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

September 19, 2017

Mr. James J. Hutto
Regulatory Affairs Director
Southern Nuclear Operating Co., Inc.
P.O. Box 1295, Bin 038
Birmingham, AL 35201-1295

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2 - REPORT FOR THE AUDIT OF LICENSEE RESPONSES TO INTERIM STAFF EVALUATION OPEN ITEMS RELATED TO NRC ORDER EA-13-109 TO MODIFY LICENSES WITH REGARD TO RELIABLE HARDENED CONTAINMENT VENTS CAPABLE OF OPERATION UNDER SEVERE ACCIDENT CONDITIONS (CAC NOS. MF4479 AND MF4480)

Dear Mr. Hutto:

On June 6, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13143A334), the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-13-109, "Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Condition," to all Boiling Water Reactor (BWR) licenses with Mark I and Mark II primary containments. The order requirements are provided in Attachment 2 to the order and are divided into two parts to allow for a phased approach to implementation. The order required licensees to submit for review overall integrated plans (OIPs) that describe how compliance with the requirements for both phases of Order EA-13-109 will be achieved.

By letter dated June 27, 2014 (ADAMS Accession No. ML14178B464), Southern Nuclear Operating Company, Inc. (SNC, the licensee) submitted its Phase 1 OIP for Edwin I. Hatch Nuclear Plant, Units 1 and 2 (Hatch). By letters dated December 30, 2014, June 26, 2015, December 23, 2015 (which included the combined Phase 1 and Phase 2 OIP), June 13, 2016, December 14, 2016, and June 12, 2017 (ADAMS Accession Nos. ML15049A513, ML15177A353, ML15357A212, ML16165A184, ML16349A160 and ML17163A224, respectively), the licensee submitted its 6-month updates to the OIP. The staff reviewed the information provided by the licensee and issued interim staff evaluations (ISEs) for Phase 1 and Phase 2 of Order EA-13-109 for Hatch by letters dated March 25, 2015 (ADAMS Accession No. ML14335A137), and August 2, 2016 (ADAMS Accession No. ML16099A260), respectively. When developing the ISEs, the staff identified open items where the staff needed additional information to determine whether the licensee's plans would adequately meet the requirements of Order EA-13-109.

The NRC staff is using the audit process described in the letters dated May 27, 2014 (ADAMS Accession No. ML14126A545), and August 10, 2017 (ADAMS Accession No. ML17220A328), to gain a better understanding of licensee activities as they come into compliance with the order. As part of the audit process, the staff reviewed the licensee's closeout of the ISE open items. The NRC staff conducted teleconferences with the licensee on March 8, 2017, and August 15, 2017. The enclosed audit report provides a summary of that aspect of the audit.

If you have any questions, please contact me at 301-415-1025 or by e-mail at Rajender.Auluck@nrc.gov.

Sincerely,

Rajender Auluck, Senior Project Manager
Containment and Balance of Plant Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos.: 50-321 and 50-366

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

AUDIT OF LICENSEE RESPONSES TO INTERIM STAFF EVALUATION OPEN ITEMS

RELATED TO ORDER EA-13-109 MODIFYING LICENSES

WITH REGARD TO RELIABLE HARDENED CONTAINMENT VENTS CAPABLE OF

OPERATION UNDER SEVERE ACCIDENT CONDITIONS

SOUTHERN NUCLEAR COMPANY, INC.

EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-321 AND 50-326

BACKGROUND

On June 6, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13143A334), the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-13-109, "Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Condition," to all Boiling Water Reactor (BWR) licenses with Mark I and Mark II primary containments. The order requirements are divided into two parts to allow for a phased approach to implementation.

Phase 1 of Order EA-13-109 requires license holders of BWRs with Mark I and Mark II primary containments to design and install a Hardened Containment Vent System (HCVS), using a vent path from the containment wetwell to remove decay heat, vent the containment atmosphere (including steam, hydrogen, carbon monoxide, non-condensable gases, aerosols, and fission products), and control containment pressure within acceptable limits. The HCVS shall be designed for those accident conditions (before and after core damage) for which containment venting is relied upon to reduce the probability of containment failure, including accident sequences that result in the loss of active containment heat removal capability or extended loss of alternating current power. The order required all applicable licensees, by June 30, 2014, to submit to the Commission for review an overall integrated plan (OIP) that describes how compliance with the Phase 1 requirements described in Order EA-13-109 Attachment 2 will be achieved.

Phase 2 of Order EA-13-109 requires license holders of BWRs with Mark I and Mark II primary containments to design and install a system that provides venting capability from the containment drywell under severe accident conditions, or, alternatively, to develop and implement a reliable containment venting strategy that makes it unlikely that a licensee would need to vent from the containment drywell during severe accident conditions. The order required all applicable licensees, by December 31, 2015, to submit to the Commission for review an OIP

that describes how compliance with the Phase 2 requirements described in Order EA-13-109 Attachment 2 will be achieved.

By letter dated June 27, 2014 (ADAMS Accession No. ML14178B464), Southern Nuclear Operating Company, Inc. (SNC, the licensee) submitted its Phase 1 OIP for Edwin I. Hatch Nuclear Plant, Units 1 and 2 (Hatch, HNP), in response to Order EA-13-109. By letters dated December 30, 2014, June 26, 2015, December 23, 2015 (which included the combined Phase 1 and Phase 2 OIP), June 13, 2016, December 14, 2016 and June 12, 2017 (ADAMS Accession Nos. ML15049A513, ML15177A353, ML15357A212, ML16165A184, ML16349A160 and ML17163A224, respectively), the licensee submitted its 6-month updates to the OIP, as required by the order.

The staff reviewed the information provided by the licensee and issued interim staff evaluations (ISEs) for Phase 1 and Phase 2 for Hatch by letters dated March 25, 2015 (ADAMS Accession No. ML14335A137), and August 2, 2016 (ADAMS Accession No. ML16099A260), respectively. When developing the ISEs, the staff identified open items where the staff needed additional information to determine whether the licensee's plans would adequately meet the requirements of Order EA-13-109.

The NRC staff is using the audit process in accordance with the letters dated May 27, 2014, (ADAMS Accession No. ML14126A545), and August 10, 2017 (ADAMS Accession No. ML17220A328), to gain a better understanding of licensee activities as they come into compliance with the order. The staff reviews submitted information, licensee documents (via ePortals), and preliminary Overall Program Documents (OPDs)/OIPs, while identifying areas where additional information is needed. As part of this process, the staff reviewed the licensee closeout of the ISE open items.

AUDIT SUMMARY

As part of the audit, the NRC staff conducted teleconferences with the licensee on March 8, 2017, and August 15, 2017. The purpose of the audit teleconferences was to continue the audit review and provide the NRC staff the opportunity to engage with the licensee regarding the closure of open items from the ISEs. As part of the preparation for these audit calls, the staff reviewed the information and/or references noted in the OIP updates to ensure that closure of ISE open items and the HCVS design are consistent with the guidance provided in NEI 13-02, Rev. 1 and related documents (e.g. white papers (WPs) and frequently asked questions (FAQs)) that were developed and reviewed as part of overall guidance development. The NRC staff audit members are listed in Table 1. Table 2 is a list of documents reviewed by the staff. Table 3 provides the status of the ISE open item closeout for Hatch. The open items are taken from the Phase 1 and Phase 2 ISEs that were issued on March 25, 2015 (ADAMS Accession No. ML14335A137), and August 2, 2016 (ADAMS Accession No. ML16099A260), respectively.

FOLLOW UP ACTIVITY

The staff continues to audit the licensee's information as it becomes available. The staff will issue further audit reports for Hatch, as appropriate.

Following the licensee's declarations of order compliance, the licensee will provide a final integrated plan (FIP) that describes how the order requirements are met. The NRC staff will evaluate the FIPs, the resulting site-specific OPDs, as appropriate, and other licensee documents, prior to making a safety determination regarding order compliance.

CONCLUSION

This audit report documents the staff's understanding of the licensee's closeout of the ISE open items, based on the documents discussed above. The staff notes that several of these documents are still preliminary, and all documents are subject to change in accordance with the licensee's design process. In summary, the staff has no further questions on how the licensee has addressed the ISE open items, based on the preliminary information. The status of the NRC staff 's review of these open items may change if the licensee changes its plans as part of final implementation. Changes in the NRC staff review will be communicated in the ongoing audit process.

Attachments:
1. Table 1 – NRC Staff Audit and Teleconference Participants
2. Table 2 – Audit Documents Reviewed
3. Table 3 – ISE Open Item Status Table

Table 1 - NRC Staff Audit and Teleconference Participants

Title	Team Member	Organization
Team Lead/Project Manager	Rajender Auluck	NRR/JLD
Project Manager Support/Technical Support – Containment / Ventilation	Brian Lee	NRR/JLD
Technical Support – Containment / Ventilation	Bruce Heida	NRR/JLD
Technical Support – Electrical	Kerby Scales	NRR/JLD
Technical Support – Balance of Plant	Kevin Roche	NRR/JLD
Technical Support – I&C	Steve Wyman	NRR/JLD
Technical Support – Dose	John Parillo	NRR/DRA

Table 2 – Audit Documents Reviewed

Calculation SMNH-13-013, "Sizing of Accumlator Tanks for Reliable Hardened Containment Vent System"
Calculation SMNH-13-019, "Sizing of Nitrogen Bottles for Reliable Hardened Containment Venting System"
FSAR, Section 8.4, "Stanby AC Power Supply"
NEDC-32749P, "Entended Power Uprate Safety Analysis Report for Edwin I. Hatch Units 1 and 2"
GE MDE-03-0186, "Safe Shutdown Appendix R Analysis for Edwin I. Hatch Nuclear Power Station Units 1 and 2"
Calculation SENH-13-005, "Load Data for Sizing the Inverters for FLEX and HCVS"
Calculation SENH-16-003, "Battery Sizing, Voltage Drop, Cable Sizing, and Short Circuit Evaluation for 250V Dedicated Battery System"
Calculation A-47402, "FLEX DG Sizing"
Calculation DOEJ-HDSNC598056-M001, "Identification of Boundary and Control Valves Required to Prevent Hydrogen Migration for the Unit 2 Hardened Containment Vent System (HCVS)"
Calculation DOEJ-HDSNC598056-M003, "Hardened Containment Vent System (HCVS) Control of Flammable Gases"
Calculation SMNH-13-023, "Hydrogen Crossflow in Mixing Chamber"
Procedure NMP-OS-019-013, "Beyond Design Basis Equipment Unavailablilty Tracking"
Procedure OS-019-013-GLO2, "Hatch BDB Equipment Unavailablitly Tracking Guideline"
BWROG-TP-008, "Severe Accident Water Addition Timing"
BWROG-TP-011, "Severe Accident Water Management Supporting Evaluations"

Hatch Nuclear Station
Vent Order Interim Staff Evaluation Open Items:

Table 3 - ISE Open Item Status Table

ISE Open Item Number **Requested Action**	**Licensee Response – Information provided in 6-month updates and on the ePortal**	**NRC Staff Close-out notes**	**SE status** **Closed; Pending; Open (need info from licensee)**
Phase 1 ISE OI 1 Make available for NRC staff audit the location of the ROS's.	Included on page 16 of 66 in the Phase 1 and Phase 2 OIP: "The final location of the ROS [Remote Operating Station] is the 147' elevation of the Control Building, one floor below the elevation of the MCR [main control room]."	The NRC staff reviewed the information provided in the 6-month updates. The ROS is in a location that is readily accessible and appears to support operation of the HCVS. No follow-up questions.	Closed [Staff evaluation to be included in safety evaluation (SE) Section 3.1.2.4]
Phase 1 ISE OI 2 Make available for NRC staff audit the location of the dedicated HCVS battery transfer switch.	Included on page 13 of 66 in the Phase 1 and Phase 2 OIP: "Access to the transfer switch is located on the ground elevation of the Control Building."	The NRC staff reviewed the information provided in the 6-month updates. The battery transfer switch is located on the ground elevation of the Control Building and is readily accessible and appears to support operation of the HCVS. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.2.6]
Phase 1 ISE OI 3 Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location.	Included on page 13 of 66 in the Phase 1 and Phase 2 OIP: "Nitrogen bottles will be located in the Control Building."	The NRC staff reviewed the information provided in the six-month updates and on the ePortal. First 24-hour operation is from installed air accumulator tanks. After 24-hours pneumatic motive	Closed [Staff evaluation to be included in SE Section 3.1.2.6]

	Calculations for the accumulator tank and nitrogen bottle sizing are included in SMNH-13-013 and SMNH-13-019.	force can be provided by nitrogen tanks. Calculation SMNH-13-013 estimated the compressed gas requirements and sized air accumulators for 8 air-operated valves (AOVs) associated with the HCVS for the first 24 hours. The calculation assumed seven valves open and remain open with air pressure. The 8th valve was assumed to cycle 12 times. System leakage was assumed to be 0.4 scfh based on the worst case solenoid valve air leakage or 9.6 scf over 24 hours. This appears to be sufficient to provide the required number of valve manipulations. Calculation SMNH-13-019 determined the nitrogen bottle requirements to provide motive force back-up for the HCVS AOVs. Calculation uses the results of calculation SMNH-13-013. No follow-up questions.	
Phase 1 ISE OI 4 Make available for NRC staff audit the deployment location of the portable diesel generators.	Two portable diesel generators (PDGs) will be located on the west side of the Control Building for Unit 1. One portable diesel generator will be located on the south side of the Turbine Building for Unit 2 and one DG will be located at the base of Main Stack.	The NRC staff reviewed the information on the deployment location of the PDGs provided in the 6-month updates. The licensee has three portable FLEX DGs (600 Vac, 545 kW). Two FLEX DGs that will be staged on the west side of the Control Building for Unit 1. One FLEX DG will be staged on the	Closed [Staff evaluation to be included in SE Section 3.1.2.6]

		south side of the Turbine Building for Unit 2. The licensee also has one portable DG (600 Vac, 85 kW) that will be staged at the base of main stack to repower the stack mixing chamber fans and some of the interconnecting valves. These locations for the deployment of the PDGs are in mild temperature and low dose areas, which support plant personnel accessibility for the operation of the HCVS. No follow-up questions.	
Phase 1 ISE OI 5 Make available for NRC staff audit an evaluation of temperature and radiological conditions to ensure that operating personnel can safely access and operate controls and support equipment.	Included on page 16 of 66 in the Phase 1 and Phase 2 OIP… "The HCVS design allows initiating and then operating and monitoring the HCVS from the Main Control Room (MCR) or the Remote Operating Station (ROS). The MCR location is protected from adverse natural phenomena and is the normal control point for HCVS operation and Plant Emergency Response actions." The final location of the ROS is the 147' elevation of the Control Building, one floor below the elevation of the MCR. Additional support equipment is located on the 130' elevation (ground elevation) of the Control Building (battery throw-over switch and nitrogen bottle rack). The licensee references site-specific assumption HNP-5 from the OIP, which described the Control Building having substantial structural walls and features	The NRC staff reviewed the information provided in the 6-month updates. The licensee stated that the ROS is located at grade level and is open to the outdoors. The licensee indicated they had procedures and equipment to permit operator use of the ROS during cold weather. Temperatures do not exceed 110 degrees farenheit (F°), which is acceptable for long-term personnel habitability. Radiological conditions result in low operator dose. No follow-up questions.	Closed [Staff evaluation to be included in SE Sections 3.1.1.2 and 3.1.1.3]

	independent of the Reactor Building. Also, the licensee references HCVS-FAQ-08, HCVS-FAQ-04, and GDC19.		
Phase 1 ISE OI 6 Make available for NRC staff audit analyses demonstrating that HCVS has the capacity to vent the steam/energy equivalent of one percent of licensed/rated thermal power (unless a lower value is justified), and that the suppression pool and the HCVS together are able to absorb and reject decay heat, such that following a reactor shutdown from full power containment pressure is restored and then maintained below the primary containment design pressure and the primary containment pressure limit.	The suppression pool is capable of accepting operation of the reactor core isolation cooling system and safety relief valvess without any suppression pool cooling during the station blackout (SBO) cooling duration. Although not required, suppression pool cooling capability can be initiated within 1 hour when the alternating current (ac) source becomes available by meeting the diesel loading margins. (Reference Section 8.4 of the Final Safety Analysis report) The current containment and Reactor Pressure Vessel thermal hydraulic analysis for SBO took credit for analysis performed for 10 CFR 50[1], Appendix R (fire protection). As part of the extended power uprate, the SBO scenario was reanalyzed assuming that suppression pool cooling was initiated in 1 hour when the alternate ac is assumed available. The peak pool temperature is 167 °F. Even if SPC is not initiated until 4 hours, the resulting peak pool temperature of 194 °F is acceptable for containment and ECCS pump operation. (Reference NEDC- 32749P, "Extended Power Uprate Safety Analysis Report for Edwin I. Hatch Units 1 and 2", July 1997 and GE MDE-03-0186 "Safe Shutdown Appendix R Analysis for Edwin I. Hatch Nuclear Power Station Units 1 and 2")	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. In response to staff question regarding HCVS capacity, the licensee indicated that the evaluation in FLEX NEDC 33771P, "GEH Evaluation of FLEX Implementation Guidelines," is a FLEX OIP reference. This document was reviewed during the FLEX audits. This document determined that a 12-inch vent provided adequate venting. Per OIP page 15 "The size of the wetwell portion of the HCVS is ≥18 inches in diameter which provides adequate capacity to meet or exceed the Order criteria." The stack mixing chamber and stack pipe is ≥18 inches, thus based on the NEDC assessment of a 12-inch vent, the HNP vent (≥18 inches) is adequate No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.2.1]

[1] Title 10 of the *Code of Federal Regulations*, Part 50

	GE MDE-03-0186 on ePortal. Addresses Unit 1 and Unit 2.		
Phase 1 ISE OI 7 Make available for NRC staff audit the descriptions of local conditions (temperature, radiation and humidity) anticipated during extended loss of ac power (ELAP) and severe accident for the components (valves, instrumentation, sensors, transmitters, indicators, electronics, control devices, and etc.) required for HCVS venting including confirmation that the components are capable of performing their functions during ELAP and severe accident conditions.	The original design for the Generic Letter (GL) 89-16 vent line was 345 °F, so engineering judgement was used for qualification to 350 °F based on downstream cooling of vent piping. Specification for new equipment and instrumentation included environmental conditions expected from licensee for post-accident design values. New equipment procured to comply with the Order was purchased through new specifications the ROS, batteries, and battery charger. Those specifications contain all the required operating parameters for the equipment for normal operation, design-basis accidents, as well as beyond-design-basis external event (BDBEE) requirements. The radiation monitor is an "off the shelf" monitor without its own specification. It was procured with a datasheet specific to Hatch for radiation and temperature requirements. Each item procured with a specification requires test reports be provided that the test specimens performed in compliance with the specification requirements. The radiation monitor also has multiple test reports which document compliance with required operating conditions/parameter. Other commodities such as conduit, wiring, piping, etc. were procured consistent with the design requirements of the systems and locations they were	The NRC staff reviewed the information provided in the 6-month updates. The licensee has described an acceptable approach for qualifying the components (valves, instrumentation, sensors, transmitters, indicators, electronics, control devices, and etc.) needed for the operation of the HCVS for ELAP and severe accident conditions. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.1.4]

	being installed. For example, items installed in the control building - non-harsh environment with temperature considerations consistent with current SBO temperatures and radiation. These other items like pipe, cable, valves, transmitters were procured AQ as necessary to meet the BDBEE requirements for the location where they are installed. The majority of equipment installed is located outside the reactor building, and therefore does not require additional qualification beyond normal operating/accident conditions of the plant.		
Phase 1 ISE OI 8 Make available for NRC staff audit the final sizing evaluation for HCVS batteries/battery charger including incorporation into FLEX DG loading calculation.	The licensee provided: Calculation SENH-13-003. Modification Calculation SENH-16-003. FLEX DG Sizing Calculation A-47402.	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. The NRC staff reviewed licensee calculation SENH-16-003, "Battery Sizing, Voltage Drop, Cable Sizing, and Short Circuit Evaluation for 250V Dedicated Battery System (Unit 2)," Version 2, which verified the capability of the existing Class 1E batteries supplemented with the new Division 1 and 2 batteries to extend the battery capacity to 24 hours of operation for HCVS functions. The NRC staff also reviewed the separation and isolation of the new HCVS batteries from the Class 1E batteries. The NRC staff reviewed calculation A-47402, "FLEX Portable System Phase 2 600V FLEX Diesel Generation Sizing Calculation," Version 1 and the separation and isolation of the FLEX DGs from the EDGs. Based	Closed [Staff evaluation to be included in SE Section 3.1.2.6]

		on the NRC staff's review, the required loads for the Phase 2 600 Vac, 545 kW FLEX DG total approximately 387 kW for both units' Division I loads and 383 kW for both units' Division II loads. This also takes into account the HCVS loads. No follow-up questions.	
Phase 1 ISE OI 9 Make available for NRC staff audit documentation that demonstrates adequate communication between the remote HCVS operation locations and HCVS decision makers during ELAP and severe accident conditions.	Notifications can be made with either the gaitronics system or via runners to the MCR or ROS to allow operation of the HCVS once the portable DGs are operating.	The NRC staff reviewed the information provided in the six-month updates and on the ePortal. The communication methods are the same as accepted in Order EA-12-049. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.1.1]
Phase 1 ISE OI 10 Provide a description of the final design of the HCVS to address hydrogen detonation and deflagration.	Included on page 17 of 66 in the Phase 1 and 2 OIP… "Plant Hatch plans to use option 1 of the endorsed white paper HCVS-WP-03 and power up the mixing chamber fan in the base of the meteorological stack." In addition, Hatch plans to close HCVS boundary valves and main stack interconnecting valves and purge the main stack mixing chamber. Hatch will utilize a portable diesel generator deployed to the stack to repower the stack mixing chamber fans and power operators on some of the interconnecting valves.	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. DOEJ-HDSNC598056-M003 (Documentation of Engineering Judgment) addresses HCVS Control of Flammable Gases. The licensee's design is consistent with option 1 of the endorsed white paper HCVS-WP-03. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.2.11]

	See Calculations DOEJ-HDSNC598056-M003 and SMNH-13-023. Both on ePortal.		
Phase 1 ISE OI 11 Provide a description of the strategies for hydrogen control that minimizes the potential for hydrogen gas migration and ingress into the reactor building or other buildings.	Refer to response to ISE open item #10 and leakage testing of boundary valves found in calculations in DOEJ M003 and SMNH-13-023.	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. DOEJ-HDSNC598056-M003 (Documentation of Engineering Judgment) addresses HCVS Control of Flammable Gases, which appears to maintain hydrogen below flammability limits. SMNH-13-023 addresses H2 infiltration into Main Stack gas mixing chamber. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.2.12]
Phase 1 ISE OI 12 Make available descriptions of details that minimize unintended cross flow of vented fluids within a unit and between units.	The HCVS interface to other systems is described in Section 2, pages 10 and 17 of 66 in the Phase 1 and 2 OIP. The boundary valves will be tested in accordance with the guidance of NEI 13-02, FAQ-HCVS-05 to ensure unintended system cross flow is minimized. Refer to the response to ISE item #10 and leakage testing of 10 boundary valves per the LLRT program procedure 42SV-TET-001-2. Details are in Calculations DOEJ M003 and SMNH-13- 023. DOEJ-HDSNC598056-M003 and SMNH-13-023. Both on ePortal.	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. Licensee strategy appears to minimize unintended cross flow. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.2.3]
Phase 1 ISE OI 13 Make available for NRC staff audit descriptions of all	Refer to DCP 598056 ILOM for I&C components (I&C and electrical sections)…	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal.	Closed

instrumentation and controls (existing and planned) necessary to implement this order including qualification methods.	"Demonstration that instrumentation is substantially similar to the design of instrumentation previously qualified." Site design standards such as Institute of Electrical and Electronics Engineers (IEEE) 323-1974 or IEEE 324-1975 were used in the specifications.	Instrumentation appears sufficient to monitor and control HCVS operation. Qualification standards are industry-accepted for this type of application. No follow-up questions.	[Staff evaluation to be included in SE Section 3.1.2.8]
Phase 1 ISE OI 14 Make available for NRC staff audit documentation of an evaluation verifying the existing containment isolation valves, relied upon for the HCVS, will open under the maximum expected differential pressure during BDBEE and severe accident wetwell venting.	Existing primary containmet isolation valves (PCIVs) that perform a design-basis function were utilized. Per NEI 13-02 no further evaluation is required. The expected differential is within the scope of containment design for compliance with GL 89-16 since containment pressure is managed below the design pressure. Additionally, Hatch is utilizing existing PCIVs which were designed and procured to meet the containment design pressures.	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.2.1]
Phase 1 ISE OI 15 Make available for NRC staff audit the control document for HCVS out of service time criteria.	Procedures NMP-OS-019-013 and NMP-OS-019-013-GLO2 were provided on the eportal for NRC review.	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 3.1.2.13]
Phase 2 ISE OI 1 Licensee to demonstrate that containment failure as a result of overpressure can be prevented without a drywell vent during severe accident conditions Section 3.3.3	The wetwell vent has been designed and installed to meet NEI 13-02 Rev 1 guidance which will ensure that it is adequately sized to prevent containment overpressure under severe accident conditions. The severe accident water management (SAWM) strategy will ensure that the	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. BWR Owners Group (BWROG)-TP-008 demonstrates adding water to the reactor vessel within 8-hours of the onset of the event will limit the peak containment	Closed [Staff evaluation to be included in SE Sections 4.1 and 4.2]

	wetwell vent remains functional for the period of sustained operation. HNP will follow the guidance (flow rate and timing) for SAWA/SAWM described in BWROG-TP-15-008 and BWROG-TP-15-011. These documents have been posted to the ePortal for NRC staff review. The wetwell vent will be opened prior to exceeding the PCPL value of 62 per square inch gauge. Therefore, containment over pressurization is prevented without the need for a drywell vent.	drywell temperature significantly reducing the possibility of containment failure due to temperature. Drywell pressure can be controlled by venting the suppression chamber through the suppression pool. BWROG-TP-011 demonstrates that starting water addition at a high rate of flow and throttling after approximately 4-hours will not increase the suppression pool level to that which could block the suppression chamber HCVS. As noted under Phase 1, the vent is sized to pass a minimum steam flow equivalent to 1% rated core power. This is sufficient to permit venting to maintain containment below the lower of Primary Containment Pressure Limit (PCPL) or of design pressure. No follow-up questions.	
Phase 2 ISE OI 2 Licensee shall demonstrate how the plant is bounded by the reference plant analysis that shows the SAWM strategy is successful in making it unlikely that a drywell vent is needed Section 3.3.3.1	Using Figure 2.1.C from the combined Phase 1 and 2 OIP, compare the reference plant parameters to the plant specific parameters. Reference Plant: Torus freeboard volume is 525.00 gallons; SAWA flow is 500 GPM at 8 hours followed by 100 GPM from 12 hours to 168 hours HNP: Torus freeboard volume is >805,161 gallons; SAWA flow is 500 GPM at 8 hours followed by 100 GPM from 12 hours to 168 hours The above parameters for HNP demonstrate that the reference plant	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. Staff reviewed the parameters from the reference plant to those of Hatch. Staff concur that it is unlikely the suppression chamber HCVS could become blocked. Therefore, it is unlikely a drywell vent would be required to maintain containment integrity. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 4.2.1.1]

	values are bounding. Therefore, the SAWM strategy implemented at HNP makes it unlikely that a drywall vent is needed to prevent containment overpressure related failure.		
Phase 2 ISE OI 3 Licensee to demonstrate that there is adequate communication between the MCR and the Intake Structure operator at the FLEX manual valve during severe accident conditions. Section 3.3.3.4	HNP utilizes gaitronics paging system or runners to communicate between the MCR and the Intake Structure operator at the FLEX pump. This communication method is the same as accepted in Order EA-12-049. Gaitronics has been modified with a 12-hour Uniterruptible Power Supply battery backup and will be repowered with FLEX portable DGs.	The NRC staff reviewed the information provided in the 6-month updates and on the ePortal. The communication methods are the same as accepted in Order EA-12-049. No follow-up questions.	Closed [Staff evaluation to be included in SE Section 4.1]

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2 - REPORT FOR THE AUDIT OF LICENSEE RESPONSES TO INTERIM STAFF EVALUATION OPEN ITEMS RELATED TO NRC ORDER EA-13-109 TO MODIFY LICENSES WITH REGARD TO RELIABLE HARDENED CONTAINMENT VENTS CAPABLE OF OPERATION UNDER SEVERE ACCIDENT CONDITIONS DATED SEPTEMBER 19, 2017

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