



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 9, 2015

Mr. Bryan Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 - REPORT FOR THE ONSITE AUDIT REGARDING IMPLEMENTATION OF MITIGATING STRATEGIES AND RELIABLE SPENT FUEL POOL INSTRUMENTATION RELATED TO ORDERS EA-12-049 AND EA-12-051 (TAC NOS. MF1046, MF1047, MF1050, AND MF1051)

Dear Mr. Hanson:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13063A320), Exelon Generation Company, LLC (Exelon, the licensee) submitted its OIP for Dresden Nuclear Power Station, Units 2 and 3 (Dresden) in response to Order EA-12-049. By letters dated August 28, 2013, February 28, 2014, August 28, 2014, February 27, 2015, and August 28, 2015 (ADAMS Accession Nos. ML13241A282, ML14059A430, ML14248A238, ML15058A529, and ML15240A305, respectively), Exelon submitted its first five six-month updates to the OIP. By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). This audit process led to the issuance of the Dresden interim staff evaluation (ISE) dated November 22, 2013 (ADAMS Accession No. ML13220A238), and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML13060A125), the licensee submitted its OIP for Dresden in response to Order EA-12-051. By letter dated June 26, 2013 (ADAMS Accession No. ML13177A064), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 18, 2013, August 28, 2013, February 28, 2014, August 28, 2014, February 27, 2015, and August 28, 2015 (ADAMS Accession Nos.

ML13200A125, ML13241A242, ML14062A060, ML14248A327, ML15063A240, and ML15240A298, respectively), the licensee submitted its RAI responses and first five six-month updates to the OIP. The NRC staff's review led to the issuance of the Dresden ISE and RAI dated October 29, 2013 (ADAMS Accession No. ML13275A111). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation (SFPI) ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion took place prior to declarations of compliance for Dresden.

In support of the ongoing audit of the licensee's OIPs, as supplemented, the NRC staff conducted an onsite audit at Dresden from August 3-6, 2015, per the audit plan dated June 11, 2015 (ADAMS Accession No. ML15161A413). The purpose of the onsite portion of the audit was to provide the NRC staff the opportunity to continue the audit review and gain key insights most easily obtained at the plant as to whether the licensee is on a successful path for compliance with the Mitigation Strategies and SFPI orders. The onsite activities included detailed analysis and calculation discussions, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, review of staging and deployment of offsite equipment, and review of installation details for SFPI equipment.

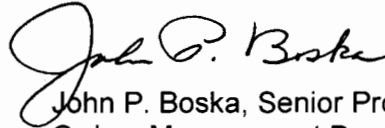
The enclosed audit report provides a summary of the activities for the onsite audit portion. Additionally, this report contains an attachment listing all open audit items currently under NRC staff review.

B. Hanson

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If you have any questions, please contact me at 301-415-2901 or by e-mail at John.Boska@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "John P. Boska". The signature is written in a cursive style with a large, looping initial "J".

John P. Boska, Senior Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos.: 50-237 and 50-249

Enclosure:
Audit report

cc w/encl: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

AUDIT REPORT BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO ORDERS EA-12-049 AND EA-12-051 MODIFYING LICENSES
WITH REGARD TO REQUIREMENTS FOR
MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS
AND RELIABLE SPENT FUEL POOL INSTRUMENTATION
EXELON GENERATION COMPANY, LLC
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
DOCKET NOS. 50-237 and 50-249

BACKGROUND AND AUDIT BASIS

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). Order EA-12-049 directs licensees to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities in the event of a beyond-design-basis external event (BDBEE). Order EA-12-051 requires, in part, that all operating reactor sites have a reliable means of remotely monitoring wide-range SFP levels to support effective prioritization of event mitigation and recovery actions in the event of a BDBEE. The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13063A320), Exelon Generation Company, LLC (Exelon, the licensee) submitted its OIP for Dresden Nuclear Power Station, Units 2 and 3 (Dresden) in response to Order EA-12-049. By letters dated August 28, 2013, February 28, 2014, August 28, 2014, February 27, 2015, and August 28, 2015 (ADAMS Accession Nos. ML13241A282, ML14059A430, ML14248A238, ML15058A529, and ML15240A305, respectively), Exelon submitted its first five six-month updates to the OIP. By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses

Enclosure

to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). This audit process led to the issuance of the Dresden interim staff evaluation (ISE) dated November 22, 2013 (ADAMS Accession No. ML13220A238), and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML13060A125), the licensee submitted its OIP for Dresden in response to Order EA-12-051. By letter dated June 26, 2013 (ADAMS Accession No. ML13177A064), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 18, 2013, August 28, 2013, February 28, 2014, August 28, 2014, February 27, 2015, and August 28, 2015 (ADAMS Accession Nos. ML13200A125, ML13241A242, ML14062A060, ML14248A327, ML15063A240, and ML15240A298, respectively), the licensee submitted its RAI responses and first five six-month updates to the OIP. The NRC staff's review led to the issuance of the Dresden ISE and RAI dated October 29, 2013 (ADAMS Accession No. ML13275A111). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation (SFPI) ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns.

In support of the ongoing audit of the licensee's OIPs, as supplemented, the NRC staff conducted an onsite audit at Dresden from August 3-6, 2015, per the audit plan dated June 11, 2015 (ADAMS Accession No. ML15161A413). The purpose of the onsite portion of the audit was to provide the NRC staff the opportunity to continue the audit review and gain key insights most easily obtained at the plant as to whether the licensee is on a successful path for compliance with the Mitigation Strategies and SFPI orders. The onsite activities included detailed analysis and calculation discussions, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, review of staging and deployment of offsite equipment, and review of installation details for SFPI equipment. The audit's onsite portion took place prior to declarations of compliance for Dresden.

Following the licensee's declarations of order compliance, the NRC staff will evaluate the OIPs, as supplemented; the resulting site-specific Overall Program Documents (OPDs) and Final Integrated Plans (FIPs); and, as appropriate, other licensee submittals based on the requirements in the orders. For Order EA-12-049, the staff will make a safety determination using the Nuclear Energy Institute (NEI) developed guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" issued in August 2012 (ADAMS Accession No. ML12242A378), as endorsed, by NRC Japan Lessons-Learned Directorate (JLD) interim staff guidance (ISG) JLD-ISG-2012-01 "Compliance with Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-

Basis External Events" (ADAMS Accession No. ML12229A174). For Order EA-12-051, the staff will make a safety determination using the NEI developed guidance document NEI 12-02, Revision 1, "Industry Guidance for Compliance with NRC Order EA-12-051, 'To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation'" (ADAMS Accession No. ML12240A307), as endorsed, with exceptions and clarifications, by NRC ISG JLD-ISG-2012-03 "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," (ADAMS Accession No. ML12221A339) as providing one acceptable means of meeting the order requirements. Should the licensee propose an alternative strategy for compliance, additional staff review will be required to evaluate the alternative strategy in reference to the applicable order.

AUDIT ACTIVITIES

The onsite audit was conducted at the Dresden facility from August 3, 2015, through August 6, 2015. The NRC audit team staff was as follows:

Title	Team Member	Organization
Team Lead/Project Manager	John Boska	NRR/JLD
Technical Support – Electrical	Kerby Scales	NRR/JLD
Technical Support – Reactor Systems	Joshua Miller	NRR/JLD
Technical Support – Reactor Systems	Laura Okruhlik	NRR/JLD
Technical Support – Balance of Plant	Garry Armstrong	NRR/JLD
Technical Support – Containment	Brett Titus	NRR/JLD
Technical Support – I&C	Khoi Nguyen	NRR/JLD

The NRC staff executed the onsite portion of the audit per the three part approach discussed in the audit plan, to include conducting a tabletop discussion of the site's integrated mitigating strategies (MS) compliance program, a review of specific technical review items, and discussion of specific program topics. Activities that were planned to support the above included detailed analysis and calculation discussions, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, staging and deployment of offsite equipment, and physical sizing and placement of SFPI equipment.

AUDIT SUMMARY

1.0 Entrance Meeting (August 3, 2015)

At the audit entrance meeting, the NRC staff audit team introduced itself followed by introductions from the licensee's staff. The NRC audit team provided a brief overview of the audit's objectives and anticipated schedule.

2.0 Integrated Mitigating Strategies Compliance Program Overview

Per the audit plan and as an introduction to the site's program, the licensee provided a presentation to the NRC audit team describing the site's strategies to meet the NRC

orders. The licensee reviewed its strategy to maintain core cooling, containment, and SFP cooling in the event of an extended loss of alternating current power (ELAP), and the plant modifications being done in order to implement the strategies. Also reviewed was the design and location of the storage facilities for the FLEX equipment, the interface with the National Strategic Alliance for FLEX Emergency Response (SAFER) Response Centers (NSRC) including staging areas, the spent fuel pool level indication modification, the modifications planned to enhance emergency communications, and procedural enhancements such as development of FLEX support guidelines (FSGs).

3.0 Onsite Audit Technical Discussion Topics

Based on the audit plan, and with a particular emphasis on the Part 2 "Specific Technical Review Items," the NRC staff technical reviewers conducted interviews with licensee technical staff, site walk-downs, and detailed document review for the items listed in the plan. Results of these technical reviews and any additional review items needed from the licensee are documented in the audit item status table in Attachment 3, as discussed in the Conclusion section below.

3.1 Reactor Systems Technical Discussions and Walk-Downs

The NRC staff met with licensee staff to discuss the amount of leakage from the reactor recirculation pump seals, the use of the Isolation Condenser (IC) to remove decay heat, the use of the High Pressure Coolant Injection (HPCI) system to maintain reactor pressure vessel (RPV) level, the availability of water sources, and the heatup of the suppression pool due to steam release from the RPV and HPCI. The NRC staff reviewed the analysis and flow calculations along with applicable procedures. The NRC staff reviewed the licensee's strategy for utilizing raw water sources, including water filtration and monitoring of core parameters to ensure adequate cooling. The NRC staff also walked down the licensee's strategies and reviewed plant procedures for implementing the core cooling strategies and makeup strategies.

3.2 Electrical Technical Discussions and Walk-Downs

a. The NRC staff reviewed the calculations on extending battery life based on load shedding, and walked down the battery rooms to evaluate strategies for hydrogen and temperature control. The NRC staff also walked down panels used for load shedding to evaluate feasibility and timing.

b. The NRC staff walked down connection points and locations for FLEX electrical generators. One portable 480V FLEX diesel generator (DG) will be located in FLEX storage building (FSB) A with a temporary power distribution unit (TPDU), and can be operated in that position after portable cables are run from the TPDU to the plant electrical connections. It is capable of powering the FLEX loads for both units. A backup (N+1) portable 480V FLEX DG will be stored in FSB-C, a commercial storage building. The staff reviewed the licensee's load and sizing calculations for the FLEX generators.

3.3 SFPI Technical Discussions and Walk-Downs

The NRC staff walked down instrument, transmitter, electronics, and display locations for the SFP level instrumentation, along with the associated cable runs. No concerns were identified during the walkdown. The NRC staff also reviewed the associated calibration, maintenance and test procedures for the SFP level instrumentation.

3.4 Other Technical Discussion Areas and Walk-Downs

a. The NRC staff toured the construction in progress on the three FSBs. The FSB-A is a robust building which will hold the portable FLEX DG. The FSB-B is a robust building which will hold the portable FLEX pumps and other FLEX equipment. These robust buildings are designed to survive all site hazards except for severe flooding. The FSB-C is a commercial storage building which will hold the backup (N+1) equipment, but is not robust for the external hazards which could potentially affect the site. The use of a commercial storage building is an alternative to the guidance in NEI 12-06, and is being evaluated by the NRC staff. The NRC staff walked down equipment haul routes from the FSBs to the designated deployment sites, and walked down haul routes from designated staging areas for equipment that will be delivered from the NSRC.

b. The NRC staff walked down the FLEX strategies for core cooling, reactor coolant system inventory, and SFP inventory functions. This included the point of deployment for the portable FLEX pumps, hose routing and deployment connection points (primary and alternate).

c. The NRC staff reviewed the strategy that will be implemented by the licensee to refuel the portable diesel-powered FLEX equipment. The NRC staff reviewed the instructions for refueling the equipment, as well as the equipment needed to perform the refueling. Additionally, the staff reviewed the licensee's procedures for ensuring adequate fuel quality.

d. The NRC staff reviewed the licensee's plans to ensure adequate communications, lighting, personnel access, and equipment access, to successfully implement the strategies. The NRC staff interviewed plant personnel responsible for these areas, and observed lighting and communication needs during plant walkdowns.

e. The licensee has a FLEX strategy for severe flooding from the Kankakee River. Since there is adequate warning time, the licensee will shut down the reactors and pre-stage equipment. Diesel-driven FLEX pumps will be placed on a floating platform inside the Unit 3 turbine building trackway and will provide makeup water to the isolation condensers, the RPVs, and the SFPs. Portable FLEX DGs will be placed on the roof of the Unit 2/3 reactor building trackway, and portable cables will be used to energize the electrical equipment needed for coping with the event.

4.0 Exit Meeting (August 6, 2015)

The NRC staff audit team conducted an exit meeting with licensee staff following the closure of onsite audit activities. The NRC staff highlighted items reviewed and noted that the results of the onsite audit trip will be documented in this report. There were five FLEX issues and no SFPI issues open at the conclusion of the audit and they were discussed at the exit meeting. See Attachment 3 for additional information.

CONCLUSION

The NRC staff completed all three parts of the onsite audit plan. Each audit item listed in Part 2 of the plan was reviewed by NRC staff members while on site. In addition to the list of NRC and licensee onsite audit staff participants in Attachment 1, Attachment 2 provides a list of documents reviewed during the onsite audit portion.

In support of the continuing audit process, as the licensee proceeds towards orders compliance for this site, Attachment 3 provides the status of all open audit review items that the NRC staff is evaluating in anticipation of issuance of a combined safety evaluation (SE) for both the MS and SFPI orders. The five sources for the audit items referenced below are as follows:

- a. Interim Staff Evaluation (ISE) Open Items (OIs) and Confirmatory Items (CIs)
- b. Audit Questions (AQs)
- c. Licensee-identified Overall Integrated Plan (OIP) Open Items (OIs)
- d. SFPI Requests for Additional Information (RAIs)
- e. Additional information needed to support the SE

The attachments provide audit information as follows:

- a. Attachment 1: List of NRC staff and licensee staff audit participants
- b. Attachment 2: List of documents reviewed during the onsite audit
- c. Attachment 3: MS/SFPI SE Audit Items currently under NRC staff review (licensee input needed as noted)

While this report notes the completion of the onsite portion of the audit per the audit plan dated June 11, 2015, the ongoing audit process continues as per the letters dated August 28, 2013, and March 26, 2014, to all licensees and construction permit holders for both orders.

Additionally, while Attachment 3 provides a list of currently open items, the status and progress of the NRC staff's review may change based on licensee plan changes, resolution of generic issues, and other NRC staff concerns not previously documented. Changes in the status of the NRC staff's review will be communicated in the ongoing audit process.

Attachments:

1. NRC and Licensee Staff Onsite Audit Participants
2. Onsite Audit Documents Reviewed
3. MS/SFPI Audit Items currently under NRC staff review

Onsite Audit Participants

NRC Staff:

John Boska	NRR/JLD/JOMB
Kerby Scales	NRR/JLD/JERB
Joshua Miller	NRR/JLD/JERB
Laura Okruhlik	NRR/JLD/JCBB

Garry Armstrong	NRR/JLD/JCBB
Khoi Nguyen	NRR/JLD/JERB
Brett Titus	NRR/JLD/JCBB

Dresden Staff:

Dennis Francis	Fukushima Response Team
Stuart Clark	Fukushima Response Team
Chris Kent	Fukushima Response Team
Joshua Gregg	Operations
Jonathan Hodapp	Fukushima Design Engineer
Eyad Ali	Fukushima Design Engineer
Zafar Qureshi	Fukushima Design Engineer
Dean Walker	Regulatory Assurance
Dave Schupp	Corporate Fukushima Response
Leslie Holden	Corporate (EP, Communications)

Documents Reviewed

- CC-DR-118, Site Implementation Of Diverse And Flexible Coping Strategies (FLEX) And Spent Fuel Pool Instrumentation Program, Draft.
- EC 371913, SFP Time To Boil Curves.
- EC 391973, Extend 125vdc and 250vdc Battery Coping Time with Load Shedding, Rev. 0.
- EC 394205, Fukushima NRC Order EA-12-049: U2 Mechanical FLEX Modifications.
- EC 394206, Fukushima NRC Order EA-12-049: U3 Mechanical FLEX Modifications.
- EC 394210, Fukushima NRC Order EA-12-049: U2 Electrical FLEX Modifications, Rev. 1.
- EC 394211, Fukushima NRC Order EA-12-049: U3 Electrical FLEX Modifications, Rev. 0.
- EC 398999, SFPLI Installation, Rev. 0.
- EC 399624, Satellite Communications Network.
- Calculation 2013-01671, "Transient Analysis of HPCI Pump Room for Extended Loss of A-C Power", Rev.0.
- CN-PEUS-14-20, "Seismic analysis of the SFP Mounting Bracket at Dresden Nuclear Power Station Units 2 and 3," Rev. 1.
- DR-MISC-043, Dresden FLEX - Overview of MAAP Results - MAAP Analysis, Rev. 2.
- DRE 14-0006, FLEX Hydraulic Analysis.
- DRE 14-0037, Unit 2(3) 480 VAC FLEX Diesel Generator and Cable Sizing For Beyond Design Basis FLEX Event, Rev. 0.
- DRE 14-0046, SFPI Sensor Mounting Detail Anchorage.
- DRE 14-0047, "SFPLI Special Conduit Supports and Core Holes," Rev. 0.
- DRE 14-0048, Seismic Qualification of the SFPLI System Components, Rev. 0.
- Hydro ICI 42 125-100-250, FLEX Pump Tests.
- 12E-2306, Key Diagram Reactor Building 480V AC Switchgear 28 & 29, Rev. AE.
- 12E-2311, Key Diagram Turbine Building 480V Motor Control Centers 28-2 and 29-2, Rev. AU.
- 12E-2321, Key Diagram 250V DC Motor Control Centers, Rev. AS.
- 12E-2322, Sheet 1, Key Diagram Turbine Building 125V DC Main Bus 2A-1 Distribution Panel, Rev. AO.
- 12E-2322, Sheet 2, Key Diagram Turbine Building 125V DC Main Bus 2A-1 & 2A-2 Distribution Panels, Rev. AS.
- 12E-2322, Sheet 3, Key Diagram Reactor Building 125V DC Main Bus 2 Distribution Panel, Rev. AF.
- 12E-2322A, Key Diagram Turbine Building 125V DC Reserve Bus Distribution Panels, Rev. Q.
- 12E-2322B, Overall Key Diagram 125V DC Distribution Centers, Rev. L.
- 12E-2325, Key Diagram 120 and 120/240V AC Distribution Essential Service Bus and Instrument Bus, Rev. AQ.
- 12E-3306, Key Diagram Reactor Building 480V AC Switchgear 38 & 39, Rev. Y.

- 12E-3311, Key Diagram Turbine Building 480V Motor Control Centers 38-2 & 39-2, 3-7838-2 & 3-7839-2, Rev. AU.
- 12E-3322, Key Diagram 125V DC Distribution, Rev. AJ.
- 12E-3322A, Key Diagram Turbine Building 125V DC Main Bus Distribution Panels, Rev. Z.
- 12E-3325, Key Diagram 120 and 120/240V AC Distribution Essential Service Bus and Instrument Bus, Rev. AI.
- B-205, "Reactor Building Framing Plan EL 570'-0" North Area - Dresden Station Unit 2 Commonwealth Edison Co. Chicago Illinois," Rev. P.
- B-218, "Reactor Building Framing Section D-D Upper Area - Dresden Station Unit 2 Commonwealth Edison Co. Chicago Illinois," Rev. P.
- M31, Diagram of Fuel Pool Cooling Piping, Rev. BN.
- M362, Diagram of Fuel Pool Cooling Piping, Rev. BB.
- 12E-2081, Electrical Installation Reactor Building EL. 570'-0" North, Rev. Z.
- 12E-2085, Electrical Installation Reactor Building EL. 613'-0, Rev. T.
- 12E-2086, Electrical Installation Reactor Building EL. 613'-0" South, Rev. N.
- 12E-3081, Electrical Installation Reactor Building EL. 570'-0" North, Rev. Z.
- 12E-3085, Electrical Installation Reactor Building EL. 613'-0" North, Rev. M.
- 12E-3086, Electrical Installation Reactor Building EL. 613'-0" South, Rev. M.
- DGA-03, Loss of 250 VDC Battery Chargers with Simultaneous Loss of Auxiliary Electrical Power, Rev. 14.
- DGA-13, Loss of 125 VDC Battery Chargers with Simultaneous Loss of Auxiliary Electrical Power, Rev. 19.
- DGA-12, Loss of Offsite Power, Rev. 74
- DGA-22, Station Blackout, Draft.
- FSG-1, ELAP Flowchart, Draft.
- FSG-2, FLEX Strategy For HPCI Operation During An ELAP Event, Draft.
- FSG-3, FLEX Strategy For Supplying Power To FLEX Pumps, Draft.
- FSG-4, Aligning FLEX Pumps For Operation, Draft.
- FSG-5, FLEX Isolation Condenser Make-Up And Level Control, Draft.
- FSG-6, FLEX Strategy For Aligning Power To U2(3) 480 Volt Safety Related Busses 28(38)and 29(39), Draft.
- FSG-7, FLEX Strategy For Isolating Recirc Loops, Draft.
- FSG-8, FLEX High Pressure And Low Pressure RPV Level Control Using SBLC, Draft.
- FSG-9, FLEX Torus Make-Up, Draft.
- FSG-10, FLEX Spent Fuel Pool Make-Up, Draft.
- FSG-11, FLEX Injection Through LPCI, Draft.
- FSG-12, FLEX Spent Fuel Pool Spray, Draft.
- FSG-13, FLEX Diesel Generator Operation, Draft.
- FSG-30, FLEX Strategy For Obtaining Alternate Readings, Draft.
- FSG-31, FLEX Ventilation Strategies, Draft.
- FSG-32, Fueling FLEX Portable Equipment, Draft.
- FSG-33, FLEX Small Equipment Operation, Draft.
- FSG-34, Ford F-750 FLEX Truck Operation, Draft.
- FSG-35, FLEX Carry Deck Crane Operation, Draft.

- FSG-36, FLEX Damage Assessment, Draft.
- FSG-37, FLEX Main Generator Hydrogen Venting Following an ELAP Event, Draft.
- FSG-38, FLEX Auxiliary Equipment Deployment, Draft.
- FSG-39, FLEX Communication Options, Draft.
- FSG-40, FLEX Deployment Path and Debris Removal, Draft.
- FSG-61, FLEX Fire System Isolation, Draft.
- AREVA Document No. 51-9237986-001, "Dresden Nuclear Power Station SAFER Response Plan".

Mitigation Strategies/Spent Fuel Pool Instrumentation Safety Evaluation Audit Items:

Audit Items Currently Under NRC Staff Review, Requiring Licensee Input As Noted

Audit Item Reference	Item Description	Licensee Input Needed
ISE CI 3.2.4.2.A	A discussion is needed on the effects of extreme [high and] low temperatures (i.e., temperatures below those assumed in the sizing calculation for each battery) on each battery's capability to perform its function for the duration of the ELAP [extended loss of alternating current power] event.	None. The staff is reviewing the licensee's recent response on the temperature effects.
ISE CI 3.2.4.2.B	Address controlling battery room hydrogen concentration.	None. The staff is reviewing the licensee's recent response on controlling hydrogen concentration.
ISE CI 3.2.4.2.C	Evaluations to address loss of ventilation in the auxiliary equipment electric room and Battery Rooms are not complete.	None. The staff is reviewing the licensee's recent response on loss of ventilation.
SE 1-E	Validation and Verification: Discuss the validation and verification of the revised plant procedures and the new FSGs. Verify that appropriate human factors are applied for the implementation of the FLEX strategies.	The staff requests that the licensee make available for audit the completed validation documentation.
SE 13-E	For the flood strategy, the licensee moves the FLEX DG to the roof of the 2/3 Reactor Building trackway. However, the FLEX N+1 DG is not moved to the roof, and during the flood it cannot be moved. Therefore, it cannot be used if the FLEX DG fails.	None. The staff is reviewing the licensee's decision to also move the FLEX N+1 DG to the roof, and the associated load analysis.

B. Hanson

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If you have any questions, please contact me at 301-415-2901 or by e-mail at John.Boska@nrc.gov.

Sincerely,

/RA/

John P. Boska, Senior Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos.: 50-237 and 50-249

Enclosure:
Audit report

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RidsNrrDorlLpl3-2 Resource	MHalter, NRR
RidsNrrPMDresden Resource	LGibson, NRR
RidsNrrLASLent Resource	AProffitt, NRR
RidsAcrcsAcnw_MailCTR Resource	JCameron, RIII

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NAME	JBoska	SLent	BTitus
DATE	9/18/2015	9/18/2015	9/24/2015
OFFICE	NRR/JLD/JERB/BC(A)*	NRR/JLD/JOMB/BC(A)	NRR/JLD/JOMB/PM
NAME	JLehning	MHalter	JBoska
DATE	9/25/2015	9/28/2015	109/2015

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