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EA-12-049

August 25, 2015
GO2-15-124

10 CFR 50.54(f)

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

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397
ENERGY NORTHWEST'S FIFTH SIX-MONTH STATUS UPDATE
REPORT FOR THE IMPLEMENTATION OF NUCLEAR REGULATORY
COMMISSION (NRC) ORDER EA-12-049 MITIGATION STRATEGIES
FOR BEYOND DESIGN BASIS EXTERNAL EVENTS**

- References:
1. Letter dated March 12, 2012, from E. J. Leeds (NRC) and M. R. Johnson (NRC) to Energy Northwest et.al, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events"
 2. Letter dated March 12, 2012, from E. J. Leeds and M. R. Johnson (NRC) to Energy Northwest et.al, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident"
 3. Letter GO2-12-156 dated October 30, 2012, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Response to the March 12, 2012 Information Request – Communication Assessment"
 4. Letter GO2-13-034 dated February 28, 2013, from A. L. Javorik (Energy Northwest) to NRC, "Energy Northwest's Response to NRC Order EA-12-049 – Overall Integrated Plan for Mitigating Strategies"

Dear Sir or Madam,

By Reference 1, the Nuclear Regulatory Commission (NRC) issued Order EA-12-049, which required licensees to develop, implement, and maintain guidance and strategies for mitigation of beyond-design-basis external events. Reference 4 transmitted the Mitigation Strategies Overall Integrated Plan (OIP) for Columbia prepared in response to Reference 1.

Reference 1 also required submittal of status reports at six month intervals following initial submittal of the OIP. Enclosure 1 to this letter provides Energy Northwest's fifth six-month status report regarding the implementation of the mitigation strategies.

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By Reference 2, the NRC requested that licensees assess the communications systems and equipment that would be used during an emergency. Energy Northwest submitted the communications assessment for Columbia in Reference 3 and committed to provide the NRC with the status of the implementing actions identified in the assessment as part of the six-month status reports prepared in response to Reference 1. Enclosure 2 to this letter provides Energy Northwest's fifth six-month status report regarding the status of the communication assessment open items.

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 25th day of August, 2015.

Respectfully,



D. A. Swank
Assistant 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 1

COLUMBIA GENERATING STATION, DOCKET NO. 50-397

**FIFTH SIX-MONTH STATUS UPDATE REPORT FOR THE
OVERALL INTEGRATED PLAN FOR MITIGATION STRATEGIES FOR BEYOND
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1.0 Introduction

By Reference 1, the Nuclear Regulatory Commission (NRC) issued Order EA-12-049 to Columbia Generating Station (Columbia). The Order contained requirements for mitigation strategies for beyond-design-basis external events. Reference 1 also required submittal of a Mitigation Strategies Overall Integrated Plan (OIP), and submittal of status reports at six month intervals. This enclosure provides Energy Northwest's fifth six-month status report. This fifth six-month status report provides an update of milestone accomplishments and open items since submittal of the fourth six-month status report, including any changes to the compliance method or schedule.

2.0 Milestone Accomplishments

All the Milestones required to support restart from Refueling Outage 22 (implementation outage) have been completed. With the exception of plant changes directly associated with the severe accident capable containment wetwell vent, only 6-month updates and the final compliance notification remain open.

3.0 Milestone Schedule Status

The following table is provided as an update to the milestone schedule documented in the initial submittal of the Mitigation Strategies Overall Integrated Plan. Columbia is required to have all the activities to meet the requirements of NRC Order EA-12-049 completed by the restart from Refueling Outage 22 with the exception of those items directly related to NRC Order EA-13-109. This section shows that the activities required to meet NRC Order EA-12-049 are complete with the exception of the recurring 6-month updates and the final certification submittal.

Milestones	Target Commence Date	Target Completion Date	Activity Status
Correspondence & Reports:			
Submit 60 Day Initial Mitigation Strategies Status Report	Oct. 2012	Oct. 2012	Completed GO2-12-149
Submit Mitigation Strategies Overall Integrated Plan	Feb. 2013	Feb. 2013	Completed GO2-13-034
First Status Update Report for the Mitigation Strategies Overall Integrated Plan	Aug. 2013	Aug. 2013	Completed GO2-13-123
Second Status Update Report for the Mitigation Strategies Overall Integrated Plan	Feb. 2014	Feb. 2014	Completed GO2-14-031
Third Status Update Report for the Mitigation Strategies Overall Integrated	Aug. 2014	Aug. 2014	Completed GO2-14-131

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Milestones	Target Commence Date	Target Completion Date	Activity Status
Fourth Status Update Report for the Mitigation Strategies Overall Integrated Plan	Feb. 2015	Feb. 2015	Completed GO2-15-034
Fifth Status Update Report for the Mitigation Strategies Overall Integrated Plan	Aug. 2015	Aug. 2015	Completed GO2-15-124
Sixth Status Update Report for the Mitigation Strategies Overall Integrated Plan	Feb. 2016	Feb. 2016	Not Started
Seventh Status Update Report for the Mitigation Strategies Overall Integrated Plan	Aug. 2016	Aug. 2016	Not Started
Eighth Status Update Report for the Mitigation Strategies Overall Integrated Plan	Feb. 2017	Feb. 2017	Not Started
Issuance of Energy Northwest letter of compliance with NRC Order EA-12-049, Section IV.C.3	Jun. 2017	Aug. 2017	Not Started
Evaluations for Mitigation Strategies Phase 1, 2 & 3			
Perform Engineering Evaluations	Jun. 2013	Apr. 2015	Completed GO2-15-124
Engineering & Modifications for Mitigation Strategies Phase 1, 2 & 3			
Develop Engineering Design for Modifications	Jun. 2013	Apr. 2015	Completed GO2-15-124
Plant Modification Installation	Apr. 2014	Jun. 2015	Completed GO2-15-124
Diverse and Flexible Coping Strategies (FLEX) Support Guidelines (FSG) Program & Procedures:			
Perform FLEX procedure tabletop exercise	Dec. 2014	Apr. 2015	Completed GO2-15-124
Develop FSGs	Jul. 2013	Apr. 2015	Completed GO2-15-124

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Milestones	Target Commence Date	Target Completion Date	Activity Status
Develop testing, calibration, maintenance and surveillance procedures for portable FLEX equipment	Jan. 2014	Apr. 2015	Completed GO2-15-124
FLEX Program Procedural Changes are placed in effect	Jun. 2015	Jun. 2015	Completed GO2-15-124
Procurement & Storage Plan:			
Complete modification and installation of FLEX buildings	Oct. 2013	Jun. 2014	Completed GO2-15-034
Procure and store necessary FLEX portable equipment	Jun. 2013	Apr. 2015	Completed GO2-15-124
Test portable FLEX equipment	Mar. 2014	Apr. 2015	Completed GO2-15-124
Establish programmatic controls for portable FLEX equipment	Jan. 2014	Apr. 2015	Completed GO2-15-124
Mitigation Strategies Staffing Analysis:			
Perform Mitigation Strategies Staffing Analysis	Aug. 2014	Dec. 2014	Completed GO2-15-124
Operations & Training:			
Development of Mitigation Strategies Program training modules	Jan. 2015	Mar. 2015	Completed GO2-15-124
Mitigation Strategies Program training of station personnel	Mar. 2015	Jun. 2015	Completed GO2-15-124
Operational/Functional Testing of Mitigation Strategies Program Structures, Systems, Components (SSC)	Mar. 2015	Jun. 2015	Completed GO2-15-124
Final Mitigation Strategies Program turned over to Operations	Jun. 2015	Jun. 2015	Completed GO2-15-124

4.0 Changes to the Compliance Method

No additional changes to the method of compliance are being identified.

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

The mitigation strategies contained in the initial OIP (Reference 2) were dependent, in part, on the hardened containment wetwell venting capabilities that were to be implemented by NRC Order EA-12-050 (Reference 4) coincident with the

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implementation of the FLEX strategies. NRC Order EA-13-109 (Reference 5) rescinded Reference 4 requirements and imposed additional requirements for severe accident capable hardened containment venting capabilities. Consistent with EA-13-109 Phase 1 requirements, Energy Northwest plans to complete installation of the hardened containment wetwell vent during the spring 2017 refueling outage. However, full compliance with EA-12-049 was required prior to restarting from the spring 2015 Columbia refueling outage. As requested in Reference 7 and approved in Reference 8, full compliance with NRC Order EA-12-049 was relaxed until the completion of the spring 2017 refueling outage to allow sufficient time to implement a severe accident capable hardened containment wetwell vent.

No additional relief or relaxation has been identified. Additionally, the need for an amendment request to support pending modifications has not been identified.

6.0 Open Items from Overall Integrated Plan

The following table provides a summary and status of the open items documented in the initial submittal of the Mitigation Strategies OIP (Reference 2), Revision 1 of the Mitigation Strategies OIP contained in the second six-month status update (Reference 9), and responses to NRC Audit Questions regarding the mitigation strategies. This section shows that the activities required to meet NRC Order EA-12-049 are complete. The flooding hazard analysis items remain open.

Mitigation Strategies Overall Integrated Plan Open Items List	Status
Hazards:	
OI-FLEX-01 - FLEX equipment will be stored in structures capable of withstanding the hazards applicable to Columbia described above. These structures are generally referred to as "FLEX Buildings." Two FLEX buildings or structures will be utilized to provide diverse storage locations that can maintain an appropriate environment for the stored equipment and provide generator backed power as necessary. The construction of the storage facilities is in progress. The list of equipment to be stored therein is being developed, including any vehicles required to move the equipment. The storage of equipment within buildings has been specified to limit seismic interactions.	Completed GO2-15-034
OI-FLEX-02 - The potential failure of a circulating water (CW) pipe, coincident with the extended loss of alternating current (ac) power (ELAP), will be considered to ensure that the FLEX storage areas are located such that deployment of at least one set of portable equipment can be accomplished.	Completed GO2-14-031
OI-FLEX-03 - Equipment stored outside will be evaluated for seismic interactions, cold weather operation and ashfall.	Completed GO2-15-034

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Mitigation Strategies Overall Integrated Plan Open Items List	Status
OI-FLEX-04 - The locations and design of equipment connection points are being developed and will ensure at least one connection point for the FLEX equipment requires access only through seismically robust structures including both the connection point and any areas that plant personnel will have to access.	Completed GO2-15-034
OI-FLEX-05 - The procedural interface in NEI 12-06 Section 5.3.3.1 (alternate instrument readouts) will be developed once the critical monitoring parameters are identified.	Completed GO2-15-034
OI-FLEX-06 - Evaluation of FLEX equipment will be completed to ensure proper functioning under the design basis temperatures and ashfall conditions. This includes manual actions to transport and set up the equipment.	Completed GO2-15-124
OI-FLEX-07 - Actions will be developed to ensure the continued availability of the water inventory sources from the SW ponds in cold weather. In addition, actions will be developed to thaw any frozen service water piping that will be required in Phase 3. The plan to remove ice and snow from equipment deployment routes is under evaluation and actions will be developed as needed.	Completed GO2-15-034
Assumptions: (Some Assumptions may be impacted by the completion of activities developed for Hardened Vents)	
OI-FLEX-08 - The sequence of events developed to address the ELAP and loss of the ultimate heatsink (LUHS) will take into account sources of expected reactor coolant inventory loss. (NRC Audit Question 15)	Completed GO2-14-131
OI-FLEX-09 - Modular Accident Analysis Program (MAAP) analysis will be performed. The resulting time line will establish the necessary actions that will be taken to protect both the core and containment.	Completed GO2-14-131
OI-FLEX-10 - GOTHIC calculations will evaluate the effects of a loss of heating, venting and air conditioning (HVAC) on the plant response. An evaluation of the GOTHIC results on equipment qualification will be performed. Areas of the plant requiring access by personnel (including activities identified in the Appendix 1 Timeline) will be evaluated to ensure conditions will support the actions. (This OI has been changed to explicitly include activities identified in the Timeline for completeness.) (NRC Audit Questions 23, 24, 29, 43 and 44)	Completed GO2-14-131

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OI-FLEX-11 – The design of the permanent structures, systems, and components (SSCs) used to mitigate the ELAP and LUHS will be verified to be robust with respect to seismic events, floods, and high winds.	Completed GO2-15-034
Sequence of Events:	
OI-FLEX-12 - The Station Blackout (SBO)/ELAP procedure will require all load shed actions to be completed in 1 hour. These load shed actions will be validated to ensure they can be completed within this time limit. (This OI has been changed because the existing 1 hour procedural limit will be maintained.	Completed GO2-14-131
OI-FLEX-13 - A plant modification will be performed to address the potential for flooding of the RCIC room from the barometric condenser.	Completed GO2-15-034
OI-FLEX-14 - It is estimated to take 15 minutes to complete the additional load shedding necessary for an ELAP. The 15 minute duration for shedding the additional loads will be validated. (This OI has been deleted because the ELAP load shed will be combined with the SBO load shed and performed at the start of the event.)	Deleted GO2-14-131
OI-FLEX-15 - The maximum time needed for connection of a 480V FLEX generator to power the Division 1 batteries will be determined.	Completed GO2-15-034
Programmatic:	
OI-FLEX-16 - Portable FLEX equipment will be initially tested or otherwise evaluated to ensure acceptable performance.	Completed GO2-15-124
OI-FLEX-17 - The maintenance and testing program for FLEX equipment will be documented in the next OIP update following finalization of the program.	Completed GO2-15-124
OI-FLEX-18 - Unavailability of equipment and applicable connections that directly perform a FLEX mitigation strategy for core, containment, and spent fuel pool (SFP) will be managed in accordance with NEI 12-06.	Completed GO2-15-124
OI-FLEX-19 - Procedures will ensure that changes to the plant design, physical plant layout, roads, buildings, and structures used for the storage of portable FLEX equipment will not adversely impact the approved FLEX strategy.	Completed GO2-15-124
OI-FLEX-20 - Changes to FLEX strategies will be assessed using the change process provided in NEI 12-06 Section 11.8.	Completed GO2-15-124

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OI-FLEX-21 – Periodic training will be provided to site emergency response leaders on Beyond Design Basis emergency response strategies and implementing guidelines. (This OI has been changed to reflect the requirement for periodic training stated in NEI 12-06 paragraph 11.6.2)	Completed GO2-15-034
OI-FLEX-22 - Personnel assigned to direct execution of the mitigation strategies for Beyond Design Basis events will receive the necessary training to ensure familiarity with the associated tasks.	Completed GO2-15-034
OI-FLEX-23 - Establish staging area for the receipt of offsite resources.	Completed GO2-14-131
OI-FLEX-24 - Establish site-specific Strategic Alliance for FLEX Emergency Response (SAFER) Response Plan for Columbia with the National SAFER Response Center (NSRC) to define and coordinate NSRC and plant actions in response to events. (This OI has been changed to use the formal designation of the “playbook.”)	Completed GO2-15-034
OI-FLEX-69 - Energy Northwest will perform an evaluation of the acceptability of the Tri-Cities Airport and the Yakima Municipal Airport as SAFER Staging Areas. (This OI has been added to reflect the selection of the Tri Cities and Yakima Airports.) As a result of the evaluation, the Seattle and Portland airports were chosen as the SAFER staging areas.	Completed GO2-14-131
Phase 1 Core Cooling: (Some Mitigation Strategies related to Phase 1 Core Cooling may be impacted by the completion of activities developed for Hardened Vents)	
OI-FLEX-25 - Procedure guidance will be developed to support implementation of Phase 1 Core Cooling strategies as described in the Overall Integrated Plan.	Completed GO2-15-124
OI-FLEX-26 - Strategies for maintaining core cooling during an ELAP and LUHS event during shutdown and refueling will be developed, including the necessary actions and equipment required during Phases 1, 2, and 3. Energy Northwest will incorporate the supplemental guidance provided in the NEI position paper entitled “Shutdown / Refueling Modes” to enhance the shutdown risk process and procedures.	Completed GO2-15-124
OI-FLEX-27 - System modifications and evaluations will be completed to support implementation of Phase 1 Core Cooling strategies as described in the Overall Integrated Plan.	See Items a – e below

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<p>a. A reliable containment hardened vent system will be installed to vent heat from the reactor pressure vessel (RPV)/containment to the atmosphere. Details of this design will be provided in the Hardened Vent Overall Integrated Plan required by NRC Order EA-13-109.</p>	<p>Completed GO2-14-107 GO2-14-175</p>
<p>b. Analyses of reactor core isolation cooling (RCIC) operation at elevated temperatures have been undertaken by General Electric Hitachi (GEH) and Energy Northwest to identify changes to the RCIC pump or turbine necessary to ensure reliable operation at elevated temperatures. Energy Northwest will evaluate potential actions including changes to procedures or maintenance practices or implementation of modifications.</p>	<p>Completed GO2-15-124</p>
<p>c. An assessment of RCIC system piping, hangers and supports will be conducted at the elevated temperatures to ensure satisfactory performance. If needed, modifications will be performed.</p>	<p>Completed GO2-15-124</p>
<p>d. An evaluation of the feasibility of redesigning or repowering the barometric condenser's level switch will be performed to determine if it can remain functional during an ELAP to provide automatic control of RCIC-P-4.</p>	<p>Completed GO2-14-031</p>
<p>e. MAAP cases using the suppression pool will be re-run using finalized design parameters of the containment hardened vent. The results will be used to define additional actions. (See Open Item OI-FLEX-09). (This OI has been changed because the suppression pool will be the credited water source for initial RCIC operation.)</p>	<p>Completed GO2-14-131</p>
<p>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.)</p>	<p>Open</p>

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Mitigation Strategies Overall Integrated Plan Open Items List	Status
Phase 1 Containment: (Some Mitigation Strategies Open Items not originally identified in the Overall Integrated Plan related to Phase 1 Containment have been created due to the potential impact of the schedule for activities developed for Phase 1 & 2 Hardened Vents)	
OI-FLEX-27 (continued) <ul style="list-style-type: none"> f. It is anticipated that temporary interim strategies will be developed for venting the containment until the completion of containment hardened vent activities. (This OI has been deleted because an interim venting strategy will not be credited for compliance with EA-12-049.) 	Deleted GO2-14-031
<ul style="list-style-type: none"> g. It is anticipated that revisions to procedures will be developed to implement the temporary interim strategies for venting the containment until the completion of containment hardened vent activities. (This OI has been deleted because an interim venting strategy will not be credited for compliance with EA-12-049.) 	Deleted GO2-14-031
Phase 2 Core Cooling:	
OI-FLEX-28 - Procedure guidance will be developed to support implementation of Phase 2 Core Cooling strategies as described in the Overall Integrated Plan.	Completed GO2-15-124
OI-FLEX-29 - System modifications and evaluations will be completed to support implementation of Phase 2 Core Cooling strategies as described in the Overall Integrated Plan.	See items a – d below
<ul style="list-style-type: none"> a. Alternate connection points will be provided to connect FLEX generators to the electrical distribution system. 	Completed GO2-15-124
<ul style="list-style-type: none"> b. An evaluation of running underground cabling from the FLEX Building(s) to the existing electrical connection points outside the Diesel Generator Building will be performed. 	Completed GO2-14-131
<ul style="list-style-type: none"> c. DG4 or DG5 will have the capability of providing power to Division 1 and Division 2. (This OI has been changed to eliminate duplication of OI-FLEX-29.b and to reflect the planned capability of the FLEX DGs) 	Completed GO2-14-131
<ul style="list-style-type: none"> d. Provisions will be made to allow the installation of hoses through fence(s). (This OI has been changed to reflect a change in the strategy for hose routing with respect to fences.) 	Completed GO2-14-131

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OI-FLEX-30 - An evaluation will be completed to ensure a diverse supply of fuel is available, maintained and diverse means are provided for refueling the portable equipment.	Completed GO2-15-034
OI-FLEX-31 - Strategies for mitigating an ELAP and LUHS event during cold shutdown and refueling will be developed as described in the Overall Integrated Plan.	Completed GO2-15-124
OI-FLEX-70 - An analysis will be performed to confirm that the Phase 2 configurations described in the OIP for suppression pool make-up can provide adequate flow through the spray header. (This OI has been deleted as the suppression pool make-up will not use the spray nozzles as part of the make-up flow path.)	Deleted GO2-14-131
OI-FLEX-71 - A wind and seismic evaluation in accordance with the American Society of Civil Engineers (ASCE) 7-10 Building Risk Category IV will be performed on the above ground alternate gasoline tank located outside the protected area. (This OI has been added to track completion of the subject evaluation.)	Completed GO2-15-034
Phase 3 Core Cooling:	
OI-FLEX-32 - Energy Northwest will establish a site-specific SAFER Response Plan for Columbia with the NSRC to define and coordinate NSRC and plant actions in response to events.	Completed GO2-15-034
OI-FLEX-33 - Modifications and evaluations will be completed to support implementation of Phase 3 Core Cooling strategies as described in the Overall Integrated Plan.	See Items a – b below
a. Two separate connection points will be installed to provide critical bus power from a 4160-V ac FLEX generator (From the NSRC).	Completed GO2-15-034
b. A strategy for connecting the large FLEX pump to the service water (SW) system will be developed. SW system piping will be modified if needed to provide connection points.	Completed GO2-15-034
OI-FLEX-72 - The spray pond temperature rise while operating in the shutdown cooling mode without sprays will be determined. (This OI has been added to determine if cooling tower make-up (TMU) pump operation will be needed.)	Completed GO2-14-131

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Phase 1 SFP Cooling:	
Procedure guidance will be developed to support implementation of Phase 1 SFP Cooling strategies. (As discussed in the Overall Integrated Plan, the SFP does not require any action in Phase 1. The inventory of water in the pool is generally maintained greater than or equal to 22 feet above the top of irradiated fuel assemblies stored in the fuel pool. The heat up of the pool water will remove heat from the stored fuel during Phase 1, therefore this open item can be Deleted)	Deleted GO2-14-031
OI-FLEX-34 - Modifications will be completed to support implementation of Phase 1 SFP Cooling strategies. Phase 1 relies on the use of installed plant equipment. As stated in GO2-14-031, the SFP does not require any action in Phase 1. The inventory of water in the SFP is generally maintained greater than or equal to 22 feet above the top of irradiated fuel assemblies stored in the fuel pool. The heat up of the pool water will remove heat from the stored fuel during Phase 1. There are no modifications required for SFP cooling strategies. The SFPLI modification required by EA-12-051 has been completed as reported in letter GO2-15-120.	Completed GO2-15-124
Phase 2 SFP Cooling:	
OI-FLEX-75 - Procedure guidance will be developed to support implementation of Phase 2 SFP Cooling strategies as described in the OIP. (This OI has been added to track the procedure development needed to support Phase 2 SFP Cooling.)	Completed GO2-15-124
OI-FLEX-74 - The time that make-up to the SFP must be initiated after an ELAP will be determined for a full core off-load.	Completed GO2-14-131
Phase 3 SFP Cooling:	
OI-FLEX-35 - Procedure guidance will be developed to support implementation of Phase 3 SFP Cooling strategies.	Completed GO2-15-124
OI-FLEX-36 - Evaluations will be completed to support implementation of Phase 3 SFP Cooling strategies. a. An evaluation of the ability of the 4160-V ac FLEX generator (from the NSRC) to repower a Fuel Pool Cooling (FPC) pump will be completed. An evaluation of the ability of the large-capacity FLEX pump (from the NSRC) to provide cooling to the FPC heat exchanger will be completed.	Completed GO2-14-131

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Phase 1 Safety Support Functions:	
OI-FLEX-37 - Procedure guidance will be developed to support implementation of Phase 1 Safety Function Support strategies as described in the Mitigation Strategies Overall Integrated Plan.	Completed GO2-15-034
OI-FLEX-38 - System modifications will be completed to support implementation of Phase 1 Safety Function Support strategies as described in the Mitigation Strategies Overall Integrated Plan. a. GOTHIC modeling is ongoing in support of the ELAP that will identify heat loads in the key locations between the buildings. This analysis will then define additional actions that may be required using portable equipment, or any modifications to support operation of installed equipment during Phase 1. No system modifications were required.	Completed GO2-15-034
Phase 3 Safety Support Functions:	
OI-FLEX-39 - An evaluation of the conditions of the residual heat removal (RHR) pump rooms under an ELAP event will be completed to determine if additional actions are needed to remove heat from the rooms prior to and during operation of the pump.	Completed GO2-14-131
Appendix 1 – Sequence of Events Timeline:	
OI-FLEX-40 - Modification to the sequence of events timeline will be provided in future status update reports as analyses, strategies and evaluations are completed.	Completed GO2-15-034
Appendix 2 – Milestone Schedule:	
None – Revisions to the milestone schedule are identified in Section 2 of this and subsequent future status update reports.	N/A
Appendix 3 – Conceptual Sketches:	
OI-FLEX-41 – Updated sketches will be provided in future status reports if needed to reflect changes.	Completed GO2-14-131
NRC Audit Question Responses:	
OI-FLEX-42 – NEI 12-06, Section 5.3.3 Consideration 2: “Consideration should be given to the impacts from large internal flooding sources that are not seismically robust and do not require ac power (e.g., gravity drainage from lake or cooling basins for non-safety-related cooling water systems,” will be addressed in future six-month updates. (Response to NRC Audit Question 02)	Completed GO2-14-131

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<p>OI-FLEX-43 – The flooding hazards analysis will provide information about site water level associated with a probable maximum precipitation (PMP) event and a local intense precipitation (LIP) event. These water levels will be compared to elevations for the FLEX buildings as well as the deployment routes for the equipment. A LiDAR survey of the site was performed and a topographic plan of the site has been generated to assist in this evaluation. The flooding analysis is currently in progress. The results will be used to provide a response to this question in a future OIP update. (Response to NRC Audit Question 03) (This OI has been changed because the flooding analysis remains in progress and the OI was not closed in the February 2014 update.)</p>	<p align="center">Started</p>
<p>OI-FLEX-44 – A future update to the OIP will address the applicability to Columbia of each of the nine considerations in NEI 12-06 Section 6.2.3.2, Deployment of FLEX Equipment. (Response to NRC Audit Question 04) (This OI has been changed because the flooding analysis remains in progress and the OI will be closed in a future update.)</p>	<p align="center">Started</p>
<p>OI-FLEX-45 – The flooding analysis will be used to determine if any of the external flooding procedures should be changed. (Response to NRC Audit Question 04)</p>	<p align="center">Not Started</p>
<p>OI-FLEX-46 – The NRC has endorsed generic resolutions of concerns regarding use of the MAAP code in mitigation strategies. Energy Northwest will assess the applicability of the generic resolutions to Columbia. (Response to NRC Audit Question 09) Columbia has completed an assessment of the generic resolution of the issues related to use of MAAP4 for our ELAP work. The assessment focused on the limitations imposed by the NRC on their acceptance of the use of MAAP4 for timeline purposes as stated in the NRC letter dated October 3, 2013, from Jack R. Davis (NRC) to Joseph E. Pollock (NEI). Columbia has used MAAP4 for the determination of wetwell vent timing, fuel pool cooling/make-up timing, and for RCIC operability assessments based on calculated suppression pool temperature. All the limitations in the NRC letter have been addressed in the assessment which is available for review upon request.</p>	<p align="center">Completed GO2-14-131</p>

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OI-FLEX-47 – A review of the current fire protection ring header shows that it was designed to Seismic Category II standards outside Seismic Category I structures. Except for minor portions, it is buried in engineered fill and is largely protected from the effects of high winds and missiles. While use of the fire protection ring header is an operational convenience, its availability is not credited (Response to NRC Audit Question 13).	Completed GO2-14-031
OI-FLEX-48 – The NRC has endorsed a generic resolution of concerns regarding use of the MAAP code in mitigation strategies. Energy Northwest will assess the applicability of the generic resolution to Columbia. (Response to NRC Audit Question 14) See the response in OI-FLEX-46 above.	Completed GO2-14-131
OI-FLEX-49 – GOTHIC analyses of the Vital Island will evaluate hydrogen generation in the battery rooms. The results of those analyses will determine the need, if any, for measures needed to control hydrogen concentrations in the battery rooms. (Response to NRC Audit Question 28)	Completed GO2-14-031
OI-FLEX-50 – At the point when ELAP mitigation activities require tie-in of FLEX generators, in addition to existing electrical interlocks, procedural controls, such as inhibiting generator start circuits and breaker rack-outs, will be employed to prevent simultaneous connection of both the FLEX generators and Class 1E generators to the same AC distribution system or component. FLEX strategies, including the transition from installed sources to portable sources (and vice versa), will be addressed in the FLEX procedures. (Response to NRC Audit Question 50)	Completed GO2-15-124
OI-FLEX-51 – Energy Northwest will address the considerations in NEI 12-06, Section 12.2. (Response to NRC Audit Question 34)	Completed GO2-14-131
OI-FLEX-52 – Plant specific ELAP analysis results will be provided in the format and detail equivalent to NEDC-33771P. Energy Northwest will provide the information in a subsequent six-month update. (Response to NRC Audit Question 36)	Completed GO2-15-034

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<p>OI-FLEX-53 – The issue of maintenance and testing of portable FLEX equipment is being addressed and coordinated on an industry-wide basis. Energy Northwest will continue to monitor and participate in these industry activities so that it can develop a maintenance and testing program that meets acceptable standards (including NEI 12-06), and is consistent with those used generically throughout the industry. Energy Northwest will also utilize existing station procedures coupled with vendor technical information for establishing preventive maintenance activities and schedules. The Columbia maintenance and testing program for FLEX equipment will be documented in the next OIP update following finalization of the program. (Response to NRC Audit Question 40)</p> <p>The maintenance and testing program for portable FLEX equipment has been added to the FLEX Program Document. NRC SE Tracker items 33-B and 7-E have been posted to the E-portal. No additional OIP update will be made.</p>	<p align="center">Completed GO2-15-124</p>
<p>OI-FLEX-54 – Finalize the sizing calculation for the FLEX generators for phase 2 and 3. Completion of this activity is necessary to provide a comprehensive response to this question (i.e. NRC Audit Question 42 requesting a summary of the sizing calculation for the FLEX generators to show that they can supply the loads assumed in phases 2 and 3). (Response to NRC Audit Question 42).</p>	<p align="center">Completed GO2-14-131</p>
<p>OI-FLEX-55 – Finalization of the capacity and power requirements calculation for Phase 3 is not complete. Completion of this activity is necessary to provide a comprehensive response to this question (i.e. NRC Audit Question 45 requesting a description of the electrical power requirements for Phase 3 of the mitigating strategies integrated plan and the capacity of the power sources). (Response to NRC Audit Question 45) See OI-FLEX-54 Summary Above.</p>	<p align="center">Completed GO2-14-131</p>
<p>OI-FLEX-57 – Energy Northwest will validate the ability to successfully accomplish each bypass under the expected conditions of a prolonged station blackout as part of the procedure approval process. Based on incorporation of the GEH recommended trip bypasses, the potential for equipment protection features to interfere with operation of RCIC will be minimized. (Response to NRC Audit Question 56)</p>	<p align="center">Completed GO2-15-034</p>

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OI-FLEX-58 - Energy Northwest will perform an evaluation to compare (1) the quantity of water required to dissipate, for 72 hours, the decay heat of the reactor core and spent fuel pool during Phases 1 and 2, (2) the volume of water normally in the spray ponds. (Response to NRC Audit Question 05)	Completed GO2-14-031
OI-FLEX-59 - Energy Northwest's periodic OIP updates will identify any planned modifications that it determines may require NRC approval per 10 CFR 50.90. (Response to NRC Audit Question 22) No planned modifications require NRC approval.	Completed GO2-15-034
OI-FLEX-60 - The Spent Fuel Pool section of the OIP will be updated to reflect actions taken in the event of full core off-load to the pool. (Response to NRC Audit Question 24)	Completed GO2-14-131
OI-FLEX-61 - This issue (early venting) was identified as a generic concern or question which the nuclear industry will resolve generically through the Nuclear Energy Institute (NEI) and the applicable industry groups (e.g., Boiling Water Reactor Owners Group (BWROG), Electric Power Research Institute (EPRI), etc.). (Response to NRC Audit Question 25)	Completed GO2-14-031
OI-FLEX-62 - An updated schedule for the Energy Northwest identified open items will be included in the six-month updates of the Columbia OIP. (Response to NRC Audit Question 46)	Completed GO2-14-131
OI-FLEX-63 - Calculations NE-02-12-02, ME-02-12-06, ME-02-12-07, 2.05.0,1 and CMR-11179 have been uploaded to the Columbia Fukushima portal. (Response to NRC Audit Question 47)	Completed GO2-14-131 GO2-15-034
OI-FLEX-64 - The timeline in Appendix 1 of the February 28, 2013 Overall Integrated Plan (OIP) for Order EA-12-049 will be revised as necessary to reflect use of the existing ductwork rather than the hardened containment vent. (Response to NRC Audit Question 58) (This OI has been deleted because use of ductwork for containment venting will not be credited for compliance with EA-12-049)	Deleted GO2-14-031
OI-FLEX-65 - Energy Northwest will address the conformance to the guidance of NEI 12-06, Section 3.2.2, Guideline (12). (Response to NRC Audit Question 61)	Completed GO2-14-131

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<p>OI-FLEX-66 - The NEI position paper includes instructions for licensees to incorporate the following template wording into their OIPs: “(Name of licensee) will incorporate the supplemental guidance provided in the NEI position paper entitled “Shutdown / Refueling Modes” to enhance the shutdown risk process and procedures.” (Response to NRC Audit Question 62A)</p>	<p align="center">Completed GO2-14-031</p>
<p>OI-FLEX-67 - The NEI white paper includes instructions for licensees to incorporate the following template wording into their OIPs: “[Insert Licensee] confirms that the FLEX strategy station battery run-time was calculated in accordance with the Institute of Electrical and Electronics Engineers (IEEE)-485 methodology using manufacturer discharge test data applicable to the licensee’s FLEX strategy as outlined in the NEI white paper on Extended Battery Duty Cycles. The detailed licensee calculations, supporting vendor discharge test data, FLEX strategy battery load profile, and other inputs/initial conditions required by IEEE-485 will be available on the licensee’s web portal for documents and calculations. The time margin between the calculated station battery run-time for the FLEX strategy and the expected deployment time for FLEX equipment to supply the dc loads is [“8”] hours.” Energy Northwest will incorporate this template wording into a future OIP update. (Response to NRC Audit Question 62B)(This OI has been changed because the validation of actual time deploying the 480-V ac FLEX generators per OI-FLEX-15 has not been completed.)</p>	<p align="center">Completed GO2-15-034</p>
<p>OI-FLEX-68 - The load shedding procedure is in the process of being developed. The procedure will also direct operators to depressurize the main generator manually if the main generator is pressurized with hydrogen before shedding the air side seal oil backup pump. These actions are expected to preclude a potential fire and/or explosion from the hydrogen. (Response to NRC Audit Question 50)</p>	<p align="center">Completed GO2-14-131</p>

7.0 Interim Staff Evaluation

Reference 6 transmitted an NRC Interim Staff Evaluation and Audit Report (ISE) which documented the results of a review of the Columbia OIP (Reference 2), six-month update (Reference 3), and information obtained through the NRC’s mitigation strategies audit process. The ISE documented the staff’s conclusion that Energy Northwest has

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provided sufficient information to determine that there is reasonable assurance that the OIP, when properly implemented, will meet the requirements of Order EA-12-049 at Columbia. That conclusion was based on the assumption that Energy Northwest would implement the OIP as described, including the satisfactory resolution of the Open and Confirmatory Items tabulated in the ISE. In February 2015 the NRC conducted an on-site audit of the implementation of the requirements of Reference 1 (Mitigation) and NRC Order EA-12-051 on Reliable Spent Fuel Pool Instrumentation. The audit reviewed the Open and Confirmatory items previously identified in this section. The status of the remaining Open, Confirmatory, and New items are now tracked in Section 8.0 below.

8.0 Open Items from the Audit Regarding Implementation

Reference 12 transmitted the audit report of the February 2015 audit regarding the implementation of the mitigation strategies and reliable spent fuel pool instrumentation Orders. The following table was reproduced from Attachment 3 of the audit report and includes the status of Columbia's response to the open items listed. Where indicated, the requested information has been posted on the Columbia e-portal as outlined in the Columbia Audit Plan dated January 16, 2015.

OPEN ITEMS FROM THE FEBRUARY 2015 MITIGATION/SFPI AUDIT		
Audit Item	Item Description	Licensee Input Needed
ISE OI 3.1.2.1.A	Confirm that FLEX equipment can be adequately protected and deployed in such an event and whether flooding procedures account for the use of FLEX equipment.	Licensee Open Items 43 through 45 remain open as EN is performing a local intense precipitation analysis. Response: Pending completion of the flooding hazards analysis.
ISE CI 3.2.1.4.A	The licensee has not completed calculations supporting the design of the FLEX equipment. Confirm that portable FLEX equipment is adequate to perform its credited mitigation function(s).	Licensee to evaluate head loss to the spent fuel pool while simultaneously filling SFP and RPV level. Response: Discussion and related calculation was posted to the E-portal on 6/2/15

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OPEN ITEMS FROM THE FEBRUARY 2015 MITIGATION/SFPI AUDIT		
Audit Item	Item Description	Licensee Input Needed
ISE CI 3.2.2.D	Confirm that [Energy Northwest] EN's SFP makeup strategy for Columbia provides for SFP makeup without accessing the refueling floor, as recommended in NEI 12-06, Table C-3, or that an acceptable alternate approach is developed.	Licensee to evaluate flow analysis for filling SFP through RHR B loop. Response: Flow path discussion and drawings were posted to the E-portal on 6/2/15
ISE CI 3.2.3.B	The licensee's proposed strategy for maintaining containment will rely on installation of the hardened containment vent system (HCVS) as required by Order EA-13-109. When complete, the licensee's calculations supporting the revised containment response and sequence of events timeline should be reviewed to confirm that the timeline is appropriate and that containment functions will be restored and maintained following an ELAP event.	The licensee needs to provide to the NRC staff the final configuration and calculations for the HCVS. Response: Pending finalization of the HCVS design package.
AQ 41	The alternate strategy for Phase 2 core cooling involves removal, replacement, and reconfiguration of several flanges and piping elbows during the ELAP event. The NRC staff requests that the licensee provide a description of the available lighting and habitability around the RHR piping where connections need to be made.	The NRC staff asked the licensee to provide further detail of the paths and the locations of the connections points as well as the validation of the ability to perform the actions. Response: Accessibility and flange installation discussion with maps and photos were posted to the E-portal on 6/9/15.

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OPEN ITEMS FROM THE FEBRUARY 2015 MITIGATION/SFPI AUDIT		
Audit Item	Item Description	Licensee Input Needed
AQ 52	<p>On page 18 of 60 Columbia's OIP states that load shedding will be performed to "prolong battery life to 10 hours." On page 22 of 60 Columbia's OIP states, "The 125 VDC batteries are available for 10 hours without recharging. The 250 VDC batteries are available for 17 hours without recharging." On page 35 of 60, with reference to power for containment hardened vent valve solenoids and instrumentation, Columbia's OIP states, "This battery will be designed to support at least 24 hours of operation without any outside power source." Provide justification for the above discrepancy.</p>	<p>The licensee to design the containment hardened vent system battery for a cycle of 24 hours.</p> <p>Response: Pending finalization of the HCVS design package.</p>

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OPEN ITEMS FROM THE FEBRUARY 2015 MITIGATION/SFPI AUDIT		
Audit Item	Item Description	Licensee Input Needed
1-E	<p>Please address the following items regarding the use of raw water sources for mitigating an ELAP event:</p> <p>a. Discuss the quality of the water (e.g., suspended solids, dissolved salts) that will be used for primary makeup during ELAP events, accounting for the potential for increased suspended or dissolved material in some raw water sources during events such as flooding or severe storms.</p> <p>b. Discuss whether instrumentation available during the ELAP event is capable of providing indication that inadequate core cooling exists for one or more fuel assemblies due to blockage at fuel assemblies' inlets or applicable bypass leakage flowpaths.</p> <p>c. Provide justification that the use of the intended raw water sources will not result in blockage of coolant flow across fuel assemblies' inlets and applicable bypass leakage flowpaths to an extent that would inhibit adequate core cooling. Or, if deleterious blockage at the core inlet cannot be precluded under ELAP conditions, then please discuss alternate means for assuring the adequacy of adequate core cooling in light of available indications.</p>	<p>Licensee to justify the ashfall event would not plug the inlets of the fuel assemblies or that top down cooling would be used to ensure core cooling.</p> <p>Response: Discussion and calculation was posted to the E-portal on 4/13/15</p>

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Audit Item	Item Description	Licensee Input Needed
2-E	<p>a. Discuss the design of the suction strainers used with FLEX pumps taking suction from raw water sources, including perforation dimension(s) and approximate surface area.</p> <p>b. Provide reasonable assurance that the strainers will not be clogged with debris (accounting for conditions following, flooding, severe storms, earthquakes or other natural hazards), or else that the strainers can be cleaned of debris at a frequency that is sufficient to provide the required flow. In the response, consider the following factors:</p> <p>i. The timing at which FLEX pumps would take suction on raw water relative to the onset and duration of the natural hazard.</p> <p>ii. The timing at which FLEX pumps would take suction on raw water relative to the timing at which augmented staffing would be available onsite.</p> <p>iii. Whether multiple suction hoses exist for each FLEX pump taking suction on raw water, such that flow interruption would not be required to clean suction strainers.</p>	<p>Licensee to analyze the suction strainer design and how far into the water it sits as well as the procedure for ensuring that flow is not interrupted to such a length of time that the fuel would remain covered.</p> <p>Response: Discussion and strainer vendor information was posted to the E-portal on 4/3/15</p>
10-E	<p>Evaluation of FLEX equipment to be completed to ensure proper functioning under the design-basis temperatures and ash fall conditions during both operation and storage. This includes manual actions to transport and set up the equipment as well as storage conditions.</p>	<p>Licensee to complete evaluation of operating FLEX equipment under ash fall conditions.</p> <p>Response: Evaluation was posted to the E-portal on 5/20/15</p>
11-E	<p>Please provide an assessment of potential susceptibilities of EMI/RFI in the areas where the SFP instrument is located and how to mitigate those susceptibilities.</p>	<p>A strategy to mitigate EMI/RFI interference in the SFP area.</p> <p>Response: This response was provided in the EA-12-051 compliance letter GO2-15-120.</p>

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OPEN ITEMS FROM THE FEBRUARY 2015 MITIGATION/SFPI AUDIT		
Audit Item	Item Description	Licensee Input Needed
14-E	The licensee is requested to provide a summary evaluation to confirm that the temperature and pressures within containment will not exceed the environmental qualification (EQ) of electrical equipment that is being relied upon as part of their FLEX strategies. The licensee needs to ensure that the EQ profile of the required electrical equipment remains bounding for the entire duration of the event.	Provide EQ evaluation Response: Evaluation was posted to the E-portal on 3/11/15

9.0 References

1. Letter dated March 12, 2012, from E. J. Leeds (NRC to Energy Northwest et. al, "Implementation of Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events" (EA-12-049)
2. Letter GO2-13-034 dated February 28, 2013, from A. L. Javorik (Energy Northwest) to NRC, "Energy Northwest's Response to NRC Order EA-12-049 – Overall Integrated Plan for Mitigating Strategies"
3. Letter GO2-13-123 dated August 28, 2013, from D.A. Swank (Energy Northwest) to NRC, "Energy Northwest's First Six Month Status Update Report for the Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"
4. Letter dated March 12, 2012, from E. J. Leeds (NRC) to Energy Northwest et. al, "Issuance of Order Modifying Licenses with Regard to Reliable Hardened Containment Vents" (EA-12-050)
5. Letter dated June 6, 2013, from E. J. Leeds (NRC) to Energy Northwest et. al, "Issuance of Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions" (EA-13-109)
6. NRC letter dated January 29, 2014, from J. S. Bowen (NRC) to M. E. Reddemann (Energy Northwest), "Columbia Generating Station - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies)"

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7. Letter GO2-14-26 dated February 21, 2014, from D. A. Swank (Energy Northwest) to NRC, "Request for Relaxation from NRC Order EA-12-049, 'Order Modifying Licenses With Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events'"
8. Letter dated April 15, 2014, from E. J. Leeds (NRC) to M. E. Reddemann (Energy Northwest), "Columbia Generating Station – Relaxation of Certain Schedule Requirements for Order EA-12-049 'Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events'"
9. Letter GO2-14-031, dated February 27, 2014, from D. A. Swank (Energy Northwest) to NRC, "Energy Northwest's Second Six Month Status Update Report for the Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"
10. Letter GO2-14-131 dated August 28, 2014, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Third Six-Month Status Update Report for the Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"
11. Letter GO2-15-034 dated March 2, 2015, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Fourth Six-Month Status Update Report for the Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"
12. 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"
13. Letter GO2-14-107 dated June 30, 2014, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Phase 1 Response to NRC Order EA-13-109 - Overall Integrated Plan for Reliable Hardened Containment Vents Under Severe Accident Conditions"
14. Letter GO2-14-175 dated December 17, 2014, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's First Six-Month Status Update Report for the Implementation of NRC Order EA-13-109 - Overall Integrated Plan for Reliable Hardened Containment Vents Under Severe Accident Conditions"

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1.0 Introduction

By Reference 1, the Nuclear Regulatory Commission (NRC) requested information based upon Near-Term Task Force (NTTF) Recommendation 9.3. The NRC requested that licensees assess their current communications systems and equipment used during an emergency event. Reference 2 and Reference 3 provided Energy Northwest's communications assessment for the Columbia Generating Station, and a response to an NRC request for additional information, respectively. The NRC staff documented its review of the communication assessment in Reference 4. The staff's review determined that the assessment was reasonable, and that the interim measures and proposed enhancements identified in the assessment would help to ensure that communications are maintained.

2.0 Status Update

In Reference 2, Energy Northwest committed to include the status of the Implementing Actions identified in Section 9.0 of the Communication Assessment as part of the six-month status reports prepared pursuant to Section IV.C.2 of NRC Order EA-12-049. This enclosure provides Energy Northwest's fifth six-month status report. The table in Section 4.0 provides the status of the implementing activities considered necessary to provide communication capabilities during a Beyond Design Basis Event that are consistent with the assumptions specified in Nuclear Energy Institute (NEI) 12-01. This table has been updated and shows completion of all of the items listed.

3.0 Changes to the Assessment

In Reference 5, Energy Northwest provided the following updates to the Communications Assessment:

- The Reference 2 Communications Assessment stated that the in-plant radios would be available as a backup communication system. It has been determined that the mounting of some radio system components does not meet the seismic requirements necessary to assure system availability. Nevertheless, the portable radio-to-radio capability, portable satellite phones, and sound powered phones will be available as stated in the Communications Assessment. These devices ensure the communication capability in Section 2.6 of Reference 2 will be met. In addition, portable back-up power will be available for most events.

Additionally, sufficient quantities of portable radios, portable satellite phones, sound powered phones, and sound powered phone kits are available to minimize the reliance on multi-use equipment as required by NEI 12-01.

- The Reference 2 Communications Assessment also stated that power to the in-plant radio system and battery chargers would be provided by portable generators. The current plan is to power the in-plant radio system from FLEX generator DG4 or DG5, and to power the radio battery chargers from the

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generators that will power house loads in the FLEX buildings in the event of a loss of normal power.

No additional changes to the Communication Assessment are being made.

4.0 Open Items from the Communications Assessment

Communication Implementing Activities - Open Item List	Status
<u>OI-COMM-01 - Sound Powered Phones:</u>	
a. Develop and procure sound powered phone kits.	Completed GO2-12-123
b. Stage sound powered phone kits in FLEX buildings.	Completed GO2-15-034
c. Expand line loss test procedure with additional jacks/locations.	Completed GO2-12-123
d. Update inventory procedure to include sound powered phone kits.	Completed GO2-12-123
e. Identify any preventive maintenance/testing required for sound powered phone kits.	Completed GO2-12-123
f. Review existing functional test procedure for sound powered system headsets for any enhancements.	Completed GO2-12-123
g. Revise communication procedure(s) to include the use of the sound powered phone kits.	Completed GO2-12-123
<u>OI-COMM-02 - Satellite Phones:</u>	
a. Design, procure, and install fixed base station units, antennas, and uninterruptable power supplies for the:	
1) TSC/OSC	Completed GO2-15-034
2) Control Room	Completed GO2-15-034
3) EOF	Completed GO2-14-131
4) JIC	Completed GO2-14-131
5) Alternate EOF	Completed GO2-14-131
b. Stage spare satellite phones, batteries, and chargers in FLEX buildings.	Completed GO2-15-034

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Communication Implementing Activities - Open Item List	Status
c. Update work instructions for satellite phone inventory with final location of portable phones, batteries, and chargers.	Completed GO2-15-034
d. Develop preventive maintenance and testing procedures for the fixed base station units and uninterruptable power supplies.	Completed GO2-15-034
e. Develop procedure on portable satellite phone battery rotation.	Completed GO2-12-123
f. Include information on fixed base station locations and usage in procedures.	Completed GO2-14-131
<u>OI-COMM-03 - Radios:</u>	
a. Determine radio system coverage requirements for an extended loss of AC power event.	Completed GO2-12-123
b. Develop design to support coverage requirements and meet requirements of NEI 12-01. (This OI has been deleted because the radios will not be assumed to be available as a backup communication system.)	Deleted GO2-15-034
c. Incorporate design into overall radio upgrade project. (This OI has been deleted because the radios will not be assumed to be available as a backup communication system.)	Deleted GO2-15-034
d. Complete Phase 1 of radio upgrade project.	Completed GO2-14-131
e. Develop estimates of required radio talk time.	Completed GO2-12-123
f. Determine battery life based on talk time estimates and procure additional batteries as required.	Completed GO2-12-123
g. Procure portable generators (FLEX) to provide power to radio system.	Completed GO2-15-034
h. Stage portable generators in FLEX buildings.	Completed GO2-15-034
i. Identify final storage locations of radios and ensure locations are diverse and reasonably protected. Stage radios in final locations.	Completed GO2-15-124
j. Stage batteries and battery chargers in FLEX buildings.	Completed GO2-15-034

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Communication Implementing Activities - Open Item List	Status
k. Update work instructions for radio inventory with final location of radios, batteries, and chargers.	Completed GO2-15-034
l. Develop procedure on radio battery rotation.	Completed GO2-12-123
m. Develop preventive maintenance and testing procedures for new radio system equipment required for an extended loss of AC power event. (This OI has been deleted because the radios will not be assumed to be available as a backup communication system.)	Deleted GO2-14-031
n. Develop procedure on radio system use for radios required for an extended loss of AC power event. (This OI has been deleted because the radios will not be assumed to be available as a backup communication system.)	Deleted GO2-14-031
<u>OI-COMM-04 - PA System:</u>	
a. Identify those onsite office buildings that do not have a battery-backed PA system.	Completed GO2-12-123
b. Identify personnel to perform alternate notification of onsite office buildings if PA system is not available.	Completed GO2-14-131
c. Develop procedure for performing alternate notifications to ensure staff can be notified within 30 minutes.	Completed GO2-14-131
d. Develop policy requiring building occupants to automatically evacuate buildings and assemble in designated areas for an extended loss of AC power event.	Completed GO2-14-131
e. Evaluate upgrading power supplies to PA system in onsite office buildings that are not battery-backed.	Completed GO2-14-131
<u>OI-COMM-05 - Communication with ORO Facilities:</u>	
a. Provide each ORO identified in Section 4.0 with instructions for proper storage and rotation of satellite phone batteries.	Completed GO2-12-123
b. Verify the capability of the satellite phones at the ORO facilities to be powered for 24 hours consistent with the assumptions in NEI 12-01.	Completed GO2-12-123

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Communication Implementing Activities - Open Item List	Status
OI-COMM-06 - FLEX Buildings:	
a. Design, procure and install FLEX buildings to include portable generator-backed power supply to meet requirements of NEI 12-06.	Refer to mitigation strategies open item OI-FLEX-01
OI-COMM-07 - Portable Generators:	
a. Develop portable generator fueling plan to ensure ability to provide power for a minimum of 24 hours.	Refer to mitigation strategies open item OI-FLEX-30
OI-COMM-08 - Training:	
a. Evaluate training needs specific to the use of sound powered phones, satellite phones, and radios during an extended loss of AC power event.	Completed GO2-14-031

5.0 References

1. Letter dated March 12, 2012, from EJ Leeds (NRC) and M. R. Johnson (NRC) to Energy Northwest et. al, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3 and 9.3 of the Near Term Task Force Review of Insights from the Fukushima Dai-ichi Accident"
2. Letter GO2-12-156, dated October 30, 2012, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Response to the March 12, 2012 Information Request – Communications Assessment"
3. Letter GO2-13-026, dated February 21, 2013, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Response to Follow-Up Letter on Technical Issues for Resolution Regarding Licensee Communication Submittals Associated with Near-Term Task Force Recommendation 9.3"
4. Letter dated April 11, 2013, from C. F. Lyon (NRC) to M. E. Reddemann (Energy Northwest), "Columbia Generating Station - Safety Assessment In Response to Information Request Pursuant to 10 CFR 50.54(f)-Recommendation 9.3 Communications Assessment "
5. Letter GO2-14-031, dated February 27, 2014, from D. A. Swank (Energy Northwest) to NRC, "Energy Northwest Second Six-Month Status Update Report for the Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"

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6. Letter GO2-14-131 dated August 28, 2014, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Third Six-Month Status Update Report for the Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"
7. Letter GO2-15-034 dated March 2, 2015, from D. A. Swank (Energy Northwest) to the NRC, "Energy Northwest's Fourth Six-Month Status Update Report for the Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"