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50-366

NL-16-0726

U. S. Nuclear Regulatory Commission
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Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Fourth Six-Month Status Report of the Implementation of the
Commission Order with Regard to Requirements for
Reliable Hardened Containment Vents (EA-13-109)

References:

1. NRC Order Number EA-13-109, *Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions*, dated June 6, 2013.
2. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Phase 1 Overall Integrated Plan in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated June 27, 2014.
3. SNC Letter, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 Third Six-Month Status Report of the Implementation of Commission Order with Regard to Requirements for Reliable Hardened Containment Vents (EA-13-109)*, dated December 23, 2015.

Ladies and Gentlemen:

On June 6, 2013, the Nuclear Regulatory Commission (NRC) issued an Order (Reference 1) to Southern Nuclear Operating Company (SNC). Reference 1 was immediately effective and directs the Edwin I. Hatch Nuclear Plant - Units 1 and 2 (HNP) 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. Specific requirements are outlined in Attachment 2 of Reference 1.

In addition, Reference 1 also required submission of a Phase 1 overall integrated plan pursuant to Section IV, Condition D, and status reports at six-month intervals thereafter. SNC submitted the Phase 1 overall integrated plan (OIP) by letter dated June 27, 2014 (Reference 2). The third six-month update for Phase 1 of the Order included the required HCVS Phase 2 OIP submittal. The consolidated HCVS Phase 1 and 2 OIP document (Reference 3) provided a list of the Phase 1 OIP open items, and addressed the NRC Interim Staff Evaluation open items for Phase 1. This letter is being submitted to satisfy the requirements for providing the six-month updates for Phase 1 and 2 of the Order in accordance with Section IV, Condition D.3, of Reference 1.

This letter contains no new NRC commitments. If you have any questions, please contact John Giddens at 205.992.7924.

Mr. C. R. Pierce states he is the Regulatory Affairs Director for Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and, to the best of his knowledge and belief, the facts set forth in this letter are true.

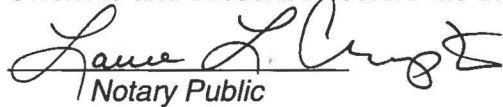
Respectfully submitted,



C. R. Pierce
Regulatory Affairs Director

CRP/JMG/MRE

Sworn to and subscribed before me this 13 day of June, 2016.


Notary Public

My commission expires: 10-8-2017

Enclosure: Fourth Six-Month Status Report Regarding Requirements for Reliable Hardened Containment Vents (EA-13-109)

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer
Mr. D. R. Vineyard, Vice President – Hatch
Mr. M. D. Meier, Vice President – Regulatory Affairs
Mr. B. J. Adams, Vice President – Engineering
Mr. D. R. Madison, Vice President – Fleet Operations
Mr. G. L. Johnson, Regulatory Affairs Manager – Hatch
RType: CHA02.004

U. S. Nuclear Regulatory Commission

Mr. W. M. Dean, Director of the Office of Nuclear Reactor Regulations
Mr. C. Haney, Regional Administrator
Mr. M. D. Orenak, NRR Senior Project Manager – Hatch
Mr. D. H. Hardage, Senior Resident Inspector – Hatch
Ms. J. A. Kratchman, NRR/JLD/PMB
Mr. E. E. Bowman, NRR/DPR/PGCB

State of Georgia

Mr. J. H. Turner, Director – Environmental Protection Division

**Edwin I. Hatch Nuclear Plant – Units 1 and 2
Fourth Six-Month Status Report of the Implementation of the
Commission Order with Regard to Requirements for
Reliable Hardened Containment Vents (EA-13-109)**

Enclosure

**Fourth Six-Month Status Report Regarding Requirement for
Reliable Hardened Containment Vents (EA-13-109)**

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Fourth Six Month Status Report for the Implementation of Order EA-13-109

1 Introduction

Southern Nuclear Operating Company developed an Overall Integrated Plan (Reference 1 and 8) for the Edwin I. Hatch Nuclear Plant – Units 1 and 2 (HNP) documenting the installation of a Hardened Containment Vent System (HCVS). Starting with this six month status report, updates of milestone accomplishments will be based on the combined Phase 1 and 2 Overall Integrated Plan dated December 23, 2015.

HNP developed an updated and combined Phase 1 and 2 Overall Integrated Plan (Reference 8), documenting:

1. The installation of a Hardened Containment Vent System (HCVS) that provides 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, in response to Reference 2.
2. An alternative strategy that makes it unlikely that a drywell vent is needed to protect the containment from overpressure related failure under severe accident conditions, including those that involve a breach of the reactor vessel by molten core debris, in response to reference 2

This enclosure provides an update of milestone accomplishments since submittal of the combined Phase 1 and 2 Overall Integrated Plan (Reference 8), including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

2 Milestone Accomplishments

The following milestone(s) have been completed since the development of the combined Phase 1 and 2 Overall Integrated Plan (Reference 8), and are current as of April 30, 2016.

- None

3 Milestone Schedule Status

The following provides an update to Attachment 2 of the combined Phase 1 and 2 Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

The revised milestone target completion dates do not impact the order implementation date.

Phase 1 and 2 HCVS Milestone Table

Milestone	Target Completion Date	Activity Status	Comments
Submit Overall Integrated Plan	Jun. 2014	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 with this submittal	
Update 5	Dec. 2016	Not Started	
Update 6	Jun. 2017	Not Started	
Update 7	Dec. 2017	Not Started	
Phase 1 Specific Milestones			
Phase 1 Modifications:			
Hold preliminary/conceptual design meeting	Jun. 2014	Complete	
Unit 1 Design Engineering On-site/Complete	Feb. 2017	Started	Current Projection Oct. 2016
Unit 1 Implementation Outage	Mar. 2018	Not Started	
Unit 1 Walk Through Demonstration/Functional Test	Mar. 2018	Not Started	
Unit 2 Design Engineering On-site/Complete	May 2016	Started	Current Projection Aug. 2016
Unit 2 Walk Through Demonstration/Functional Test	Mar. 2017	Not Started	
Unit 2 Implementation Outage	Mar. 2017	Not Started	
Phase 1 Procedure Changes			
Operations Procedure Changes Developed	Dec. 2016	Not Started	
Site Specific Maintenance Procedure Developed	Dec. 2016	Not Started	
Procedure Changes Active	Mar. 2017	Not Started	

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Milestone	Target Completion Date	Activity Status	Comments
Phase 1 Training:			
Training Complete	Dec. 2016	Not Started	Current Projection Mar. 2018
Phase 1 Completion			
Unit 2 HCVS Implementation	Mar. 2017	Started	
Unit 1 HCVS Implementation	Mar. 2018	Started	
Full Site HCVS Implementation	Mar. 2018	Started	
Phase 2 Specific Milestones			
Phase 2 Modifications:			
Hold preliminary/conceptual design meeting	Apr. 2016	Started	No modifications expected. Engineering evaluations and associated non-modification changes scope definition by Mar 2017
Unit 1 Design Engineering On-site/Complete	Feb. 2017	Not Started	No modifications expected. Engineering evaluations and associated non-modification changes by Oct 2017
Unit 1 Walk Through Demonstration/Functional Test	Mar. 2018	Not Started	
Unit 1 Implementation Outage	Mar. 2018	Not Started	
Unit 2 Design Engineering On-site/Complete	Feb. 2018	Not Started	No modifications expected. Engineering evaluations and associated non-modification changes by Oct 2018
Unit 2 Walk Through Demonstration/Functional Test	Mar. 2019	Not Started	
Unit 2 Implementation Outage	Mar. 2019	Not Started	

Milestone	Target Completion Date	Activity Status	Comments
Phase 2 Procedure Changes			
Operations Procedure Changes Developed	Sep. 2017	Not Started	Current Projection Feb. 2018
Site Specific Maintenance Procedure Developed	Dec. 2017	Not Started	
Procedure Changes Active	Mar. 2018	Not Started	
Phase 2 Training:			
Training Complete	Dec. 2017	Not Started	
Phase 2 Completion			
Unit 1 HCVS Implementation	Mar. 2018	Not Started	
Submit Unit 1 Phase 1 and 2 Completion Report	May 2018	Not Started	
Unit 2 HCVS Implementation	Mar. 2019	Not Started	
Full Site HCVS Implementation	Mar. 2019	Not Started	
Submit Unit 2 and site Completion Report [60 days after full site compliance]	May 2019	Not Started	

1 Changes to Compliance Method

There are no changes to the compliance method as documented in the Phase 1 and 2 Overall Integrated Plan (Reference 8).

2 Need for Relief/Relaxation and Basis for the Relief/Relaxation

Edwin I. Hatch Nuclear Plant – Units 1 and 2, expect to comply with the order implementation date and no relief/relaxation is required at this time.

3 Open Items from Combined Phase 1 and 2 Overall Integrated Plan and Interim Staff Evaluation

The following tables provide a summary of the open items documented in the combined Phase 1 and 2 Overall Integrated Plan, the Phase 1 Interim Staff Evaluation (ISE) or Phase 2 Staff Evaluation (anticipated) and the status of each item.

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 Fourth Six-Month Status Report of Vent Order Implementation

Combined Phase 1 and 2 OIP Open Item		Status/Comment
Phase 1 Open Items		
1	Determine location of Dedicated HCVS Battery transfer switch	Complete (ref. 8)
2	Determine location of back-up nitrogen bottles	Complete (ref. 8)
3	Evaluate location of Portable DG for accessibility under Severe Accident HCVS use	Complete (ref. 8)
4	Confirm suppression pool heat capacity	Complete (ref. 8)
5	Determine location of HCVS Remote Operating Station (ROS)	Complete (ref. 8)
6	State which approach or combination of approaches Plant Hatch decides to take to address the control of flammable gases, clearly demarcating the segments of vent system to which an approach applies	Complete (ref. 8)
7	Evaluate SGTS Valve Leakage utilizing criteria from NEI HCVS-FAQ-05	Confirmatory action <i>In progress</i>
8	Identify qualification method used for HCVS instruments	<i>In progress</i>
9	Evaluate HCVS monitoring location for accessibility, habitability, staffing sufficiency, and communication capability with Vent-use decision makers	Confirmatory action <i>In progress</i>
10	Perform severe accident evaluation for FLEX DG use post 24 hour actions	Confirmatory action <i>In progress</i>
11	Determine the control document for HCVS out of service time criteria	Complete

Interim Staff Evaluation Open Item	Status
Phase 1 ISE Items	
1. Make available for NRC staff audit the location of the ROSs.	<i>In progress (same as 5 above)</i>
2. Make available for NRC staff audit the location of the dedicated HCVS battery transfer switch.	<i>Available (same as 1 above)</i>
3. Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location.	<i>In progress (part of 2 above)</i>
4. Make available for NRC staff audit the deployment location of the portable diesel generators.	<i>In progress (same as 3 above)</i>
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.	<i>In progress</i>

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Interim Staff Evaluation Open Item	Status
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.	<i>In progress (part of 4 above)</i>
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.	<i>In progress (part of 8 above)</i>
8. Make available for NRC staff audit the final sizing evaluation for HCVS batteries/battery charger including incorporation into FLEX DG loading calculation.	<i>In progress (part of 10 above)</i>
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.	<i>In progress (same as 9 above)</i>
10. Provide a description of the final design of the HCVS to address hydrogen detonation and deflagration.	<i>In progress (same as 6 above)</i>
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.	<i>In progress (same as 7 above)</i>
12. Make available descriptions of design details that minimize unintended cross flow of vented fluids within a unit and between units.	<i>In progress (same as 5 above)</i>
13. Make available for NRC staff audit descriptions of all instrumentation and controls (existing and planned) necessary to implement this order including qualification methods.	<i>In progress (same as 8 above)</i>
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.	<i>In progress</i>
15. Make available for NRC staff audit the control document for HCVS out of service time criteria.	Complete (ref. 8)

Staff Evaluation (Phase 2) Open Item	Status
TBD	NA

4 Interim Staff Evaluation Impacts

There are no potential impacts to the Interim Staff Evaluation identified at this time.

5 Additional Information

The following additional information supports the Phase 1 and Phase 2 implementation activities:

1. In addition to repowering the main meteorological stack mixing chamber fans as described in the Phase 1 and 2 OIP (Reference 8), HNP will utilize an argon purge into the main stack mixing chamber, (prior to operation of the HCVS vent valves used in response to a EA-13-109 core damage and vessel breach event), as a defense in depth approach to combustible gas control and unintended crossflow mitigation in accordance with method 3 of endorsed white paper HCVS-WP-03.
2. The table on page 23 of the Phase 1 and 2 OIP (Reference 8) shows transmitters for the component for the first 2 items. Refer to the following table to list the respective indicators:

<u>Key Parameter</u>	<u>Component Identifier</u>	<u>Indication Location</u>
HCVS Effluent temperature	1/2T48-R650/R150	MCR/ROS
HCVS Pneumatic supply pressure	1P52-R660/R060, 2P52-R630/R030	MCR/ROS

3. The table on page 26 of the Phase 1 and 2 OIP (Reference 8) shows transmitters for the component for the temperature, pressure, power status and radiation monitor items. Refer to the following table to list the respective indicators:

<u>Key Parameter</u>	<u>Component Identifier</u>	<u>Indication Location</u>
HCVS Effluent temperature	1/2T48-R650/R150	MCR/ROS
HCVS Pneumatic supply pressure	1P52-R660/R060, 2P52-R630/R030	MCR/ROS
HCVS power status*	2R42-R600/R104 and 2R42-R603/R105	MCR/ROS
HCVS effluent radiation monitor	1/2T48-R652/R152	MCR/ROS

* The HCVS power status indicator in the MCR will utilize an existing indicator for Station Service Batteries, but a new indicator will be added in the ROS.

4. Additionally, the indicator for “rupture disc pressure” is an indicator that provides information that the rupture disc has been burst by monitoring argon pressure, which will drop significantly when the rupture disc is burst.

6 References

The following references support the updates to the Phase 1 and 2 Overall Integrated Plan (Reference 8) described in this enclosure:

1. 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).
2. NRC Order Number EA-13-109, *Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions*, dated June 6, 2013 (ML13143A321).
3. NRC Endorsement, *Hardened Containment Venting System (HCVS) Phase 1 Overall Integrated Plan Template (EA-13-109) Revision 0*, dated May 1, 2014 (ML14128A219).
4. 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).
5. NEI 13-02, *Industry Guidance for Compliance with NRC Order EA-13-109, To Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions, Revision 1*, dated April 2015 (ML15113B318).
6. 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, Revision 1*, dated April 2015 (ML15104A118).
7. NRC Endorsement of "Hardened Containment Venting System (HCVS) Phase 1 and 2 Overall Integrated Plan Template," Revision 1, dated September 22, 2015, and Frequently Asked Questions (FAQs) 10, 11, 12, and 13, dated October 8, 2015 (ML15271A148).
8. 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 30, 2015 (ML15357A212).