "yes" to the Mitigating Systems Screening Question A.1 in Exhibit 2, and screened the finding as having very-low safety significance (Green).

The finding has a cross-cutting aspect in the area of Human Performance; Teamwork because the licensee did not communicate and coordinate activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, the Operations Department failed to communicate and coordinate with the Engineering Department when developing the procedural changes. [H.4]

Enforcement: Title 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, from April 22, 2013, to May 29, 2015, the licensee failed to ensure that applicable regulatory requirements and the IC's design basis were correctly translated into procedures. Specifically, the licensee added steps to the

IC control procedures which directed operators to secure the IC in order to prevent the water level in the shell from going below 3.5 feet. The added steps would result in the IC being shutdown when required to operate per the IC's design bases.

This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy because it was of very-low safety significance and was entered into the licensee's CAP as Action Request 02506445, "NRC MOD/5059 Inspection: ISCO Operating Procedures," dated May 28, 2015. The licensee will continue to administratively control level of the shell at or above seven feet to provide additional margin to the IC to perform its function. (NCV 05000237/2015007-01; NCV 05000249/2015007-01, Procedure Revisions Resulted in Isolation Condenser Unable to Meet Design Basis)

.2 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed nine permanent plant modifications that had been installed in the plant during the last 3 years. This review included in-plant walkdowns for portions of the modified High Pressure Coolant Injection (HPCI) system to assess recent replacement of the auxiliary oil pump. The modifications were selected based upon risk-significance, safety significance, and complexity. The inspectors reviewed the modifications selected to determine if:

- the supporting design and licensing basis documentation was updated;
- the changes were in accordance with the specified design requirements;
- the procedures and training plans affected by the modification have been adequately updated;
- the test documentation as required by the applicable test programs has been updated; and
- post-modification testing adequately verified system operability and/or functionality.

The inspectors also used applicable industry standards to evaluate acceptability of the modifications. The list of modifications and other documents reviewed by the inspectors is included as an Attachment to this report.

This inspection constituted nine permanent plant modification samples as defined in IP 71111.17-04.

b. Findings

Emergency Diesel Generator Usable Fuel Calculations Failed to Consider Appropriate Emergency Diesel Generator Frequency Variations

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," for the failure to account for increased fuel oil consumption during the development of the Emergency Diesel Generator (EDG) endurance calculations which resulted in non-conservative TS. Specifically, the licensee failed to account for the increased fuel oil consumption at an EDG frequency of 61.2 Hertz (Hz), and ensure that the minimum fuel oil level in the EDG day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs' mission time at 110 percent for one hour.

Description: The TSs SR 3.8.1.2 allows an EDG frequency tolerance of ± 2 percent. This tolerance was based on RG 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," Revision 4, requirements that the EDG frequency recover to within ± 2 percent of 60 Hz (i.e., 58.8 - 61.2 Hz) within a specified period during the sequencing of loads on the bus. Therefore, the EDGs could operate at a frequency of 61.2 Hz, which would be the worst-case scenario for loading of the EDGs.

Additionally, TS SR 3.8.1.4 verifies adequate level of fuel oil in the day tank and the bulk storage tanks. The level selected is to ensure adequate fuel oil for a minimum of one hour of EDG operation at 110 percent of full load for the day tank and approximately two days at 100 percent full load for the bulk storage tanks. The levels identified by TS SR 3.8.1.4 are 205 gallons and 10,000 gallons for the day tank and bulk storage tank, respectively.

During review of Calculation 10553-CALC-07, "Dresden Station Emergency Diesel Generators Endurance Calculations," Revision 2, the inspectors questioned why the licensee based their fuel consumption on the EDGs operating at 110 percent at 60 Hz rather than 61.2 Hz as allowed by TS SR 3.8.1.2. The higher frequency would result in higher fuel consumption; therefore, would be more conservative. Specifically, the estimated fuel consumption at 110 percent loading at 61.2 Hz would be approximately 211.3 gallons/hour. The calculation did identify that the 2 percent frequency tolerance would result in higher fuel consumption; however, the more conservative frequency was only applied to calculating EDG loading at 100 percent. The calculation of the day tank level at 110 percent only considered the less conservative 60 Hz frequency.

The inspectors determined that the EDGs could operate at a steady state frequency up to 61.2 Hz according to TS SR 3.8.1.2. This would result in a higher fuel consumption that would exceed the TS 3.8.1.4 minimum volumetric fuel requirements. The TS 3.8.1.4 minimum fuel requirements were based on operating the EDGs at a frequency up to 60 Hz, rather than 61.2 Hz, which resulted in non-conservative TS.

The inspectors discussed the issue with the licensee and identified that the licensee had administrative procedures that would limit the frequency of the EDG to 60.5 Hz and would ensure the day tank level remained greater than 350 gallons. The Dresden Procedure DGA-12, "Partial or Complete Loss of AC Power," Revision 73, ensures operators maintain frequency of the EDGs between 59.5 to 60.5 Hz. Additionally, Dresden Surveillance Procedure DOS 6600-14, "Diesel Oil Transfer Pump Operation and Fuel Consumption Test," Revision 20, requires operators to maintain at least 350 gallons in the day tank. Therefore, the EDG would remain capable of performing its specified safety function. However, even with the administrative limits, the minimum fuel requirements identified in TS SR 3.8.1.4 would remain non-conservative since the fuel consumption would still be higher at the 60.5 Hz which is not represented in TS SR 3.8.1.4. The licensee captured this issue and entered it into their CAP as Action Request 02506869. The licensee intends to evaluate the effect of the increased frequency on their EDG Calculations.

Analysis: The inspectors determined that the licensee's failure to account for increased fuel oil consumption during the development of the EDG Calculation 10553-CALC-07, "Dresden Station Emergency Diesel Generators Endurance Calculations," Revision 2, resulted in non-conservative TS and was contrary to 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. Specifically, the

licensee failed to account for the increased fuel oil consumption at an EDG frequency of 61.2 Hz, and ensure that the minimum fuel oil level in the EDG day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs' mission time at 110 percent for one hour.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone's objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to account for the increased fuel oil consumption resulting from operation at a higher EDG frequency. Therefore, the licensee did not ensure that the minimum fuel oil level in the day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs' mission time at 110 percent for one hour.

In accordance with IMC 0609, "Significance Determination Process," Attachment 609.04, "Initial Characterization of Findings," Table 2, the inspectors determined the finding affected the Mitigating Systems cornerstone. As a result, the inspectors determined the finding could be evaluated using Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, for the Mitigating Systems cornerstone. The performance deficiency affected the design or qualification of a mitigating SSC; however, the SSC maintained its operability or functionality as applicable. Specifically, the licensee was able to demonstrate that adequate fuel in the storage tanks would be available to support the EDGs mission time when operating at the administratively controlled higher frequency limit specified in procedures. Therefore, the inspectors answered "no" to all the Mitigating Systems Screening Questions in Exhibit 2, and screened the finding as having very-low safety significance (Green).

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution; Identification because the licensee did not thoroughly evaluate the EDG fuel oil consumption when considering EDG frequency variation. Specifically, the licensee failed to translate applicable design bases into specifications which resulted in non-conservative TS. [P.1]

Enforcement: Title 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to ensure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, from May 25, 2011, until May 29, 2015, the licensee failed to ensure that applicable regulatory requirements and the design basis were correctly translated into specifications during development of the EDG Calculation 10553-CALC-07, "Dresden Station Emergency Diesel Generators Endurance Calculations," Revision 2, which resulted in non-conservative TS. Specifically, the licensee failed to account for the increased fuel oil consumption at an EDG frequency of 61.2 Hz, and ensure that the minimum fuel oil level in the EDG day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs' mission time at 110 percent for one hour.

This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy because it was of very-low safety significance, and was entered into the licensee's CAP as Action Request 02506869, "NRC MOD/5059 Inspection: EDG Fuel Consumption," dated May 28, 2015. The licensee is evaluating the effect of the increased frequency on their EDG calculations, and will continue to administratively

control level in the fuel oil day tank high enough to ensure the SSC remains operable. (NCV 05000249/2015007-02; NCV 05000237/2015007-02, EDG Usable Fuel Calculations Failed to Consider Appropriate EDG Frequency Variations)

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

.1 Routine Review of Condition Reports

a. Inspection Scope

The inspectors reviewed several corrective action process documents that identified or were related to 10 CFR 50.59 evaluations and permanent plant modifications. The inspectors reviewed these documents to evaluate the effectiveness of corrective actions related to permanent plant modifications and evaluations of changes, tests, and experiments. In addition, corrective action documents written on issues identified during the inspection were reviewed to verify adequate problem identification, and incorporation of the problems into the corrective action system. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the attachment to this report.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On May 29, 2015, the inspectors presented the inspection results to Mr. Shane Marik, and other members of the licensee staff. The licensee personnel acknowledged the inspection results presented and did not identify any proprietary content. The inspectors confirmed that all proprietary material reviewed during the inspection was returned to the licensee staff.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

G. Baxa, Regulatory Assurance
M. Budelier, Senior Manager Design Engineering
D. Doggett, Regulatory Assurance
D. Eaman, Design Instrumentation and Control (I&C) Manager
B. Franzen, Regulatory Assurance Manager
R. Gaston, Licensing Manager - Corporate
T. Griffith, Senior Licensing Engineer
B. Kapellas, Maintenance Director
B. Madderom, Design Electrical Manager
S. Marik, Site Vice President
G. Morrow, Operations Director
P. O'Brien, Site Corrective Action Program Manager
R. Osgood, Senior Nuclear Site Communications Specialist
E. Rogers, Nuclear Oversight
R. Schmidt, Chemistry Manager
B. Surges, Work Control
D. Walker, NRC Coordinator
J. Washko, Plant Manager
D. Wolverton, Design Mechanical Manager

U.S. Nuclear Regulatory Commission

K. O'Brien, Director, Division of Reactor Safety
G. Roach, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000237/2015007-01; 05000249/2015007-01	NCV	Procedure Revisions Resulted in Isolation Condenser Unable to Meet Design Basis (Section 1R17.1b.)
05000237/2015007-02; 05000249/2015007-02	NCV	EDG Usable Fuel Calculations Failed to Consider Appropriate EDG Frequency Variations (Section 1R17.2b.)

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors 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.

ANALYSIS (ENGINEERING)

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
DR-27D-M-002	Dresden SBO Building Ventilation Air Requirement	03
DRE13-0004	Use of U2/3 or U3 DG Cooling H ₂ O Pump As An Alternate M/U Source During Design Basis Flood	02
EC 391519	Cumulative Effect of FM on Dresden U3 Reactor Vessel and Connected Systems - D3R22	00
EC 391643	Alternate IC, RPV and SFP M/U H ₂ O Source	09
EC 396217	D2R23 - Cumulative Effect of FM on the Reactor Vessel and Connected Systems	00
GEH Proprietary 0000-0130-8389-R1	ICF Task T0305: RPV Flow Induced Vibration	01
GEH Proprietary 0000-0140-6826-R1	ICF Task T0318: Piping Flow Induced Vibration	01

ASSESSMENTS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
AR 02419476	Unauthorized TCC Installed for Discharge Canal Temperature Recorder	January 20, 2014
AR 02469215-04	Inadequate 50.59 Review U2/U3 ASD Modification	April 15, 2015

10 CFR 50.59 EVALUATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
2012-02-001	Temporary N ₂ Inerting Gas Supply	00
2012-06-001	TAT TR32 Open Phase Detection Protective Relay Circuit Installation, Revision 0	October 17, 2012
2012-11-001	Cumulative Effects of FM on Dresden U3 Reactor Vessel and Connected Systems - D3R22	00
2013-09-001	Dresden Increased Core Flow Implementation, Revision 0	October 8, 2013
2013-10-001	Temporarily Bypass U2 RWCU Trips	00
2013-11-001	Disable Fuel Pool Cooling Pump Trips, Revision 0	November 8, 2013
2013-11-003	D2R23 - Cumulative Effects of FM on Dresden U2 Reactor Vessel and Connected Systems - D3R22	00

10 CFR 50.59 SCREENINGS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
2012-0007	DG RM Air Temp High	00

10 CFR 50.59 SCREENINGS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
2012-0039	Repair Air U3 SBO Fuel Day Tank Room Exhaust Fan 3-5790-6007B, Revision 0	February 27, 2012
2012-0967	Floods	00
2012-1002	Engine Start Air Pressure Low or Locked Out or Air Valve Closed or Not Full	00
2013-0025	Alternate IC, RPV & Spent Fuel M/U H ₂ O Source	00
2013-0028	Automatic Operation of the IC	00
2013-0029	Secure IC on Hi/Low Level	00
2013-0030	Manual Operation of the IC	00
2013-0032	IC M/U Pumps Local Operation	00
2013-0144	U2 RAT TR 22 Sudden Pressure Relay 2 Out of 3 Trip Logic, Revision 0	July 11, 2013
2014-0095	HPCI System Standby Operation	00
2014-0168	SFP Instrumentation – Fukushima, Revision 0	April 8, 2015
2014-0181	Replace Relay CR-102 Panel 2253-11, Revision 0	October 31, 2014
2014-0205	Inspect Discharge Check Valve 2-2099-970B	00
2015-0042	Issue Calculation Analyzing TOL Relays in a Degraded Voltage Condition, Revision 0	February 24, 2015

CALCULATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
0101-0072-01	Dresden IC Heat Transfer Calculation	02
9389-46-19-2	Calculation for DG 2 Loading Under Design Bases Accident Condition, Revision 3	April 4, 2007
10553-CALC-07	Dresden EDGs Endurance Calculations, Revision 2	May 25, 2011
DRE07-0005	Determination of Connected Loading on 120/240Vac ES Bus Dist. Panel 902-49 Powered from UPS at Panel 902-63, Revision 3	February 23, 2015
DRE13-001	Validation of TOL Relay Sizes Subject to a Degraded Voltage Condition, Revision 0	February 24, 2015
EC 388351	Temporary N ₂ Inerting Gas Supply	03

CORRECTIVE ACTION PROGRAM DOCUMENTS (ARs) ISSUED DURING INSPECTION

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
02493498	PORC Approved 10 CFR 50.59 Evaluation Cannot Be Located	April 30, 2015
02499058	NRC INSP: Parts Evaluation Errors	May 11, 2015
02499647	NRC INSP: Typo in 50.59 Screening 2012-0007 & DAN 923-74-045	May 12, 2015
02506445	NRC MOD/5059 Inspection: IC Operating Procedures	May 28, 2015
02506845	NRC MOD/5059 Inspection: Observation Improvement to DOS 6620-01	May 28, 2015

CORRECTIVE ACTION PROGRAM DOCUMENTS (ARs) ISSUED DURING INSPECTION

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
02506869	NRC MOD/5059 Inspection: EDG Fuel Consumption	May 28, 2015

CORRECTIVE ACTION PROGRAM DOCUMENTS (ARs) REVIEWED

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
00191696	Uncovering of the IC Tubes	December 18, 2003
00210558	Additional Proof Needed to Conclude Cold M/U Splash	March 24, 2004
00919110	NRC Concern - EDG Fuel Oil Storage Tank Alarm Setpoint Margin	May 13, 2009
01405505	1B CCCT Supply Pump Found Tripped	August 27, 2012
01456015	Procedure Enhancement Regarding IC Level	December 27, 2012
01533278	C/O Requires a 50.59 Screening	July 13, 2013
02386093	Mod/50.59 2014 FASA - EDG Fuel Consumption	September 25, 2014
02388710	Dresden Susceptible to Similar NRC Violation Issued to Fermi	September 30, 2014
02420155	C/O 118604 Has Been Placed for >90 Days	December 3, 2014
02469215	Inadequate 50.59 Eval for ASD Modifications	March 16, 2015

DRAWINGS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
12E-2302A	Key Diagram 4160/480V SWGRs & 480V MCCs	Y
12E-2304	Key Diagram 4160V SWGRs 23-1 and 24-1	W
12E-2306	Key Diagram-Reactor Building 480V SWGR 28 & 29	AE
12E-2328	Single Line Diagram Emergency Power System	O
12E-2509, Sheet 1	Schematic Diagram Primary Containment Isolation System Clean-Up System Isolation Logic	AY & AZ
M-22	Diagram of SW Piping	EO
M-27	Diagram of Core Spray Piping	AAN
M-30, Sheet 1	Diagram of RWCU System	AAP
M-355	Diagram of SW Piping	SI
M-375	Diagram of Fire Protection Piping	M
M-517	DG Engine Cooling H ₂ O System	I

MODIFICATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EC 347256	Replacement of Solenoid Valves 2(3)-1601-58, -59, -61, -62 with EQ Qualified Solenoid Valves	April 3, 2012
EC 380369	Revise Setpoints for EDG Fuel Oil Storage Tanks Level Switches	00
EC 383034	IC Valves Cable Reroutes	01

MODIFICATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EC 388981	Modify Supports on CREV RCU 2/3-9400-102 Skid/Frame to Facilitate Replacement of Valves	03
EC 390811	Rewire MOV 3-3901 Circuitry to Support MSO Project, Revision 0	November 14, 2012
EC 391291	Rewire MOV 2-1501-22B Circuitry to Support MSO Project, Revision 0	November 30, 2012
EC 398999	SFP Instrumentation - Fukushima	00
IEE 81788	IEE for US Electric Motor, CAT. ID 1414246-4	September 12, 2013
IEE 81789	IEE for US Electric Motor, CAT. ID 1452042-4	March 26, 2012

OTHER DOCUMENTS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EC 0000346716	Review and Approve EQ ASCO Solenoid Valve Model NP8316A54E to Replace Commercial Non-EQ Solenoid Valve HB8316D14 for 2(3)-1601-58, 59, 61, & 62.	February 5, 2004
EC 0000347323	Review and Approve Seismic Qualification of Solenoid Valve Model NP8316A54E to Replace Solenoid Valve HB8316D14 for 2(3)-1601-58, 59, 61, & 62. EC 346716 Addressed EQ Portion Only	February 13, 2004
GEH-OLNC-0000-010	On-Line NobleChem™ (OLNC) Application Technical Safety Evaluation for Dresden U2	00
4-3152-02-R0	On-Line NobleChem™ (OLNC) Application Technical Safety Evaluation for Dresden U3	01
NEDC-33635P		
WO 99016611	D3 6Y PM Replace SR/EQ Solenoid on N ₂ M/U VLV 1601-59	November 21, 2006

PROCEDURES

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
CC-AA-112	Temporary Configuration Changes	22
CC-AA-304	Component Classification	05
CC-AA-309-1002	Key Calculation Identification and Improvement	02
DAN 902(3)-3D-4	IC Level Hi/Low Annunciator Respond Procedure	12
DAN DG2(3)(2/3)AC-2	Engine Start Air Press Low or Locked Out or Air Valve Closed or Not Full Open Annunciator Response Procedure	12
DES 0040-08	ASCO Solenoid Valve Surveillance/Replacement	11
DGA-12	Partial or Complete Loss of AC Power	73
DIS 6600-01	DG Starting Air Press Instrumentation Calibration	24
DOA 0010-04	Floods	34
DOP 1300-02	Automatic Operation of IC	25 & 26
DOP 1300-03	Manual Operation of IC	34 & 35
DOP 1300-09	IC M/U Pump Local Operation	06
DOP 2300-01	HPCI System Standby Operation	54

PROCEDURES

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
DOS 0500-05	Calculation of Core Thermal Power	37
DOS 6600-01	DG Surveillance Tests	128
DOS 6600-14	Diesel Oil Transfer Pump Operation and Fuel Consumption Test	20
EP-AA-1004	Dresden EAL Tables	00
Addendum 3		
OP-AA-109-101-1002	Clearance and Tagging Quarterly Audit	03
SM-AA-300	Procurement Engineering Support Activities	06
SM-AA-300-1001	Procurement Engineering Process and Responsibilities	17

REFERENCES

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
NRR Letter to Commonwealth Edison Company	Safety Evaluation By NRR Related to Amendment 140 to FOL No. DPR-19	September 21, 1995

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CALC	Calculation
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
CNO	Chief Nuclear Officer
DRS	Division of Reactor Safety
EDG	Emergency Diesel Generator
HPCI	High Pressure Coolant Injection
Hz	Hertz
IC	Isolation Condenser
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISCO	Isolation Condenser
LLC	Limited Liability Company
MBtu	Million British Thermal Units
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NUREG	NRC Technical Report Designation
PARS	Public Available Records
RG	Regulatory Guide
SR	Surveillance Requirement
SSC	Structures, Systems and Components
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report

B. Hanson

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Sincerely,

/RA/

Dariusz Szwarc, Acting Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-237, 50-249; 72-037
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