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EA-13-109
10 CFR 50.54(f)

June 24, 2019
GO2-19-082

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

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397
ENERGY NORTHWEST'S FINAL SIX-MONTH STATUS UPDATE
REPORT FOR THE IMPLEMENTATION OF NUCLEAR REGULATORY
COMMISSION (NRC) ORDER EA-13-109, PHASE 2 ONLY**

- References:
1. EA-13-109 from E. J. Leeds (NRC) to All Operating Boiling Water Reactor 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," dated June 6, 2013 (ADAMS ML13143A334 (Pkg.))
 2. Letter GO2-15-175 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," dated December 16, 2015 (ADAMS ML15351A363)
 3. Letter GO2-18-145, from A. L. Javorik (Energy Northwest) to NRC, "Energy Northwest's December 2018 Six-Month Status Update Report for the Implementation of Nuclear Regulatory Commission (NRC) Order EA-13-109, Phase 2 Only," dated December 13, 2018 (ADAMS ML18347B495)
 4. Letter GO2-17-147 from A. L. Javorik (Energy Northwest) to NRC, "Energy Northwest's Notification of Full Compliance with Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events'", dated August 17, 2017 (ADAMS ML17229B506)
 5. Letter from J. L. Quichocho (NRC) to M. E. Reddemann (Energy Northwest), "Columbia Generating Station - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 2 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (CAC NO. MF4383)," dated September 29, 2016 (ADAMS No. ML15266A233)

Dear Sir or Madam,

By Reference 1 the Nuclear Regulatory Commission (NRC) issued Order EA-13-109 which required licensees to develop an overall integrated plan (OIP) and submit 6-month update reports in regards to installation and operation of a reliable hardened containment vent capable of operation under severe accident conditions. Reference 2 provided the Columbia Generating Station's revised OIP for Phase 1 of Order EA-13-109 and the initial OIP for Phase 2 of the Order. Reference 3 transmitted the previous 6-month update report for Phase 2 of NRC Order EA-13-109. Reference 4 reported the completion of activities associated with NRC Order EA-12-049 as well as Phase 1 of NRC Order EA-13-109.


The attachment to this letter provides the required 6-month update report for the remaining Phase 2 activities and open items of Order EA-13-109 as of May 31, 2019 including the Phase 2 request for additional information identified in Reference 5 relating to Columbia's overall integrated plan for severe accident capable hardened vents. This letter will serve as the final 6-month update required by Reference 1 prior to the submittal of the required report of full compliance with Reference 1.

No new commitments are being made by this letter or the attachment. If you have any questions or require additional information, please contact Ms. D. M. Wolfgramm at (509) 377-4792.

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

Executed on this 24th day of June, 2019.

Respectfully,



A. L. Javorik
Vice President, Engineering

Attachment: As stated

cc: NRC RIV Regional Administrator CD Sonoda – BPA/1399 (email)
NRC NRR Project Manager WA Horin – Winston & Strawn
NRC Senior Resident Inspector/988C

1.0 Introduction

By Reference 1, the Nuclear Regulatory Commission (NRC) issued Order EA-13-109 to Columbia Generating Station (Columbia). The Order contained requirements for the installation of a reliable containment hardened vent capable of operation under severe accident conditions. Reference 1 also required submittal of an Overall Integrated Plan (OIP) describing how compliance with the requirements described in the Order will be achieved and required the submittal of status reports at six month intervals. This attachment provides Energy Northwest's six-month status report for the remaining Phase 2 milestones, open items, and any changes to the compliance method or schedule.

2.0 Milestone Accomplishments

As listed below.

3.0 Milestone Schedule Status

The following table provides a listing of the remaining reports associated with NRC Order EA-13-109 as of May 31, 2019.

Correspondence and Reports

Milestone	Target Completion Date	Activity Status	Comments <i>(Include date changes in this column)</i>
6-month update for Order EA-13-109 Phase 2	Dec. 2017	Complete	GO2-17-201
6-month update for Order EA-13-109 Phase 2	June 2018	Complete	GO2-18-080
6-month update for Order EA-13-109 Phase 2	Dec. 2018	Complete	GO2-18-145
6-month update for Order EA-13-109 Phase 2	June 2019	Complete	This Letter
Issuance of Energy Northwest's letter of compliance with NRC Order EA-13-109, Phase 2	Aug. 2019	Started	

The following is the status of the overall integrated plan for reliable hardened containment vents (HCV) under severe accident conditions milestones as of May 31, 2019.

HCV Phase 1 Milestone Schedule:

Reported complete in letter GO2-17-147, dated August 17, 2017 – no longer reported.

HCV Phase 2 Milestone Schedule:

Milestone	Target Completion Date	Activity Status	Comments (<i>Include date changes in this column</i>)
Hold preliminary/conceptual design meeting	July 2016	Complete	This date was changed to July 2017 in letter GO2-16-171
Design Engineering On-site/Complete	July 2018	Complete	Nov. 2018 No modifications required
Operations Procedure Changes Developed	Jan. 2019	Complete	May 2019
Site Specific Maintenance Procedure Developed	Jan. 2019	Completed ¹	
Training Complete	Apr. 2019	Complete	
Implementation Outage	May 2019		June 2019
Procedure Changes Active	May 2019		June 2019
Walk Through Demonstration/Functional Test	June 2019		

¹ No new equipment was procured for Phase 2. Therefore, no new maintenance procedures are required.

4.0 Changes/Updates to Overall Integrated Plan

Changes have been made to the response sequence used for mitigation of a beyond-design-basis accident to enable the use of a single response to both a non-severe and severe accident scenario. The changes have been revalidated and remain within the original staffing study staffing levels.

Upon completion of the updated validation, an integrated review was conducted to ensure that adequate resources (personnel, equipment, materials) are available to implement the individual strategies to achieve the intended results was conducted. A comparison of the original FLEX Integrated Review and the severe accident response was made. The review of the two responses shows that there are adequate on-shift crew resources, supplemented by returning staff (after 6 hours) without any overlap of assignments to complete the required actions in the required time. The integrated reviews are provided at the end of this attachment.

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

None

6.0 Open Items from Overall Integrated Plan, Interim Staff Evaluation, and Audits

The following tables provide an update of the status of the remaining open items as of May 31, 2019.

<u>List of Overall HCV Integrated Plan Open Items</u>			
HCV OIP Open Item	Action	Status	Comment/Update
OI-HCV-10	Provide site-specific details of the EOPs when available. Develop procedures for SAWA and SAWM	OPEN	Phase 1: No EOP procedure changes are required. Phase 2: in review.
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.	CLOSED	The FLEX flow element and control valves have been moved into the reactor building at the 522' level.
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.	CLOSED	
OI-HCV-14	Complete the evaluation to determine accessibility, habitability, staffing sufficiency, and communication capability during SAWA/SAWM	CLOSED	
OI-HCV-15	Perform MAPP analysis for NEI 13-02 figures C-2 through C-6 and determine the time sensitive SAWM actions	CLOSED	
OI-HCV-20	Incorporate approved language of OIP Attachment 2.1.D into site SAMG procedure(s)	OPEN	

Response to the Phase 2 Request for Additional Information			
RAI Number ISE Report Section	Action	Status	Comment
1 Section 3.2.1	Licensee to determine the location of the FLEX hose installed valves and flow elements, which will be used to control SAWA/SAWM flow.	CLOSED	The FLEX flow element and control valves have been moved into the reactor building at the 522' level.

Response to the Phase 2 Request for Additional Information			
RAI Number ISE Report Section	Action	Status	Comment
2 Section 3.3.2.3	Licensee to evaluate the SAWA equipment and controls, as well as ingress and egress paths for the expected severe accident conditions (temperature, humidity, radiation) for the sustained operating period.	CLOSED	
3 Section 3.3.3	Licensee to demonstrate that containment failure as a result of overpressure can be prevented without a drywell vent during severe accident conditions.	CLOSED	
4 Section 3.3.3.1	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.	CLOSED	
5 Section 3.3.3.4	Licensee to demonstrate that there is adequate communication between the MCR and the operator at the FLEX pump during severe accident conditions.	CLOSED	See discussion below ¹ .
6 Section 3.3.3.4	Licensee to demonstrate the SAWM flow instrumentation qualification for the expected environmental conditions.	CLOSED	

¹ Procedure ABN-FSG-002 has been revised to include a sound powered phone kit to be deployed with either FLEX pump to allow the pump operator to use the sound powered phone jack in either service water pump house to communicate with the control room or the valve operator in the reactor building if radio communications are not available. Additionally, the sound powered phone system and radio system are routinely tested and inventoried.

7.0 Reference

- EA-13-109 from E. J. Leeds (NRC) to All Operating Boiling Water Reactor 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," dated June 6, 2013 (ADAMS ML13143A334 (Pkg.))

ERO Arrivals																														
	Position									5-6 hr	< Time when ERO begins to arrive							18-24 hr	< Time when NSRC begins to arrive											
	ERO Personnel or Facilities call out										Refueling Activities																			
	ERO Personnel or Facilities call out										Refueling Activities																			
	ERO Mech										RB Cooling 5.6.2 Rigging Activities																			
	ERO Mech										RB Cooling 5.6.2 Rigging Activities																			
		T0-15 min	15-30 min	30-45 min	45-60 min	1-2 hr	2-3 hr	3-4 hr	4-5 hr	5-6 hr	6-7 hr	7-8 hr	8-9 hr	9-10 hr	10-11 hr	11-12 hr	12-18 hr	18-24 hr	25 hrs	28 hrs	30 hrs	32 hrs	34 hrs	36 hrs	38 hrs					

Severe Accident Review

Action Item	Action	T0-15 min	15-30 min	30-45 min	45-60 min	1-2 hr	2-3 hr	3-4 hr	4-5 hr	5-6 hr	6-7 hr	7-8 hr	8-9 hr	9-10 hr	10-11 hr	11-12 hr	12-18 hr	18-24 hr	25 hrs	28 hrs	30 hrs	32 hrs	34 hrs	36 hrs	38 hrs		
	Event Starts					< FUEL FAILURE			Time when ERO begins to arrive >			< VESSEL FAILURE							< Time when NSRC begins to arrive								
1	Reactor Core Isolation Cooling (RCIC) fails																										
2	Operations crew enters SBO/ELAP procedure PPM 5.6.1																										
3	Monitor RPV and containment parameters and initiate RPV cool down	CRO1 and CRO2																									
4	Complete compensatory measures to promote CR cooling - PPM 5.6.2 Att 8.5	STA 15 min																									
5	Consult with regional load centers on offsite power recovery - PPM 5.6.1		Shift Manager 30 min																								
6	Determine if AC power will not be restored within the normal SBO coping period (4 hours) (i.e., declare ELAP) PPM 5.6.1	Shift Manager with input from OPS2 and OPS4 35 min																									
7	Complete 125-V dc load shed - PPM 5.6.2 Att. 8.4		RWCR and CRO3 - 20 min																								
8	Perform 250-V DC load shed - PPM 5.6.2 Att. 8.4 & 8.9				OPS 3 - 5 min																						
9	Vent the main generator			OPS 3 - 30 min																							
10	Depressurize RPV						CRO1																				
12	Vent containment - PPM 5.5.14									OPS 2 and CRO 3 - 14 min																	
13	Open additional breakers for Control Room cooling - PPM 5.6.2 Att. 8.5		RWCR and CRO3 concurrent with #7 above																								
14	Begin deployment of FLEX fueling equipment										ERO Personnel (Facilities personnel if called out)																
15	Open designated doors in vital island and radwaste bldg. - PPM 5.6.2 Att. 8.12				CRO3 - 16 min																						
16	Connect FLEX equipment for battery charging ABN-ELEC-DG4-CROSS/TIEMC-7A				OPS2, OPS4, Chem, HP, Laborer ~ 3 hrs																						
17	Refuel credited FLEX equipment - SOP-FLEX-EQUIPMENT-REFUEL										ERO Personnel (Facilities personnel if called out)																

