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Docket No.: 50-321

NL-18-0200

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001Edwin I. Hatch Nuclear Plant – Unit 1
Completion of Required Action for NRC Order EA-13-109
Reliable Hardened Containment Vents Capable of
Operation Under Severe Accident Conditions

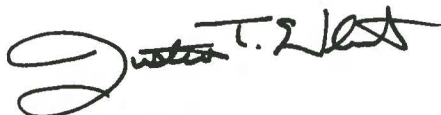
Ladies and Gentlemen:

On June 6, 2013, the Nuclear Regulatory Commission (NRC) issued Order EA-13-109, *Order Modifying Licenses with Regard to Requirements for Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions*, to Southern Nuclear Operating Company (SNC). This Order was immediately effective and directs the Edwin I. Hatch Nuclear Plant (HNP) - Units 1 and 2 to install a reliable hardened venting capability for pre-core damage and under severe accident conditions, including those involving a breach of the reactor vessel by molten core debris. This letter, along with the Enclosure, provides the notification required by Item IV.D.4 of Order EA-13-109 that full compliance (Phase 1 and Phase 2) with the requirements described in Attachment 2 of the Order has been achieved for HNP Unit 1.

This letter contains no new Regulatory Commitments and no revision to existing Regulatory Commitments. If you have any questions, please contact Matt Euten at 205.992.7673.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 27th day of March 2018.

Respectfully submitted,

Justin T. Wheat
Nuclear Licensing Manager
Southern Nuclear Operating Company

JTW/MRE

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Enclosure: HNP Unit 1 Compliance with Order EA-13-109

cc: Director of the Office of Nuclear Reactor Regulations
Regional Administrator, Region II
NRR Project Manager – Hatch
Senior Resident Inspector – Hatch
Director, Environmental Protection Division – State of Georgia
RType: CHA02.004

Edwin I. Hatch Nuclear Plant – Unit 1
Completion of Required Action for NRC Order EA-13-109
Reliable Hardened Containment Vents Capable of
Operation Under Severe Accident Conditions

Enclosure

HNP Unit 1 Compliance with Order EA-13-109

(8 pages)

BACKGROUND

On June 6, 2013, the Nuclear Regulatory Commission (NRC) issued Order EA-13-109, *Order Modifying Licenses with Regard to Requirements for Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions* (Reference 1), to Southern Nuclear Operating Company (SNC). This Order was immediately effective and directs the Edwin I. Hatch Nuclear Plant (HNP) - Units 1 and 2 to install a reliable hardened venting capability for pre-core damage and under severe accident conditions, including those involving a breach of the reactor vessel by molten core debris (HCVS) in response to Order EA-13-109. SNC developed an Overall Integrated Plan (OIP) (Reference 6) to provide HCVS. The information provided herein, as well as the implementation of the OIP (Phase 1 Reference 5 and Phase 2 in Reference 6), documents full compliance for the HNP Unit 1 in response to the Order (Reference 1).

OPEN ITEM RESOLUTION

The Phase 1 and 2 NRC Interim Staff Evaluation (ISE) Open Items (Reference 14 and Reference 15) have been addressed and documented in subsequent Order EA-13-109 six-month status reports (References 6 - 12) and are considered complete per Reference 15. The following table provides completion references for each ISE Phase 1 and 2 Open Item and a summary of the closure action for Open Items not previously completed.

HNP 1 & 2 HCVS Phase 1 ISE Open Items		Response
1	Make available for NRC staff audit the location of the ROS's	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
2	Make available for NRC staff audit the location of the dedicated HCVS battery transfer switch	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
3	Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
4	Make available for NRC staff audit the deployment location of the portable diesel generators	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
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	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Clarification in Reference 11. Closure concurrence per Reference 15.

HNP 1 & 2 HCVS Phase 1 ISE Open Items		Response
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	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
7	Make available for NRC staff audit the descriptions of local conditions (temperature, radiation and humidity) anticipated during ELAP and severe accident for the components (valves, instrumentation, sensors, transmitters, indicators, electronics, control devices, etc.) required for HCVS venting including confirmation that the components are capable of performing their functions during ELAP and severe accident conditions	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
8	Make available for NRC staff audit the final sizing evaluation for HCVS batteries/battery charger including incorporation into FLEX DG loading calculation	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Clarification in Reference 11. Closure concurrence per Reference 15.
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	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
10	Provide a description of the final design of the HCVS to address hydrogen detonation and deflagration	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
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	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.

HNP 1 & 2 HCVS Phase 1 ISE Open Items		Response
12	Make available descriptions of design details that minimize unintended cross flow of vented fluids within a unit and between units	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
13	Make available for NRC staff audit descriptions of all instrumentation and controls (existing and planned) necessary to implement this order including qualification methods	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
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	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.
15	Make available for NRC staff audit the control document for HCVS out of service time criteria	Closed per Reference 10 and verified in NRC Audit call on March 7, 2017. Closure concurrence per Reference 15.

HNP1 & 2 HCVS Phase 2 ISE Open Items		Generic Response
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	Closed per Reference 10, consistent with the BWROG generic closure criteria for Order EA-13-109 Phase 2 Open Items. Closure concurrence per Reference 15.
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	Closed per Reference 10, consistent with the BWROG generic closure criteria for Order EA-13-109 Phase 2 Open Items. Closure concurrence per Reference 15.
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	Closed per Reference 10, consistent with the BWROG generic closure criteria for Order EA-13-109 Phase 2 Open Items. Closure concurrence per Reference 15.

MILESTONE SCHEDULE - ITEMS COMPLETE

Milestone	Target Completion Date	Activity Status	Comments
Submit Phase 1 Overall Integrated Plan	Jun. 2014	Complete	
Submit Phase 2 Overall Integrated Plan	Dec. 2015	Complete	
Submit 6 Month Updates:			
Update 1	Dec. 2014	Complete	
Update 2	Jun. 2015	Complete	
Update 3	Dec. 2015	Complete	Simultaneous with Phase 2 OIP
Update 4	Jun. 2016	Complete	
Update 5	Dec. 2016	Complete	
Update 6	Jun. 2017	Complete	
Update 7	Dec. 2017	Complete	
Phase 1 Specific Milestones			
Phase 1 Modifications:			
Hold preliminary/conceptual design meeting	Jun. 2014	Complete	
Unit 1 Design Engineering On-site/Complete	Feb. 2017	Complete	
Unit 1 Implementation Outage	Feb. 2018	Complete	
Unit 1 Walk Through Demonstration/Functional Test	Feb. 2018	Complete	
Phase 1 Procedure Changes			
Operations Procedure Changes Developed	Dec. 2017	Complete	
Site Specific Maintenance Procedure Developed	Jan. 2017	Complete	
Procedure Changes Active	Feb. 2018	Complete	
Phase 1 Training:			
Training Complete	Feb. 2018	Complete	
Phase 1 Completion			

Milestone	Target Completion Date	Activity Status	Comments
Unit 1 HCVS Implementation	Feb. 2018	Complete	
Phase 2 Specific Milestones			
Phase 2 Modifications:			
Hold preliminary/conceptual design meeting	Apr. 2016	Complete	
Unit 1 Design Engineering On-site/Complete	Feb. 2017	Complete	
Unit 1 Walk Through Demonstration/Functional Test	Feb. 2018	Complete	
Unit 1 Implementation Outage	Feb. 2018	Complete	
Phase 2 Procedure Changes			
Operations Procedure Changes Developed	Dec. 2017	Complete	
Site Specific Maintenance Procedure Developed	Dec. 2017	Complete	
Procedure Changes Active	Feb. 2018	Complete	
Phase 2 Training:			
Training Complete	Feb. 2018	Complete	
Phase 2 Completion			
Unit 1 HCVS Implementation	Feb. 2018	Complete	
Submit Unit 1 Phase 1 and 2 Completion Report	March 2018	Complete	

ORDER EA-13-109 COMPLIANCE ELEMENTS SUMMARY

The elements identified below for HNP Unit 1 as well as the HCVS Phase 1 and Phase 2 OIP (Reference 6), the 6-Month Status Reports (References 6 - 12) and additional docketed correspondence, demonstrate compliance with Order EA-13-109.

HCVS PHASE 1 AND PHASE 2 FUNCTIONAL REQUIREMENTS AND DESIGN FEATURES – COMPLETE

The HNP Unit 1, Phase 1 HCVS provides a vent path from the wetwell to remove decay heat, vent the containment atmosphere, and control containment pressure within acceptable limits. The Phase 1 HCVS will function for those accident conditions 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 during an extended loss of alternating current power.

The HNP Unit 1, Phase 2 HCVS provides a reliable containment venting strategy that makes it unlikely that the plant would need to vent from the containment drywell before alternative reliable containment heat removal and pressure control is reestablished. The HNP Unit 1, Phase 2 HCVS strategies implement Severe Accident Water Addition (SAWA) with Severe Accident Water Management (SAWM) as an alternative venting strategy. This strategy consists of the use of the Phase 1 wetwell vent and SAWA hardware to implement a water management strategy that will preserve the wetwell vent path until alternate reliable containment heat removal can be established.

The HNP Unit 1, Phase 1 and Phase 2 HCVS strategies are in compliance with Order EA-13-109. The modifications required to support the HCVS strategies for HNP Unit 1 have been fully implemented in accordance with the station processes.

HCVS PHASE 1 AND PHASE 2 QUALITY STANDARDS – COMPLETE

The design and operational considerations of the Phase 1 and Phase 2 HCVS installed at HNP Unit 1 complies with the requirements specified in the Order and described in NEI 13-02, Revision 1, "Industry Guidance for Compliance with Order EA-13-109". The Phase 1 and Phase 2 HCVS has been installed in accordance with the station design control process.

The Phase 1 and Phase 2 HCVS components including piping, piping supports, containment isolation valves, containment isolation valve actuators and containment isolation valve position indication have been designed consistent with the design basis of the plant. All other Phase 1 and Phase 2 HCVS components including electrical power supply, valve actuator pneumatic supply and instrumentation have been designed for reliable and rugged performance that is capable of ensuring Phase 1 and Phase 2 HCVS functionality following a seismic event.

HCVS PHASE 1 AND PHASE 2 PROGRAMMATIC FEATURES - COMPLETE

Storage of portable equipment for HNP Unit 1 Phase 1 and Phase 2 HCVS provides adequate protection from applicable site hazards, and identified paths and deployment areas will be accessible during all modes of operation and during severe accidents, as recommended in NEI 13-02, Revision 1, Section 6.1.2.

Training in the use of the Phase 1 and Phase 2 HCVS for HNP Unit 1 has been completed in accordance with an accepted training process as recommended in NEI 13-02, Revision 1, Section 6.1.3.

Operating and maintenance procedures for HNP Unit 1 have been developed and integrated with existing procedures to ensure safe operation of the Phase 1 and Phase 2 HCVS. Procedures have been verified and are available for use in accordance with the site procedure control program.

Site processes have been established to ensure the Phase 1 and Phase 2 HCVS is tested and maintained as recommended in NEI 13-02, Revision 1, Sections 6.1.2 and 6.2.

HNP Unit 1 has completed validation in accordance with industry developed guidance to assure required tasks, manual actions and decisions for HCVS strategies are feasible and may be executed within the constraints identified in the HCVS Phase 1 and 2 OIP for Order EA-13-109 (References 5 and 6).

HNP Unit 1 has completed evaluations to confirm accessibility, habitability, staffing sufficiency, and communication capability in accordance with NEI 13-02, Sections 4.2.2 and 4.2.3.

REFERENCES:

The following references support the HNP Unit 1 compliance with the requirements of Order EA-13-109:

1. NRC Order EA-13-109, *Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions*, dated June 6, 2013 (ML 13143A321).
2. NRC Interim Staff Guidance JLD-ISG-2013-02, *Compliance with Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions*, dated November 14, 2013 (ML13304B836).
3. NRC Interim Staff Guidance JLD-ISG-2015-01, *Compliance with Phase 2 of Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions*, dated November 14, 2013 (ML15104A118).
4. NEI 13-02, *Industry Guidance for Compliance with Order EA-13-109 BWR Mark I & II Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions, Revision 1*, dated April 2015.
5. SNC Letter, *Edwin I. Hatch Phase I Overall Integrated Plan in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Requirements for Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)*, dated June 27, 2014 (ML14178B464).
6. SNC Letter with Combined Phase 1 and 2 Overall Integrated Plan, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Third Six-Month Status Report of the Implementation of the Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated December 23, 2015 (ML15357A212).

7. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 First Six-Month Status Report of the Implementation of Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated December 30, 2014.
8. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Second Six-Month Status Report of the Implementation of Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated June 26, 2015.
9. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Fourth Six-Month Status Report of the Implementation of Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated June 13, 2016.
10. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Fifth Six-Month Status Report of the Implementation of Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated December 16, 2016.
11. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Sixth Six-Month Status Report of the Implementation of Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated June 12, 2017.
12. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Seventh Six-Month Status Report of the Implementation of Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated December 5, 2017.
13. NRC Letter, *Edwin I. Hatch Nuclear Plant, Units 1 and 2 - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 1 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (TAC Nos. MF4479 and MF4480)*, dated March 25, 2015 (ML14335A137).
14. NRC Letter, *Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 2 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (CAC NOS. MF4479 and MF4480)*, dated August 2, 2016.
15. NRC Letter, *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)*, dated September 19, 2017.