



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

January 13, 2016

Mr. C. R. Pierce  
Regulatory Affairs Director  
Southern Nuclear Operating Co., Inc.  
P.O. Box 1295 / BIN B038  
Birmingham, AL 35201-1295

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT, UNITS 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. MF0712,  
MF0713, MF0721, AND MF0722)

Dear Mr. Pierce:

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. ML13059A385), Southern Nuclear Operating Company, Inc. (SNC, the licensee) submitted its OIP for the Edwin I. Hatch Nuclear Plant, Units 1 and 2 (Hatch), in response to Order EA-12-049. By letters dated August 27, 2013, February 26, 2014, August 26, 2014, February 26, 2015, and August 27, 2015 (ADAMS Accession Nos. ML13240A238, ML14057A776, ML14239A650, ML15057A315, and ML15239B301, respectively), SNC 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 Hatch interim staff evaluation (ISE) (ADAMS Accession No. ML13364A202) on February 27, 2014, and continues with in-office and onsite portions of this audit.

By letter dated February 27, 2013 (ADAMS Accession No. ML13059A389), the licensee submitted its OIP for Hatch in response to Order EA-12-051. By letter dated August 1, 2013 (ADAMS Accession No. ML13203A118), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated August 27, 2013, August 29, 2013, February 26, 2014, August 26, 2014, February 26, 2015, and August 27, 2015 (ADAMS Accession Nos. ML13240A236, ML13242A293, ML14057A778, ML14239A298, ML15057A273, and ML15239B262, respectively), the licensee submitted its RAI responses and six-month updates to the OIP. The NRC staff's review of these submittals led to the issuance of the Hatch ISE and RAI dated October 28, 2013 (ADAMS Accession No. ML13294A529). 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 audits allow 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 staff potential concerns.

In support of the ongoing audit of the licensee's OIPs, as supplemented, the NRC staff conducted an onsite audit at Hatch from October 26 - 29, 2015, per the audit plan dated September 29, 2015 (ADAMS Accession No. ML15266A345). 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, staging and deployment of offsite equipment, and physical sizing and placement of SFPI equipment.

The enclosed audit report provides a summary of the activities for the onsite audit portion. Additionally, this report contains attachments listing the attendees and documents reviewed by the staff while onsite.

C. Pierce

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If you have any questions, please contact me at 301-415-5888 or by e-mail at Jason.Paige@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'JP', followed by a horizontal line extending to the right.

FOR

Jason C. Paige, Project Manager  
Orders Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

Enclosure:  
Audit report

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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  
SOUTHERN NUCLEAR OPERATING COMPANY  
EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-321 AND 50-366

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). 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. ML13059A385), Southern Nuclear Operating Company, Inc. (SNC, the licensee) submitted its OIP for the Edwin I. Hatch Nuclear Plant, Units 1 and 2 (Hatch), in response to Order EA-12-049. By letters dated August 27, 2013, February 26, 2014, August 26, 2014, February 26, 2015, and August 27, 2015 (ADAMS Accession Nos. ML13240A238, ML14057A776, ML14239A650, ML15057A315, and ML15239B301, respectively), SNC 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 Hatch interim staff evaluation (ISE) (ADAMS Accession No. ML13364A202) on February 27, 2014, and continues with in-office and onsite portions of this audit.

Enclosure

By letter dated February 27, 2013 (ADAMS Accession No. ML13059A389), the licensee submitted its OIP for Hatch in response to Order EA-12-051. By letter dated August 1, 2013 (ADAMS Accession No. ML13203A118), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated August 27, 2013, August 29, 2013, February 26, 2014, August 26, 2014, February 26, 2015, and August 27, 2015 (ADAMS Accession Nos. ML13240A236, ML13242A293, ML14057A778, ML14239A298, ML15057A273, and ML15239B262, respectively), the licensee submitted its RAI responses and six-month updates to the OIP. The NRC staff's review of these submittals led to the issuance of the Hatch ISE and RAI dated October 28, 2013 (ADAMS Accession No. ML13294A529). 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 audits allow 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 staff potential concerns.

In support of the ongoing audit of the licensee's OIPs, as supplemented, the NRC staff conducted an onsite audit at Hatch from October 26 - 29, 2015, per the audit plan dated September 29, 2015 (ADAMS Accession No. ML15266A345). 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, staging and deployment of offsite equipment, and physical sizing and placement of 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 regarding order compliance using the Nuclear Energy Institute (NEI) 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) as providing one acceptable means of meeting the order requirements. For Order EA-12-051, the staff will make a safety determination regarding order compliance using the NEI 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 or other method deviating from the guidance, additional staff review will be required to evaluate if the alternative strategy complies with the applicable order.

### AUDIT ACTIVITIES

The onsite audit was conducted at the Hatch facility from October 26, 2015, through October 29, 2015. The NRC audit team staff was as follows:

<b>Title</b>	<b>Team Member</b>
Team Lead / Project Manager	Jason Paige
Technical Support	Garry Armstrong
Technical Support	Matthew McConnell
Technical Support	Joshua Miller
Technical Support	Duc Nguyen
Technical Support	Bruce Heida

The NRC staff executed the onsite portion of the audit per the three part approach discussed in the September 29, 2015, plan, to include conducting a tabletop discussion of the site's integrated mitigating strategies 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 (October 26, 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 titled "Hatch FLEX Presentation." The licensee provided an overview of its strategy to maintain core cooling, containment, and SFP cooling in the event of a beyond-design-basis external event (BDBEE), and the plant modifications being done in order to implement the strategies. Also presented was the design and location of the FLEX equipment storage facility, the FLEX equipment that would be stored there, the interface with the National SAFER Response Centers (NSRCs), and the spent fuel pool level indication modification.

#### 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.

### 3.1 Reactor Systems Technical Discussions and Walk-Downs

The NRC staff reviewed the licensee's modeling of an extended loss of all alternating current (ac) power (ELAP) for Hatch and its ability to mitigate the event, including the computer code Modular Accident Analysis Program (MAAP) used and input parameters assumed to generate the results of the analysis. The licensee noted that the MAAP analysis was carried out in accordance with EPRI 3002001785, "Use of Modular Accident Analysis Program (MAAP) in Support of Post-Fukushima Applications," dated June 2013. In addition, the licensee indicated that EPRI later released the BWR [boiling water reactor] roadmap EPRI 3002002749, "Technical Basis for Establishing Success Timelines in Extended Loss of AC Power Scenarios in Boiling Water Reactors Using MAAP4." The licensee followed the BWR template for Hatch using site specific information. The licensee's analysis confirmed that the collapsed vessel level would not fall below the top of active fuel, and confirmed that the cooldown rate for the primary system would remain within the technical specification limits.

### 3.2 Electrical Technical Discussions and Walk-Downs

The NRC staff reviewed Hatch's load shedding procedures, FLEX diesel generator (DG) sizing calculations, manufacturer's specifications, and FLEX Support Guidelines (FSGs) to confirm that they are of sufficient capacity to supply the expected loads. The licensee calculated that the direct current system can provide power to the required BDBEE loads for at least 13 hours given that load shedding is completed within 75 minutes of an ELAP being declared. The licensee plans to connect the FLEX DGs within 10 hrs. The licensee indicated that Hatch's Phase 2 electrical strategy is to connect the FLEX DGs directly to the 600 V busses. The alternate strategy is to connect directly to the battery charger disconnects using cables. For Phase 3, the licensee can connect the NSRC DGs to the 4160 V busses 1E and 2E. The alternate strategy is to connect the DGs to the 4160 V busses 1G and 2G. The licensee noted that the Phase 2 DGs have been checked for phase rotation in comparison to plant typical rotation. In addition, color coding of the extension cables has been used to ensure that proper phase rotation will be achieved when cables are connected from the pigtailed supplied on the generator to the connections at the breaker into the plant electrical supply. Lastly, the licensee generated a corrective action to enhance or verify that any and all procedures developed for connecting a DG received from the NSRCs will be checked for proper phase rotation prior to being placed in service to supply plant electrical loads during an ELAP event.

### 3.3 SFPI Technical Discussions and Walk-Downs

The NRC staff walked down the SFP area, SFPI locations, and related equipment mounting areas. No concerns were identified during the walk-downs. The 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 staff reviewed design documents of the FLEX equipment storage location to verify that adequate capability would exist to mitigate a BDBEE. In addition, the staff walked down the storage location of the FLEX equipment. The licensee indicated that the storage location for the FLEX portable equipment will be the new FLEX dome, which is designed to protect the equipment from all external hazards as described in NEI 12-06. Originally, the licensee's strategy included two FLEX storage locations, therefore, the licensee stated that the evaluation for axis of separation for multiple locations is no longer needed with the new FLEX dome in place, which can protect from tornado missiles and design basis high wind events.
- b. The staff reviewed the FLEX connection points to verify that at least one connection point is accessible through a seismically robust structure. The water source (i.e., Altamaha River) for the core cooling and SFP cooling strategies is supplied by the FLEX pumps to the seismically qualified residual heat removal service water (RHRSW) piping via FLEX connections within the intake structure valve pit. The existing missile shield grating protects these connections and the associated piping. A new permanent platform is provided to allow plant personnel to access the new FLEX inlet valves in the intake structure valve pit. In addition, a new ladder is installed to allow plant personnel access to the new FLEX connections. The new platform and ladder are installed in a seismic Category I structure (Intake Structure), as well as in the vicinity of existing safety-related piping and valves. Permanent conduits are installed and routed from the 600 V bus inside the control building to a seismically mounted FLEX connection box (one per unit) in the west cableway. Two seismically robust, wind-rated, missile-protected penetrations (one per division) have been installed to provide protection to the new connection box located inside the west cableway, near the penetration.
- c. The staff walked down the deployment routes and the debris removal equipment. The licensee indicated that the primary and alternate routes for transporting FLEX equipment have been established. Debris removal will be accomplished using a front loader. The licensee evaluated the potential obstacles to ensure that the front loader is capable of removing all potential debris. Four hours has been allocated for debris removal as documented in the Hatch Phase 2 staffing study. The front loader will be stored in the FLEX Dome along with a freightliner truck and an additional truck to haul vehicles.
- d. The staff reviewed the hydraulic analysis for the FLEX pumps and hoses used for all areas for makeup after an ELAP. The licensee provided the calculations for the primary and alternative connections and hydraulic analyses for the hose runs for reactor pressure vessel (RPV) and SFP makeup. The licensee intends to use the FLEX pump for condensate tank makeup after the 7.5 hour timeframe for makeup to the RPV via RCIC. Alternatively, the FLEX pump can be staged near the Intake Structure in order to take suction from the Altamaha River for injection into the RPV via RHRSW piping to RHR.. In the hydraulic analysis, the licensee concluded that the FLEX pump is capable of satisfying the minimum required flow to both units for makeup to the RPV and SFP during an ELAP event. The licensee also provided the hose lengths needed to maintain the minimum flow requirement, since the strategy accounts for both makeup functions to occur together when the RHRSW is the makeup source.

- e. The staff reviewed the robustness of the condensate storage tanks (CSTs). The licensee stated that the CSTs are credited for the use of the reactor core isolation cooling (RCIC) and high pressure coolant injection (HPCI) suction for injection due to the tanks being protected from tornado missiles and seismic hazards. The enclosure walls surrounding the tanks provide protection from tornado missiles and are designed as seismic Category I structures. The CST is designed to prevent the usage of a credited amount of water in the tank by systems other than RCIC and HPCI. Instrumentation and controls, system piping and valves associated with the RCIC and HPCI suction swap-over function are safety grade and seismic, and are qualified for all potential ELAP events. The suction valves will be aligned according to existing procedures, either from the main control room or a remote control panel. The licensee noted that although other water sources are available for CST makeup, the Altamaha River would be the primary source of makeup utilizing the FLEX pumps once the CST inventory is depleted after 10 hours.
- f. The licensee plans to replenish water supplies by using portable FLEX pumps taking suction from the Ultimate Heat Sink (Altamaha River). The staff verified that the FLEX pumps and hoses will remain unhindered and clear of debris accumulation due to the pumps taking suction from an untreated water source. The licensee described the FLEX pump as being designed with two submersible pumps, in which both submersible pumps operate during the operation of the main pump. Each submersible pump is encased in a mesh screen cage, thereby limiting the size of debris that can be sucked into the pump. Each submersible pump supplies enough flow for both units' FLEX needs, therefore, if one submersible pump becomes completely clogged, the other is sufficient to supply the main pump with the necessary flow. These pumps are required to be in service at 10 hours after the initiation of the ELAP. Supplemental personnel begin arriving at 6 hours after the start of the ELAP, which allows for adequate manpower to remove a submersible pump from the river and clean the pump casing and return it to the river. Each submersible pump has individual hydraulic lines used to power the pump and each pump has two discharge pipes supplying the main pump. The licensee noted that the design of pumps prevents an issue with one pump from debilitating the other.

#### 4.0 Exit Meeting (October 29, 2015)

The NRC staff audit team conducted an exit meeting with the 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.

### CONCLUSION

The NRC staff completed all three parts of the September 29, 2015, 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, the NRC staff is evaluating the audit items listed below in anticipation of issuance of a combined safety evaluation for both the Mitigation Strategies and Spent Fuel Pool Level Instrumentation orders.

- 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 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

While this report notes the completion of the onsite portion of the audit per the audit plan dated September 29, 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 this audit report provides a progress snapshot of the NRC staff's review of the licensee's OIPs, as supplemented, and as augmented in the audit process, 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.

Lastly, the licensee has identified open items that need to be completed to implement orders EA-12-049 and EA-12-051, and the staff expects that the licensee continue to provide updates on the status of the licensee identified open items in their 6-month updates or on the ePortal.

Attachments:

- 1. NRC and Licensee Staff Onsite Audit Participants
- 2. Onsite Audit Documents Reviewed

## Onsite Audit Participants

### NRC Staff:

Jason Paige	NRR/JLD/JOMB
Garry Armstrong	NRR/JLD/JCBB
Matthew McConnell	NRR/JLD/JERB

Josh Miller	NRR/JLD/JERB
Duc Nguyen	NRR/JLD/JERB
Bruce Heida	NRR/JLD/JCBB

### Hatch Staff:

David R. Vineyard	Site Vice President
Richard A. (Tony) Spring	Plant Manager
Robert J. Anderson	Radiation Protection Manager
Andy Belcher	Nuclear Oversight Manager – Site
Anthony D. Giancatarino	Engineering Director
Greg L. Johnson	Site Regulatory Affairs Manager
Daniel Adam Komm	Operations Director
Keith D. Long	Work Management Director
Jonathan M. Merritt	Site Security Management
Pat Swinson	IT Manager
Al M. Wheeler	Site Project Manager
J. Derwood Tootle	Severe Accident Management Manager
Randy C. Bunt	Corporate Severe Accident Management Manager
John M. Giddens	Corporate Licensing Manager
Matthew R. Euten	Licensing Engineer
Deep Ghosh	Lead Engineer
Brad Osterbuhr	Senior Engineer
John Cole	Senior Engineer
Frank D. Sellers	Security Shift Lieutenant
Blake Bolt	Work Week Manager
Lee S. Williams	Flex PM Writer/Contractor
David H. Giddens	Flex Procedure Writer/ X-SRO/Contractor
Ronnie D. Musgrove	Flex Procedure Writer/X-SRO/Contractor
Rob Brixey	Training Procedure Writer/Contractor
April Perkins	Senior Engineer
Bryan Hess	Bechtel/ Mechanical Design Supervisor
Josef Barrick	Enercon/ Electrical Engineer
Stacey Fredenberg	Enercon/Lead Mechanical Engineer
Norman Good	Sargent &Lundy/ I&C Engineer
Michael Hopman	Bechtel/ Mechanical Design Engineer

## Documents Reviewed

- Calculation A-47402, 600V FLEX Diesel Generator Sizing Calculation, Revision 0
- Calculation A-47404, Phase 2 600V Alternate Power Subsystem Diesel Generator Cable Evaluation, Revision 0
- Calculation A-47407, Phase 2 Switchgear Room and Battery Rooms Ventilation Subsystems Sizing for Portable Diesel Generator and Cables, Revision 0
- Calculation A-47400, Pump Sizing Evaluation for Hatch Units 1 and 2 Core Cooling Phase 2, Revision 0
- Calculation A-47406, Diesel Fuel Transfer and Pump Sizing, Revision 0
- Calculation A-47429, On-site FLEX Equipment Fuel Consumption, Revision 0
- Calculation SMNH-12-032, Containment Analysis of FLEX Strategies, Revision 3
- Calculation SMNH-14-001, FLEX Battery Room Hydrogen Generation, Revision 1
- Calculation SENH-13-001, Station Battery Battery 1A SBO Extended Coping Time Study, Revision 1
- Calculation SENH-13-002, Station Battery Battery 1B SBO Extended Coping Time Study, Revision 1
- Calculation SENH-13-003, Station Battery Battery 2A SBO Extended Coping Time Study, Revision 1
- Calculation SENH-13-004, Station Battery Battery 2B SBO Extended Coping Time Study, Revision 1
- Calculation 31EO-TSG-003-1, Extended Loss of AC Power (ELAP), Revision 1
- Calculation 31EO-TSG-003-2, Extended Loss of AC Power (ELAP), Revision 1
- Procedure NMP-OS-019-261, Hatch Unit 1 SIG-1, 4160V Alternate Power, Revision 1
- Procedure NMP-OS-019-262, Hatch Unit 1 SIG-2, 600V Alternate Power, Revision 1
- Procedure NMP-OS-019-281, Hatch Unit 2 SIG-1, 4160V Alternate Power, Revision 1
- Procedure NMP-OS-019-222, Hatch Unit 2 SIG-2, 600V Alternate Power, Revision 1
- Document FHC-S-13-001 / X1AR50, Procurement Specification for the FLEX Equipment Storage Building for Edwin I. Hatch Nuclear Plant, Units 1 & 2, Revision 0
- Calculation SCNH-14-050, Qualification of FLEX Tornado Missile Protection for West Cableway Roof Slab Penetrations, Revision 0
- Procedure NMP-OS-019-254, Hatch Unit C Sig-11 Critical Instrumentation, Draft
- Procedure 34AB-Y22-002, Naturally Occurring Phenomena, Revision 2
- Document SNC476653, U1 FLEX Core Cooling, Revision 0
- Document SNC467488, U2 FLEX Core Cooling, Revision 0
- Document SNC476666, U1 FLEX CST Makeup, Revision 0
- Document SNC467489, U2 FLEX CST Makeup, Revision 0
- Vendor Document A-47460, FLEX Portable System – FLEX Pump Vendor Manual, Revision 0
- Vendor Document A-47462, FLEX Portable System – Phase 2 600V Diesel Generator Vendor Manual, Revision 0
- Calculation SMNH-13-002, RCIC Room Heat-Up Room Temperature During An Extended Loss of A/C Power, Revision 1
- Document A-47429, On-Site FLEX Equipment Fuel Consumption, Revision 0
- Calculation SNC467474 E003, "Edwin I. Hatch Nuclear Plant Unit No. 2 Single Line Diagram 600V Bus 2C & 2D," Proposed Revision 2

C. Pierce

- 3 -

If you have any questions, please contact me at 301-415-5888 or by e-mail at Jason.Paige@nrc.gov.

Sincerely,

***/RA Michael Brown Acting for/***

Jason C. Paige, Project Manager  
Orders Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

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**\*via email**

OFFICE	NRR/JLD/JOMB/PM	NRR/JLD/LA	NRR/JLD/JCBB/BC(A)	NRR/JLD/JERB/BC
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DATE	12/15/15	12/15/15	12/17/15	1/5/16
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NAME	MHalter*	JPaige (MBrown for)		
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