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EA-13-109
10 CFR 50.54(f)

June 30, 2016
GO2-16-098

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397**

ENERGY NORTHWEST'S FOURTH SIX-MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NUCLEAR REGULATORY COMMISSION (NRC) ORDER EA-13-109, ORDER TO MODIFY LICENSES WITH REGARD TO RELIABLE HARDENED CONTAINMENT VENTS CAPABLE OF OPERATION UNDER SEVERE ACCIDENT CONDITIONS

References:
1. Letter dated June 6, 2013, from E. J. Leeds (NRC) to Licensees with Mark I and Mark II Containments, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions"
2. Letter GO2-15-175 dated December 16, 2015, from A. L. Javorik (Energy Northwest) to NRC, "Energy Northwest's Response to NRC Order EA-13-109 – Overall Integrated Plan for Reliable Hardened Containment Vents under Severe Accident Conditions Phases 1 and 2, Revision 1"

Dear Sir or Madam,

By Reference 1, the NRC issued Order EA-13-109, which required licensees to implement a reliable hardened containment vent capable of operation under severe accident conditions. Reference 1 also requires the submission of 6-month update reports on the status of implementing the overall integrated plan (OIP) for the reliable hardened containment vent. Reference 2 transmitted the OIP for the implementation of Phases 1 and 2 for the reliable hardened containment vent.

The enclosure provides the fourth 6-month update report on the status of implementation of NRC Order EA-13-109.

There are no new or revised regulatory commitments contained in this submittal.

If you have any questions or require additional information, please contact Ms. L. L. Williams at (509) 377-8148.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 24th day of June, 2016.

Respectfully,

A. L. Javorik

Vice President, Engineering

Enclosures: As stated

cc: NRC Region IV Administrator
NRC NRR Project Manager
NRC Senior Resident Inspector/988C
CA Sonoda – BPA/1399

ENCLOSURE

COLUMBIA GENERATING STATION, DOCKET NO. 50-397

FOURTH SIX-MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NUCLEAR REGULATORY COMMISSION (NRC) EA-13-109, ORDER TO MODIFY LICENSES WITH REGARD TO RELIABLE HARDENED CONTAINMENT VENTS CAPABLE OF OPERATION UNDER SEVERE ACCIDENT CONDITIONS

ENERGY NORTHWEST'S FOURTH SIXTH SIX-MONTH STATUS UPDATE REPORT FOR NRC ORDER EA-13-109

1.0 Introduction

By Reference 1, the Nuclear Regulatory Commission (NRC) issued Order EA-13-109 to Columbia Generating Station (Columbia). Reference 1 also required submittal of an overall integrated plan (OIP) describing how compliance with the hardened containment vent system (HCVS) requirements described in the Order will be achieved and also required the submittal of status reports at six month intervals. This enclosure provides Energy Northwest's fourth six-month status report for Phases 1 and 2 of NRC Order EA-13-109 and includes an update of the remaining milestones including any changes to the compliance method or schedule.

2.0 Milestone Accomplishments

The completion date of the wetwell (WW) design has been moved to December of 2016 to account for a change in the engineering support firm on the project.

3.0 Milestone Schedule Status

The table below provides the status of the remaining reporting requirements from EA-13-109.

Correspondence and Reports

Milestone	Target Completion Date	Activity Status	Comments *(Include date changes in this column)*
EA-13-109 Overall Integrated Implementation Plan (Phase 1)	June 2014	Complete	GO2-14-107 6/30/2014
1st 6-Month Status Report for EA 13-109 Phase 1	Dec. 2014	Complete	GO2-14-175 12/17/2014
2nd 6-Month Status Report for EA 13-109 Phase 1	June 2015	Complete	GO2-15-093 6/30/2015
Submit EA-13-109 Overall Integrated Plan for Phase 2 and Phase 1 6-month Update	Dec 2015	Complete	GO2-15-175 12/16/ 2015
4th 6-Month Update Report for EA 13-109 Phases 1 & 2	Jun 2016	Complete	This Letter
5th 6-Month Update Report for EA 13-109 Phases 1 & 2	Dec 2016		
6th 6-Month Update Report for EA 13-109 Phases 1 & 2	Jun 2017		
Issuance of Energy Northwest's letter of compliance with NRC Order EA-12-049 and Order EA-13-109, Phase 1	Aug 2017		
7th 6-Month Update Report for EA 13-109 Phase 2	Dec 2017		

8th 6-Month Update Report for EA 13-109 Phase 2	Jun 2018		
9th 6-Month Update Report for EA 13-109 Phase 2	Dec 2018		
10th 6-Month Update Report for EA 13-109 Phase 2	Jun 2019		
Issuance of Energy Northwest's letter of compliance with NRC Order EA-13-109, Phase 2	Aug 2019		

The following tables provide the status of the non-reporting milestones reported in Reference 2.

Order EA-13-109 Phase 1 Milestone Schedule:

Milestone	Target Completion Date	Activity Status	Comments *{Include date changes in this column}*
Hold preliminary/conceptual design meeting	June 2014	Complete	
WW Design Engineering Complete	May 2016	In Progress	Dec 2016
WW Operation Procedure Changes Developed	Mar 2017		
Site Specific WW Maintenance Procedure Developed	June 2017		
WW Training Complete	Apr. 2017		
WW Installation Complete	May 2017		
WW Procedure Changes Active	May 2017		
WW Walk Through Demonstration/Functional Test	June 2017		

Order EA-13-109 Phase 2 Milestone Schedule

Milestone	Target Completion Date	Activity Status	Comments *{Include date changes in this column}*
Hold preliminary/conceptual design meeting	Jul 2016		
Design Engineering On-site/Complete	Jul 2018		
Operations Procedure Changes Developed	Jan 2019		
Site Specific Maintenance Procedure Developed	Jan 2019		
Training Complete	Apr 2019		
Implementation Outage	May 2019		
Procedure Changes Active	May 2019		
Walk Through Demonstration/Functional Test	Jun 2019		

4.0 Changes to the Compliance Method

The changes to the Phase 1 actions for the EA-13-109 severe accident capable venting scenario can be summarized by the following**:**

- The HCVS will be made operational by manual action from the remote operating station (ROS) at the appropriate time based on the start of the ELAP. Nitrogen will be manually aligned to allow remote operation of the pneumatically operated primary containment isolation valves (PCIV). Breaching of the rupture disk will use the same nitrogen system used for the HCV primary containment valve operation.
- The remote operating station containing the solenoid pilot valves (SPV) will have a locked nitrogen supply valve versus a cabinet with lockable cover/door. The SPVs will have the ability to be manually bypassed verses the ability to be manually operated.

No changes to the Phase 2 actions are planned.

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

No new relaxation is being requested.

6.0 Status of HCV Open Items

The tables in the attachment to this enclosure provide a summary and status of the remaining open since the initial submittal of the OIP (Reference 2.

7.0 References

1. Letter dated June 6, 2013, from E. J. Leeds (NRC) to Licensees with Mark I and Mark II Containments, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions"
2. Letter GO2-15-175 dated December 16, 2015, from A. L. Javorik (Energy Northwest) to the NRC, "Energy Northwest's Response to NRC Order EA-13-109 –Overall Integrated Plan for Reliable Hardened Containment Vents Under Severe Accident Conditions Phases 1 and 2, Revision 1"
3. NRC letter dated March 25, 2015, from M. K. Halter (NRC) to M. E. Reddemann (Energy Northwest), " Columbia Generating Station - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 1 of Order EA-13-109 (Severe Accident Capable Hardened Vents)"
4. Letter dated June 16, 2015, from S. Monarque (NRC) to M. E. Reddemann (Energy Northwest), "Columbia Generating Station – Report for the Audit Regarding Implementation of Mitigation Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051"

List of Overall HCV Integrated Plan Open Items			
HCV OIP Open Item	**Action**	**Status**	**Comment**
OI-HCV-01	Provide resolution of the potential secondary containment bypass leakage path in the first 6-month update of the HCVS OIP	CLOSED	Closed per EN Letter GO2-14-175. Columbia will use a rupture disk to prevent secondary containment bypass leakage.
OI-HCV-02	Evaluate the location of the ROS for accessibility.	**OPEN**	
OI-HCV-03	Determine the location of the portable air compressor and evaluate for accessibility under Severe Accident HCVS use. Including connection point(s) Including refueling operations	**OPEN**	
OI-HCV-04	Evaluate the location of the FLEX DG for accessibility under Severe Accident HCVS use. Including connection point(s) Including refueling operations	**OPEN**	
OI-HCV-05	Confirm suppression pool heat capacity	CLOSED	Closed per EN Letter GO2-14-175. Calculation ME-02-14-02, Revision 0, Appendix C confirms that there is sufficient heat capacity in the suppression pool water when at a minimum Technical Specification level to control pressure in containment before venting commences.

List of Overall HCV Integrated Plan Open Items			
HCV OIP Open Item	**Action**	**Status**	**Comment**
OI-HCV-06	Determine the method of qualification for each instrument	**OPEN**	
OI-HCV-07	Complete the evaluation to determine accessibility, habitability, staffing sufficiency, and communication capability of the ROS.	**OPEN**	
OI-HCV-08	Identify design codes after design is finalized.	**OPEN**	
OI-HCV-09	Equipment qualifications will include temperature, pressure, radiation level, and total integrated dose from the effluent vent pipe at local and remote locations.	**OPEN**	
OI-HCV-10	Provide site-specific details of the EOPs when available. Develop procedures for Severe Accident Water Addition (SAWA) and Severe Accident Water Management (SAWM)	**OPEN**	
OI-HCV-11	FLEX air compressors need to be credited to recharge air lines for HCVS components after 24 hours.	**OPEN**	
OI-HCV-12	SAWA/SAWM flow is controlled using hose installed valves and mechanical flow elements (EA-12-049 actions). Location of these valves and flow elements will need to be considered per HCVS-FAQ-12.	**OPEN**	
OI-HCV-13	Reconcile the out-of-service provisions for HCVS/SAWA with the provisions documented in Columbia's PPM 1.5.18, Managing B.5.b and FLEX Equipment Unavailability.	**OPEN**	

List of Overall HCV Integrated Plan Open Items			
HCV OIP Open Item	**Action**	**Status**	**Comment**
OI-HCV-14	Complete the evaluation to determine accessibility, habitability, staffing sufficiency, and communication capability during SAWA/SAWM	**OPEN**	
OI-HCV-15	Perform MAAP analysis for NEI 13-02 figures C-2 through C-6 and determine the time sensitive SAWM actions	**OPEN**	
OI-HCV-16	Develop procedure for line-up and use of HCVS	**OPEN**	
OI-HCV-17	Add sound powered phone extension cable for instrument rack E-IR-85 to inventory procedure SOP-FLEX-EQUIPMENT-STORAGE	**OPEN**	
OI-HCV-18	Evaluate deployment pathways for severe accident capable criteria	**OPEN**	
OI-HCV-19	Develop required training and frequency IAW the SAT process	**OPEN**	
OI-HCV-20	Incorporate approved language of OIP Attachment 2.1.D into site SAMG procedure(s)	**OPEN**	

Interim Staff Evaluation of Phase 1 Request for Additional Information			
RAI Number ISE Report Section	**Action**	**Status**	**Comment**
01 Section 3.2.1	Make available for NRC staff audit the location of the ROS.	**OPEN**	
02 Section 3.2.1	Make available for NRC staff audit the location of the portable air compressor.	**OPEN**	

Interim Staff Evaluation of Phase 1 Request for Additional Information			
RAI Number **ISE Report Section**	**Action**	**Status**	**Comment**
03 Section 3.2.1	Make available for NRC staff audit the location of the portable diesel generators.	**OPEN**	
04 Section 3.2.1 Section 3.2.2.4 Section 3.2.2.5 Section 3.2.2.10 Section 3.2.4.1 Section 3.2.4.2 Section 3.2.5.2 Section 3.2.6	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.	**OPEN**	
05 Section 3.2.2.1 Section 3.2.2.2	Make available for NRC staff audit analyses demonstrating that HCVS has the capacity to vent the steam/energy equivalent of one percent of uprated 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.	**OPEN**	

Interim Staff Evaluation of Phase 1 Request for Additional Information			
RAI Number **ISE Report Section**	**Action**	**Status**	**Comment**
06 Section 3.2.2.3 Section 3.2.2.5 Section 3.2.2.9 Section 3.2.2.10	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.	**OPEN**	
07 Section 3.2.2.4 Section 3.2.6	Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location.	**OPEN**	
08 Section 3.2.2.4 Section 3.2.6	Make available for NRC staff audit the final sizing evaluation for HCVS batteries/battery charger including incorporation into FLEX DG loading calculation.	**OPEN**	
09 Section 3.2.2.5	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.	**OPEN**	

Interim Staff Evaluation of Phase 1 Request for Additional Information			
RAI Number **ISE Report Section**	**Action**	**Status**	**Comment**
10 Section 3.2.2.6	Provide a description of the strategies for hydrogen control that minimizes the potential for hydrogen gas migration and ingress into the RB or other buildings.	CLOSED	Energy Northwest will use Option number 5 of the NEI White Paper HCV-WP-03, Hydrogen/Carbon Monoxide Control Measures and add a check valve at the discharge end of the vent pipe to address the flammability of combustible gasses.
11 Section 3.2.2.9	Make available for NRC staff audit descriptions of all instrumentation and controls (existing and planned) necessary to implement this order including qualification methods.	**OPEN**	
12 Section 3.2.2.9	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	Columbia will be using an unused containment penetration and will be installing new containment isolation valves.
13 Section 3.4.1	Make available for NRC staff audit site specific details of the EOPs when available.	**OPEN**	

Interim Staff Evaluation of Phase 1 Request for Additional Information			
RAI Number **ISE Report Section**	**Action**	**Status**	**Comment**
14 Section 3.4.4	Provide justification for not leak testing the HCVS every three operating cycles and after restoration of any breach of system boundary within buildings.	CLOSED	Columbia has adopted the current NEI guidance on testing and Inspection requirements as shown in Table 4-1

List of Remaining FLEX Integrated Plan Open Items Related to the HCV		
FLEX OIP Open Item	**Action**	**Status**
OI-FLEX-73	GOTHIC analyses will be confirmed, or revised, to bound the design of the hardened containment vent after the design is finalized. (This OI has been added to assure that the subject analyses reflect the design required by EA-13-109.)	**OPEN**