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

October 30, 2015

Mr. Edward D. Halpin
Senior Vice President and Chief
Nuclear Officer
Pacific Gas and Electric Company
P.O. Box 56
Mail Code 104/6
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 - 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. MF0958, MF0959, MF0963, AND MF0964)

Dear Mr. Halpin:

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 27, 2013 (ADAMS Accession No. ML13059A501), Pacific Gas and Electric Company (PG&E, the licensee) submitted its OIP for Diablo Canyon Power Plant, Unit Nos. 1 and 2 (DCPP) in response to Order EA-12-049. By letters dated August 22, 2013, February 26, 2014, August 21, 2014, February 23, 2015, August 26, 2015 (ADAMS Accession Nos. ML13235A097, ML14058A221, ML14233A636, ML15054A628, and ML15238B884, respectively), PG&E 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 DCPP interim staff evaluation (ISE) on February 3, 2014 (ADAMS Accession No. ML13364A192), and continues with in-office and onsite portions of this audit.

By letter dated February 27, 2013 (ADAMS Accession No. ML13059A500), the licensee submitted its OIP for DCPP in response to Order EA-12-051. By letter dated July 3, 2013 (ADAMS Accession No. ML13178A364), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 18, 2013, August 22, 2013, February 26, 2014, August 21, 2014, February 23, 2015, and August 26, 2015 (ADAMS Accession Nos.

ML13200A123, ML13235A103, ML14058A222, ML14233A637, ML15054A642, and ML15238B883, 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 DCPP ISE and RAI dated November 25, 2013 (ADAMS Accession No. ML13311B362). 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.

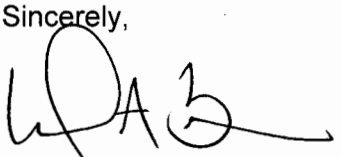
The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses 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 and updated information, audit information provided on ePortals, and preliminary Overall Program Documents/Final Integrated Plans while identifying additional information necessary for the licensee to supplement its plan and address staff potential concerns.

In support of the ongoing audit of the licensee's OIPs, as supplemented, the NRC staff conducted an onsite audit at DCPP from August 17-21, 2015, per the audit plan dated July 20, 2015 (ADAMS Accession No. ML15189A338). 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 the correct path for compliance with the Mitigation Strategies and SFPI orders. The onsite activities included detailed analysis and calculation discussion, 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.

If you have any questions, please contact me at 301-415-1924 or by e-mail at Tony.Brown@nrc.gov.

Sincerely,



Tony Brown, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos.: 50-275 and 50-323

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

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-275 AND 50-323

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 27, 2013 (ADAMS Accession No. ML13059A501), Pacific Gas and Electric Company (PG&E, the licensee) submitted its OIP for Diablo Canyon Power Plant, Unit Nos. 1 and 2 (DCPP) in response to Order EA-12-049. By letters dated August 22, 2013, February 26, 2014, August 21, 2014, February 23, 2015, August 26, 2015 (ADAMS Accession Nos. ML13235A097, ML14058A221, ML14233A636, ML15054A628, and ML15238B884, respectively), PG&E 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 DCPP interim staff evaluation (ISE) on February 3, 2014 (ADAMS Accession No. ML13364A192), and continues with in-office and onsite portions of this audit.

By letter dated February 27, 2013 (ADAMS Accession No. ML13059A500), the licensee submitted its OIP for DCPP in response to Order EA-12-051. By letter dated July 3, 2013 (ADAMS Accession No. ML13178A364), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 18, 2013, August 22, 2013, February 26, 2014, August 21, 2014, February 23, 2015, and August 26, 2015 (ADAMS Accession Nos. ML13200A123, ML13235A103, ML14058A222, ML14233A637, ML15054A642, and ML15238B883, 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 DCPP ISE and RAI dated November 25, 2013 (ADAMS Accession No. ML13311B362). 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 and updated information, audit information provided on ePortals, and preliminary Overall Program Documents (OPDs)/Final Integrated Plans (FIPs) while identifying additional information necessary for the licensee to supplement its plan and address staff potential concerns.

In support of the ongoing audit of the licensee's OIPs, as supplemented, the NRC staff conducted an onsite audit at DCPP from August 17-21, 2015, per the audit plan dated July 20, 2015 (ADAMS Accession No. ML15189A338). 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 the correct path for compliance with the Mitigation Strategies and SFPI orders. The onsite activities included detailed analysis and calculation discussion, 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.

Following the licensee's declarations of order compliance, the NRC staff will evaluate the OIPs, as supplemented; the resulting site-specific OPDs/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 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 DCPP facility from August 17, 2015, through August 21, 2015. The NRC audit team staff was as follows:

Title	Team Member	Organization
Team Lead/Project Manager	Tony Brown	NRR/JLD
Technical Support – Balance of Plant	Kevin Roche	NRR/JLD
Technical Support – Reactor Systems	Joshua Miller	NRR/JLD
Technical Support – Electrical	Matthew McConnell	NRR/JLD
Technical Support – SFPI	Khoi Nguyen	NRR/JLD

The NRC staff executed the onsite portion of the audit per the three part approach discussed in the July 20, 2015, 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 17, 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 a BDBEE, 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 Center (NSRC) including staging areas, the SFP level indication modification, the emergency communications equipment and capabilities, preventative maintenance plans for the FLEX equipment, procedural enhancements such as development of FLEX support guidelines (FSGs), and operator training.

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 identified 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 coolant pump (RCP) seals, the timing of the injection of borated water into the reactor coolant system (RCS), and the availability of borated water sources. The NRC staff reviewed the boration calculations and flow calculations, along with applicable procedures. The staff also walked down the staging areas and connection points for the RCS injection strategies and reviewed the applicable procedures.

3.2 Electrical Technical Discussions and Walk-Downs

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.

The NRC staff walked down connection points and locations for FLEX electrical generators. The staff reviewed the licensee's load and sizing calculations for the FLEX generators and reviewed the procedures for connecting the Phase 2 and Phase 3 electrical 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. NRC staff reviewed design and qualification documentation, and 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 walked down the FLEX strategies for SFP cooling and inventory makeup and reviewed the applicable procedures.

b. The NRC staff met with licensee staff to discuss the required robust sources of water for the turbine-driven auxiliary feedwater pump. The staff conducted a walkdown of the locations of the water sources to be used as well as the connection points inside the protected plant buildings. The staff also reviewed the procedures for providing makeup to the steam generators (SGs), as well as alternate methods as needed.

c. The NRC staff toured the buildings designated for storage of FLEX equipment. The staff walked down equipment haul routes from the storage locations to the designated deployment sites, and walked down haul routes from designated staging areas for equipment that will be delivered from the NSRC. The staff questioned the licensee on the ability to successfully deploy FLEX equipment in the event that the 500kV offsite power lines are down following an external event. The question is listed in Attachment 3 of this report.

d. The NRC staff reviewed the strategy that will be implemented by the licensee to refuel the diesel-powered FLEX equipment. The NRC staff reviewed the instructions for refueling the equipment as well as the equipment needed to perform the refueling.

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

f. The licensee's cooldown strategy relies on manual operation of the SG atmospheric dump valves (ADVs). The NRC staff walked down pathways and reviewed the procedures for manual operation of the ADVs.

4.0 Exit Meeting (August 21, 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. The NRC staff also discussed the remaining open items with the licensee and information needed for closure. The open items are listed in Attachment 3 of this report.

CONCLUSION

The NRC staff completed all three parts of the July 20, 2015, onsite audit plan. The audit items identified in Part 2 of the plan were 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 for both the MS and SFP Level Instrumentation 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. Spent Fuel Pool Level Instrumentation (SFPLI) Requests for Additional Information (RAIs)

e. Additional Safety Evaluation (SE) needed information

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 July 20, 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 NRC staff 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:

Tony Brown	NRR/JLD/JOMB
Kevin Roche	NRR/JLD/JCBB
Joshua Miller	NRR/JLD/JERB

Matthew McConnell	NRR/JLD/JERB
Khoi Nguyen	NRR/JLD/JERB

Diablo Canyon Power Plant Staff:

Scott Maze	Fukushima Program Manager (Acting)
Jim Dye	Fukushima Project BOP Systems
Keith Bush	Fukushima Project Electrical Systems
JC Adams	Fukushima Project Primary Systems
Cameron Christensen	Fukushima Project SFPLI
Tony Chitwood	Shift Manager
Jacob Glabe	Operations Supervisor
Marc Tarango	Nuclear Operator
Kevin Brophy	Nuclear Operator
Shawn Kirven	Security Operations Manager
Dan Ensminger	DCPP Fire Chief
Doug Spaulding	Fukushima Project Engineer
Chloe Fink	Fukushima Project Engineer
Mike McCoy	DCPP Licensing
Cindy Kaminski	Administrative

Documents Reviewed

- AREVA Engineering Information Record 51-9237985-02, "Diablo Canyon Power Plant SAFER Response Plan," Rev. 2
- Calculation 83-46, "Battery Room Ventilation System," Rev. 5
- Calculation 9000041622, "Diablo Canyon FLEX Battery Coping Analysis," Rev. 0
- Calculation 9000041641, "FLEX Diesel-Driven Generator Sizing," Rev. 0
- Calculation 9000041698/FLEX-012, "Qualification and Mounting for Spent Fuel Pool Level Indicating Sensor in Support of Fukushima Response," Rev. 0
- DC 663056, Sheet 45, "Terry Corporation Aux Feedwater Pump Turbines, Type GS-2N," Rev. 38
- DCA 9000041627-000-00/FLEX-002, "Assessment of Diablo Canyon Unit 1 and Unit 2 (PGE/PEG) Reactor Coolant System (RCS) Inventory and Shutdown Margin Analyses to Support the Diverse and Flexible Coping Strategy (FLEX) in Support of Setpoint Change," Rev. 0
- DCA 9000041684-000-00/FLEX-011, "Diablo Canyon ELAP Containment Environment Analysis," Rev. 0
- DCN 2000001335, "Unit 1 Electrical DCN for FLEX Safety Function Support," Rev. 0
- DCP 1000024965, "Warehouse B Remodel," Rev. 0
- DCP 1000024966, "Secondary FLEX Equipment Storage Facility," Rev. 0
- DCP 1000025058, "U2 Spent Fuel Pool Level Instrumentation," Rev. 0
- DCP 1000025055, "U1 Spent Fuel Pool Level Instrumentation," Rev. 0
- DDN 2000001335, "Single Line Diagram – 4160V FLEX Electric Power System – Unit 1," Attachment 2, Rev. 0
- DN 50619822
- DN 50675959
- DN 50800584
- DN 50800667
- DN 50800835
- DN 50800945
- DN 50801018
- DN 50801039
- DN 50801081
- DN 50801144
- DN 50801150
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- DN 50801366
- DN 50801382
- DN 50801413
- DN 50801427
- DN 50801428
- DN 50801429
- DN 50801469
- DN 50801471
- Drawing 480234, "480V FLEX Electric Power System," Rev. New Sheets 1, 2, and 3
- Drawing 437533-1, "Unit 1: 4160 Volt System – Single Line Meter & Relay Diagram," Rev. 42
- Drawing 441230-1, "Unit 2: Bus Section G&H – 4160V System Single Line Meter & Relay Diagram," Rev. 30
- Drawing 437542-1, "Unit 1: Bus Sect 1G-480 Volt System – S/L Meter & Relay Diagram," Rev. 55
- Drawing 441238-1, "Unit 2: Bus Sect 2G-480 Volt System – S/L Meter & Relay Diagram," Rev. 52
- EOP ECA-0.0, "Loss of All Vital AC Power," Rev. 30
- EOP ECA-0.0, "Loss of All Vital AC Power," Rev. 31 Draft
- EQ-QR-269, "Design Verification Testing Summary Report for the Spent Fuel Pool Instrumentation System," Rev. 4
- ES-98, "Battery Emergency Operated Lights – Seismic Qualification," 9/22/1992
- EZ-002, "Environmental Qualification Requirements," Rev. 2
- FSG 1, "Long Term RCS Inventory Control," Rev. 0 Draft
- FSG 4, "ELAP DC Bus Load Shed and Management," Rev. 0 Draft
- FSG 5, "Initial Assessment and FLEX Equipment Staging," Rev. 0 Draft
- FSG 7, "Loss of Vital Instrumentation or Control Power," Rev. 0 Draft
- FSG 8, "Alternate RCS Boration," Rev. 0 Draft
- FSG 10, "Accumulator Isolation," Rev. 0 Draft
- FSG 11, "Alternate SFP Makeup and Cooling," Rev. 0 Draft
- FSG 43, "Staging FLEX Equipment," Rev. 0 Draft

- FSG 48, "FLEX Coordination of Offsite Resources," Rev. 0 Draft
- FSG 51, "Placing Emergency ASW Pumps in Service," Rev. 0 Draft
- FSG 52, "FLEX Portable Lighting," Rev. 0 Draft
- FSG 53, "Placing RHR in Service for FLEX," Rev. 0 Draft
- FSG 54, "Placing 480V Loads in Service," Rev. 0 Draft
- FSG 57, "Fueling FLEX Equipment," Rev. 0 Draft
- FSG 58, "Preparing 4kV Bus for Service," Rev. 0 Draft
- FSG 59, "Placing 4kV Bus in Service," Rev. 0 Draft
- FSG 60, "Local Manual Operation of 10% Steam Dumps," Rev. 0 Draft
- FSG 61, "Restarting Turbine Driven AFW Pump After Overspeed Trip," Rev. 0 Draft
- FSG 62, "Local Closing of MSIVs," Rev. 0 Draft
- M-648, "Spent Fuel Pit Cooling Pump Hydraulic Performance Analysis," Rev. 2
- M-911, "Evaluation of Safe-Shutdown Equipment Operability during Loss of HVAC," Rev. 4
- M-912, "HVAC Interactions for Safe Shutdown, Room Heat-up Due to Loss of HVAC," Rev. 1
- M-1182, "Diesel Fuel Oil Consumption During FLEX Phase 2," Rev. 1
- MP E-67.5A, "Testing and Maintenance of Battery Operated Lights Inside Power Block," Rev. 35
- RE-20110714, "Post-Fukushima Spent Fuel Pool Heatup Time Estimates," Rev. 2
- RE-20111111, "Coping Time Estimates for IER L1-11-4, Item 1," Rev. 2
- SP 614, "Emergency Key Issue," Rev. 9
- SP 603, "Security during Operational Emergencies," Rev. 18
- STA-294, "Fukushima Emergency Pump Sizing," Rev. 4
- STA-295, "GOTHIC Evaluation of Heat Removal through Natural Convection in the Battery Charger/Inverter Room, Battery Room and Control Room," Rev. 0
- STP I-1C, "Routine Weekly Checks Required by Licenses," Rev. 110
- WNA-TP-04709-GEN, "Spent Fuel Pool Instrumentation System Calibration Procedure," Rev. 4

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 3.2.1.6.A	On pages 70 through 73 in the Integrated Plan, the licensee listed elapsed times and time constraints in different columns in Attachment 1A (SOE [sequence of events] timeline). The review determined that the times listed in the elapsed times column and the time constraint column often are the same and provide no margin between the elapsed time and the time constraint time. Provide clarification on how early a step must be begun to meet the time constraint, when the licensee actually expects to begin performing the step, and information on what margin exists for these critical actions, and whether the times can be reasonably met.	The staff requests that the licensee make available for audit the results of the timed FLEX validation and verification walkdowns when complete. The report should provide clarification on how early a step must be begun to meet the time constraint, when the licensee actually expects to begin performing the step, and information on what margin exists for these critical actions, and whether the times can be reasonably met.
AQ #12	Open Item 3.1.1.3B - The licensee's plan for the development of mitigating strategies with respect to the procedural interfaces did not address Guidelines 2 and 3 in Section 5.3.3 of NEI 12-06 for seismic hazards. These guidelines are associated with large internal flooding sources that are not seismically robust and do not require ac power and the use of ac power to mitigate ground water in critical locations, respectively. Describe how the DCPP will meet the guidance in NEI 12-06, Section 5.3.3, Guidelines 2 and 3.	The staff requests that the licensee make available for audit the internal flooding evaluation when complete.

Audit Item Reference	Item Description	Licensee Input Needed
SE #3	The licensee should confirm that there is at least one connection point for FLEX equipment requiring access via routes only through seismically robust structures in accordance with NEI 12-06, Section 5.3.2.	The staff requests the licensee make available for audit a discussion that addresses the seismic design of: 1) Maintenance shop area (area where 275 kW generator cables will be routed) 2) Admin building/tunnel where 4160V NSRC Generator is expected to be staged 3) Catwalk near ADVs (units 1 and 2) The discussion should demonstrate that at least one connection point, for each required FLEX strategy connection, is in a robust structure, and also that any hose and cable deployment path, or area where operator actions are required, also go through seismically robust structures. The discussion should also justify having a single staging area and cable routing for Phase 2 and 3 electrical generators.
SE #5	Reactor vessel level instrumentation system (RVLIS) availability - Technical report WCAP-17792-P makes recommendations regarding the timing for providing RCS makeup based on level indications in the reactor vessel. However, these systems were not included as recommended instrumentation in NEI 12-06 and, hence, did not typically appear in licensee's integrated plans. Please clarify whether a system, such as the RVLIS or reactor vessel level measurement system (RVLMS) will be available during an ELAP event. If such a system will not be available, please provide clarification as to how reactor operators will determine when to provide RCS makeup and provide justification for the intended strategy.	The staff noted that RVLIS is not available after the initial battery load shed is complete. It will be repowered at approximately 20 hours when the FLEX DGs are set up and two of the three unit batteries are repowered. Once the RCS shrinks out of the pressurizer, there will be no indication of RCS level available to plant operators. The staff requests the licensee make available for audit a discussion of how RCS level indication will be available to plant operators during an ELAP.
SE #10	Identify whether the FLEX strategy involves entry into the containment building. If containment entry is planned, please provide justification that it can be carried out in a safe and effective manner under ELAP conditions.	The staff requests that the licensee make available for audit a justification that a containment entry can be carried out in a safe and effective manner under ELAP conditions.

Audit Item Reference	Item Description	Licensee Input Needed
SE #11	The licensee needs to confirm that the temperature and pressure within containment, other areas within the plant (i.e., electrical switchgear room), and ADV rooms will not exceed the qualification of electrical equipment that is being relied upon as part of the FLEX strategy. The licensee needs to ensure that the qualification of the required electrical equipment remains bounding during the entire duration of the event (i.e., indefinitely).	The staff noted that the licensee's calculation implies that doors should be open at t = 1 hour into the event (same time as ELAP is declared). The calculation also assumes that loads are shed from the inverters at t=1 hour. The staff requests that the licensee make available for audit documentation that describes the design qualification of the equipment and the expected room temperatures for the following areas: containment, switchgear rooms, battery charger/inverter rooms, battery rooms, and control room. The documentation should also clarify the sequence of events (e.g. time to open doors as necessary) and confirm that the assumptions of the analyses are correct.
SE #17	500kV Line Interference	The staff noted that the licensee's ability to deploy FLEX equipment could be impacted if 500kV power lines fall across the deployment paths following a beyond-design-basis external event. The staff requests that the licensee make available for audit a discussion of the plans for addressing downed power lines and justification that 500kV line interference will not impact the ability of the licensee to successfully implement its FLEX strategies.

If you have any questions, please contact me at 301-415-1924 or by e-mail at Tony.Brown@nrc.gov.

Sincerely,

/RA/

Tony Brown, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos.: 50-275 and 50-323

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