



# ENERGY NORTHWEST

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GO2-15-034  
March 2, 2015

EA-12-049  
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 FOURTH SIX-MONTH STATUS UPDATE  
REPORT FOR THE IMPLEMENTATION OF 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) 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 (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 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 fourth

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six-month status report regarding mitigation strategies.

By Reference 2, the NRC requested that licensees assess the communications systems and equipment that would be used during an emergency.

By Reference 3, Energy Northwest submitted a communications assessment for Columbia, 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 fourth six-month status report regarding the communications assessment.

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 27<sup>th</sup> day of February, 2015

Respectfully,



D. A. Swank  
Assistant Vice President, Engineering

STATUS UPDATE REPORT FOR THE  
FOR MITIGATION STRATEGIES FOR BE  
D  
2015 EXTERNAL EVENTS

- Enclosures:
- 1) Fourth Six-Month Status Update Report for the Overall Integrated Plan for Mitigation Strategies for Beyond Design Basis External Events
  - 2) Fourth Six-Month Status Update Report for the Implementing Actions Identified in Section 9.0 of the Communication Assessment Contained in Energy Northwest's Docketed Correspondence GO2-12-156 (ML12319A079)

cc: NRC Region IV Administrator  
NRC NRR Project Manager  
NRC Senior Resident Inspector/988C  
MA Jones - BPA/1399

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**ENCLOSURE 1**

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

**FOURTH SIX-MONTH STATUS UPDATE REPORT FOR THE OVERALL INTEGRATED PLAN FOR MITIGATION STRATEGIES FOR BEYOND DESIGN BASIS EXTERNAL EVENTS**

The following table provides a summary of the mitigation strategies identified in the integrated plan for beyond design basis external events. The table provides the name of the mitigation strategy, the description of the strategy, the start and end dates, and the status of the strategy. The table also provides the name of the responsible party and the date of the last update.

Name	Description	Start Date	End Date	Status	Responsible Party	Last Update
Emergency Response Plan	Emergency Response Plan	Oct 2012	Oct 2012	Completed	ENR	10/2012
Severe Weather Strategy	Severe Weather Strategy	Feb 2013	Feb 2013	Completed	ENR	2/2013
Fire Protection Strategy	Fire Protection Strategy	Aug 2013	Aug 2013	Completed	ENR	8/2013

# 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

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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 fourth six-month status report. This fourth six-month status report provides an update of milestone accomplishments and open items since submittal of the third six-month status report, including any changes to the compliance method or schedule.

## 2.0 Milestone Accomplishments

The following milestones have been completed since the development of the Overall Integrated Plan and are current as of February 28, 2015.

- 1) The submittal of the fourth six-month status report has been completed.
- 2) The installation of the FLEX buildings has been completed
- 3) The Phase 2 staffing study has been completed.

## 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. This section provides the activity status of each item, and the expected commencement and completion dates, noting any changes. As detailed designs progress, milestone activities may be expanded, condensed or deleted from the current schedule. The dates are projected planning dates and are also subject to change as design and implementation details are further developed.

Changes to the Milestone Schedule made since the previous update are indicated by a revision bar.

Milestones	Target Commence Date	Target Completion Date	Activity Status
<b>Correspondence &amp; Reports:</b>			
Submit 60 Day Initial Mitigation Strategies Status Report	Oct. 2012	Oct. 2012	Completed
Submit Mitigation Strategies Overall Integrated Plan	Feb. 2013	Feb. 2013	Completed
First Status Update Report for the Mitigation Strategies Overall Integrated Plan	Aug. 2013	Aug. 2013	Completed

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Milestones	Target Commence Date	Target Completion Date	Activity Status
Second Status Update Report for the Mitigation Strategies Overall Integrated Plan	Feb. 2014	Feb. 2014	Completed
Third Status Update Report for the Mitigation Strategies Overall Integrated	Aug. 2014	Aug. 2014	Completed
Fourth Status Update Report for the Mitigation Strategies Overall Integrated Plan	Feb. 2015	Feb. 2015	Completed
Fifth Status Update Report for the Mitigation Strategies Overall Integrated Plan	Aug. 2015	Aug. 2015	Not Started
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. 2015	Aug. 2015	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.	Aug. 2017	Aug. 2017	Not Started
Evaluations for Mitigation Strategies Phase 1, 2 & 3	Jun. 2013	Apr. 2015	Started
Perform Engineering Evaluations	Jun. 2013	Apr. 2015	Started
Engineering & Modifications for Mitigation Strategies Phase 1, 2 & 3	Jun. 2013	Apr. 2015	Started
Develop Engineering Design for Modifications	Jun. 2013	Apr. 2015	Started

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Plant Modification Installation	Apr. 2014	Jun. 2015	Started
<b>Flex Support Guidelines (FSG) Program &amp; Procedures:</b>			
Perform FLEX procedure tabletop exercise	Dec. 2014	Apr. 2015	Started
Develop FSGs	Jul. 2013	Apr. 2015	Started
Develop testing, calibration, maintenance and surveillance procedures for portable FLEX equipment	Jan. 2014	Apr. 2015	Started
FLEX Program Procedural Changes are placed in effect	Jun. 2015	Jun. 2015	Started
<b>Procurement &amp; Storage Plan:</b>			
Complete modification and installation of FLEX buildings	Oct. 2013	Jun. 2014	Completed
Procure and store necessary FLEX portable equipment	Jun. 2013	Apr. 2015	Started
Test portable FLEX equipment	Mar. 2014	Apr. 2015	Started
Establish programmatic controls for portable FLEX equipment	Jan. 2014	Apr. 2015	Started
<b>Mitigation Strategies Staffing Analysis:</b>			
Perform Mitigation Strategies Staffing Analysis	Aug. 2014	Dec. 2014	Completed
<b>Operations &amp; Training:</b>			
Development of Mitigation Strategies Program training modules	Jan. 2015	Mar. 2015	Started
Mitigation Strategies Program training of station personnel	Mar. 2015	Jun. 2015	Not Started
Operational/Functional Testing of Mitigation Strategies Program SSCs	Mar. 2015	Jun. 2015	Not Started
Final Mitigation Strategies Program turned over to Operations	Jun. 2015	Jun. 2015	Not Started

**4.0 Changes to 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 implementation of the FLEX

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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 is required by restart 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 of, and status for, the open items documented in the initial submittal of the Mitigation Strategies OIP (Reference 2) and 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. Changes since the previous update are indicated by a revision bar.

Mitigation Strategies Overall Integrated Plan Open Items List	Status
<b>Hazards:</b>	
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
OI-FLEX-02 - The potential failure of a circulating water (CW) pipe, coincident with the 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
OI-FLEX-03 - Equipment stored outside will be evaluated for seismic interactions, cold weather operation and ashfall.	Completed

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Mitigation Strategies Overall Integrated Plan Open Items List	Status
<b>Hazards:</b>	
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
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
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.	Started
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 haul paths is under evaluation and actions will be developed as needed.	Completed
<b>Assumptions:</b> <i>(Some Assumptions may be impacted by the completion of activities developed for Hardened Vents)</i>	
OI-FLEX-08 - The sequence of events developed to address the ELAP and LUHS will take into account sources of expected reactor coolant inventory loss. (NRC Audit Question 15) The response was provided in the August 2014 update, Reference 10, Pg. 9/28.	Started
OI-FLEX-09 - 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. The revised timeline was provided in the August 2014 update; letter GO2-14-131. Reference 10, Appendix 2.	Completed

... Decision 1 (batteries will be ...  
... will be utilized to ...  
... acceptable performance.



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Mitigation Strategies Overall Integrated Plan Open Items List	Status
<b>Hazards:</b>	
<p>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) The response was provided in the August 2014 update; letter GO2-14-131. Reference 10, Pg. 10.</p>	Completed
<p>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.</p>	Completed
<b>Sequence of Events:</b>	
<p>OI-FLEX-12 - The 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. This OI has also been closed because the changed action has been completed.)</p>	Completed
<p>OI-FLEX-13 - A plant modification will be performed to address the potential for flooding of the RCIC room from the barometric condenser.</p>	Completed
<p>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.)</p>	Deleted
<p>OI-FLEX-15 - The maximum time needed for connection of a 480V FLEX generator to power the Division 1 batteries will be determined.</p>	Completed
<b>Programmatic:</b>	
<p>OI-FLEX-16 - Portable FLEX equipment will be initially tested or otherwise evaluated to ensure acceptable performance.</p>	Started

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Mitigation Strategies Overall Integrated Plan Open Items List	Status
<b>Hazards:</b>	
OI-FLEX-17 - The maintenance and testing program for FLEX equipment will be documented in the next OIP update following finalization of the program.	Started

**OI-FLEX-17**

The maintenance and testing program for portable FLEX equipment will be 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.

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.	Started
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.	Started
OI-FLEX-20 - Changes to FLEX strategies will be assessed using the change process provided in NEI 12-06 Section 11.8.	Started
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
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
OI-FLEX-23 - Establish staging area for the receipt of offsite resources.	Completed
OI-FLEX-24 - Establish site-specific SAFER Response Plan for Columbia with the 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
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

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<p><b>Phase 1 Core Cooling:</b> (Some Mitigation Strategies related to Phase 1 Core Cooling may be impacted by the completion of activities developed for Hardened Vents)</p>	
<p>OI-FLEX-25 - Procedure guidance will be developed to support implementation of Phase 1 Core Cooling strategies as described in the Overall Integrated Plan.</p>	<p>Completed</p>
<p>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.</p>	<p>Started</p>
<p>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.</p>	<p>See Items a – e below</p>
<p>a. A reliable containment hardened vent system will be installed to vent heat from the 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. The response was provided in letters GO2-14-107 and GO2-12-175.</p>	<p>Completed</p>
<p>b. Analyses of 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>Started</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>Started</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</p>

Energy Northwest, 10000 15th Avenue SW, Building 2000, Everett, WA 98203

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<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 RGIC operation.)</p>	<p>Completed</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>started</p>
<p><b>Phase 1 Containment:</b> <i>(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 &amp; 2 Hardened Vents)</i></p>	
<p>OI-FLEX-27 (continued) 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.)</p>	<p>Deleted</p>
<p>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.)</p>	<p>Deleted</p>
<p><b>Phase 2 Core Cooling:</b></p>	
<p>OI-FLEX-28 - Procedure guidance will be developed to support implementation of Phase 2 Core Cooling strategies as described in the Overall Integrated Plan.</p>	<p>Started</p>
<p>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.</p>	<p>See items a - d below</p>
<p>a. Alternate connection points will be provided to connect FLEX generators to the electrical distribution system.</p>	<p>Started</p>
<p>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.</p>	<p>Completed</p>

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<p>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)</p>	<p>Completed</p>
<p>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.)</p>	<p>Completed</p>
<p>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.</p>	<p>Completed</p>
<p>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.</p>	<p>Started</p>
<p>OI-FLEX-70 - An analysis will be performed to confirm that the Phase 2 configurations described in the OIP for suppression pool makeup can provide adequate flow through the spray header. (This OI has been deleted as the suppression pool makeup will not use the spray nozzles as part of the makeup flow path.)</p>	<p>Deleted</p>
<p>OI-FLEX-71 - A wind and seismic evaluation in accordance with 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.)</p>	<p>Completed</p>
<p><b>Phase 3 Core Cooling:</b></p>	
<p>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.</p>	<p>Completed</p>
<p>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.</p>	<p>See Items a - b below</p>
<p>a. Two separate connection points will be installed to provide critical bus power from a 4160-V ac FLEX generator (From the NSRC).</p>	<p>Completed</p>
<p>b. A strategy for connecting the large FLEX pump to the SW system will be developed. SW system piping will be modified if needed to provide connection points.</p>	<p>Completed</p>

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<p>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 makeup (TMU) pump operation will be needed.)</p>	<p>Completed</p>
<p><b>Phase 1 SFP Cooling:</b></p>	
<p>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)</p>	<p>Deleted</p>
<p>OI-FLEX-34 - Modifications will be completed to support implementation of Phase 1 SFP Cooling strategies.</p> <p>a. SFP instrumentation will be installed to provide reliable indication of the water level in the SFP, capable of supporting identification of the following pool water level: (1) level that is adequate to support operation of the normal fuel pool cooling system, (2) level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck, and (3) level where fuel remains covered and actions to implement make-up water addition should no longer be deferred. Details of this design will be provided in the Integrated Plan required by NRC Order EA-12-051.</p>	<p>Started</p>
<p><b>Phase 2 SFP Cooling:</b></p>	
<p>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.)</p>	<p>Started</p>
<p>OI-FLEX-74 - The time that makeup to the SFP must be initiated after an ELAP will be determined for a full core offload. The response was provided in the August 2014 update; letter GO2-14-131.</p>	<p>Completed</p>
<p><b>Phase 3 SFP Cooling:</b></p>	
<p>OI-FLEX-35 - Procedure guidance will be developed to support implementation of Phase 3 SFP Cooling strategies.</p>	<p>Started</p>

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<p><b>OI-FLEX-36 - Evaluations will be completed to support implementation of Phase 3 SFP Cooling strategies.</b></p> <p>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.</p>	<p>Completed</p>
<p><b>Phase 1 Safety Support Functions:</b></p>	
<p><b>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.</b></p>	<p>Completed</p>
<p><b>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.</b></p> <p>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.</p> <p>No system modifications were required.</p>	<p>Completed</p>
<p><b>Phase 3 Safety Support Functions:</b></p>	
<p><b>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.</b></p>	<p>Completed</p>
<p><b>Appendix 1 - Sequence of Events Timeline:</b></p>	
<p><b>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. Provided as Appendix 2 of the August 2014 update, letter GO2-14-131.</b></p>	<p>Completed</p>
<p><b>Appendix 2 - Milestone Schedule:</b></p>	
<p>None - Revisions to the milestone schedule are identified in Section 2 of this and subsequent future status update reports.</p>	<p>N/A</p>

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<b>Appendix 3 – Conceptual Sketches:</b>	
<p>OI-FLEX-41 – Updated sketches will be provided in future status reports if needed to reflect changes. (This OI has been changed because an initial set of sketches were provided in Reference 9, Appendix 3 of Enclosure 3.) Updated sketches were provided in Attachment 1 of the August 2014 update; letter GO2-14-131.</p>	Completed
<b>NRC Audit Question Responses:</b>	
<p>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) The response was provided in the August 2014 update; letter GO2-14-131. Reference 10, Pg. 17/28.</p>	Completed
<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>	Started
<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>	Started
<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>	Not Started



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<p><b>OI-FLEX-46</b> – 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/makeup 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>Completed</p>
<p><b>OI-FLEX-47</b> – 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). The February 2014 OIP update, Reference 9, pg. 26/68, clarified the wording to reflect the above results.</p>	<p>Completed</p>
<p><b>OI-FLEX-48</b> – 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.</p>	<p>Completed</p>
<p><b>OI-FLEX-49</b> – 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) The results were reported in the February OIP 2014 update, Reference 9, pg. 24/68.</p>	<p>Completed</p>

Should OI-FLEX-46 be revised to reflect the completion of the assessment? Should OI-FLEX-47 be revised to reflect the completion of the assessment? Should OI-FLEX-48 be revised to reflect the completion of the assessment? Should OI-FLEX-49 be revised to reflect the completion of the assessment?

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<p><b>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)</b></p>	<p><b>Started</b></p>
<p><b>OI-FLEX-51 – Energy Northwest will address the considerations in NEI 12-06, Section 12.2. (Response to NRC Audit Question 34)</b></p>	<p><b>Completed</b></p>

**OI-FLEX-51 description of how CGS has addressed the NEI 12-06, Section 12.2 items:**

- 1) Energy Northwest was actively involved in the industry initiatives to establish the National SAFER Response Centers (NSRCs) for implementation of Phase 3 Mitigation/FLEX strategies at CGS. The industry contracted with the Strategic Alliance for FLEX Emergency Response (SAFER) organization through Pooled Equipment Inventory Company (PEICo) to establish and operate the NSRCs as part of PEICo's existing Pooled Inventory Management (PIM) program. The ongoing provisions of the contract with PIM address the considerations in NEI 12-06, Section 12.2.
- 2) Off-site equipment procurement, maintenance, testing, calibration, storage, and control is within the scope of the SAFER team. As a member of the equipment committee, CGS has the ability to ensure the equipment specified to support the CGS mitigation strategy meets the necessary requirements.
- 3) Provisions to inspect and audit the contractual agreements is within the scope of the SAFER contract.
- 4) The SAFER team is contracted by the nuclear industry through PEICo to establish two NSRCs, one in Memphis and one in Phoenix, operated by the PIM, to maintain the capability to deploy Phase 3 response equipment such that no external single event will preclude the capability to supply the needed resources to the CGS site. The CGS SAFER Response Plan (SRP) identifies the actions to deploy the CGS Phase 3 equipment from either NSRC.
- 5) Provisions to ensure that off-site capability will be maintained for the life of the plant is within the scope of the SAFER contract.
- 6) The SAFER organization has created equipment committees associated with the various utilities for the deployment of FLEX Phase 3 equipment. Should CGS's Mitigation/FLEX strategy change such that the supplied equipment requires revision, Columbia has the ability to join an existing equipment committee or form a new equipment committee, as applicable, for the specific equipment.

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- 7) Standard mechanical and electrical connections have been specified for the Phase 3 equipment deployed by the NSRCs. The NSRC 4160 VAC generators are connected by cabling to an Emergency Connection Device (ECD) at the plant. Mechanical connections for the NSRC pump are standard STORZ connections.
- 8) Periodic maintenance, testing, and calibration of the NSRC equipment is within the scope of the SAFER contract and is developed based, in part, on vendor recommended maintenance items and periodicity.
- 9) The quantity of equipment procured for the NSRCs included provisions for a set of equipment being unavailable during periodic maintenance intervals, while maintaining the necessary equipment available to support up to four units at a single time. This extra equipment to support equipment unavailability during maintenance activities is within the scope of the SAFER contract.
- 10) Spare parts for the NSRC equipment is within the scope of the SAFER contract and was developed as the equipment was procured based on the equipment manufacturer's recommended spare parts inventory list.

<p><b>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)</b></p>	<p><b>Completed</b></p>
<p><b>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)</b></p>	<p><b>Started</b></p>

**OI-FLEX-53**

The maintenance and testing program for portable FLEX equipment will be 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 updates will be made.

action taken in response to item of interest identified in the August 2014 update.

Completed

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<p><b>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) The summary of the sizing calculation was provided in the August 2014 update; letter GO2-14-131. Reference 10, Pg. 20/28.</b></p>	<p><b>Completed</b></p>
<p><b>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</b></p>	<p><b>Completed</b></p>
<p><b>OI-FLEX-56 – Not used</b></p>	
<p><b>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)</b></p>	<p><b>Completed</b></p>
<p><b>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) The results of that evaluation were reported in the February 2014 OIP update, Reference 9, pg. 24/68.</b></p>	<p><b>Completed</b></p>
<p><b>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.</b></p>	<p><b>Completed</b></p>
<p><b>OI-FLEX-60 - The Spent Fuel Pool section of the OIP will be updated to reflect actions taken in the event of full core offload to the pool. (Response to NRC Audit Question 24) The action required to be taken was provided in the August 2014 update; letter GO2-14-131. Reference 10, Pg. 21/28.</b></p>	<p><b>Completed</b></p>

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<p><b>OI-FLEX-61</b> - 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., BWROG, EPRI, etc.). (Response to NRC Audit Question 25). Provided in the February 2013 OIP update, Reference 9, pgs. 36 and 62/68.</p>	<p><b>Completed</b></p>
<p><b>OI-FLEX-62</b> - 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) This was included as Section 6.0 starting with the August 2013 six-month update.</p>	<p><b>Completed</b></p>
<p><b>OI-FLEX-63</b> - 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. Additional calculations that have been uploaded are listed below. (Response to NRC Audit Question 47). Additional calculations were identified in the August 2014 update; letter GO2-14-131. Reference 10, Pg. 22/28.</p>	<p><b>Completed</b></p>
<p><b>OI-FLEX-64</b> - 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)</p>	<p><b>Deleted</b></p>
<p><b>OI-FLEX-65</b> - 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) This response was provided in the August 2014 update; letter GO2-14-131. Reference 10, Pg. 23/28.</p>	<p><b>Completed</b></p>
<p><b>OI-FLEX-66</b> - 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) Energy Northwest incorporated this template wording into the February 2014 OIP update, Reference 9, pgs. 20, 22, and 26/68.</p>	<p><b>Completed</b></p>

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<p><b>OI-FLEX-67</b> - The NEI white paper includes instructions for licensees to incorporate the following template wording into their OIPs:</p> <p>"[Insert Licensee] confirms that the FLEX strategy station battery run-time was calculated in accordance with the 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."</p> <p>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>Completed</p>
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**OI-FLEX-67**

This wording was incorporated in Revision 1 of the OIP submitted in letter GO2-14-031, dated February 28, 2014. The battery capacity has since been determined in accordance with IEEE-485 and has a minimum capacity of 8 hours.

<p><b>OI-FLEX-68</b> - 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 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>Completed</p>
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**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 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

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in the ISE. The Open Items and Confirmatory Items tabulated in the ISE are listed below. Energy Northwest will coordinate with the staff to facilitate closure of the Open and Confirmatory Items.

OPEN ITEMS		
Item Number	Description	SE Tracker Audit Item Number
3.2.3.A	With regard to maintaining containment, the implementation of BWROG EPG/SAG, Revision 3, including any associated plant specific evaluations, must be completed in accordance with the provisions of NRC letter dated January 9, 2014.	13-A
3.2.3.B	The licensee's proposed strategy for maintaining containment will rely on installation of the 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.	14-A
CONFIRMATORY ITEMS		
Item Number	Description	SE Tracker Audit Item Number
3.1.1.3.A	During the audit, the licensee stated that NEI 12-06, Section 5.3.3, consideration 2 (impacts from large internal flooding sources), will be addressed in future six-month updates of the Integrated Plan. Confirm that the strategies consider large internal flooding sources that are not seismically robust and do not require ac power, as necessary.	1-A
3.1.2.1.A	The licensee stated that information related to Columbia's considerations of the potential effects of a local intense precipitation event will be included in the February 2014 update to the Integrated Plan. Confirm that FLEX equipment can be adequately protected and deployed in such an event, and whether flooding procedures properly account for the use of FLEX equipment. [Energy Northwest note: The date for the associated OIP update has been changed as stated in the OI-FLEX-43 status above.]	2-A
3.1.2.4.A	When Columbia's plan for coordination with the RRC is developed, confirm that it adequately addresses potential regional impacts on transportation and delivery of off-site equipment during an extreme regional flooding event, and during conditions of snow, ice, and extreme cold.	3-A

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3.1.3.A	Confirm that the spray ponds contain enough water to dissipate, for 72 hours, the decay heat of the reactor core and SFP during Phases 1 and 2, with sufficient margin to account for some potential loss of inventory due to a tornado.	4-A
3.1.4.2.A	Confirm that the transport of FLEX equipment is addressed during cold weather conditions, including ice and snow removal from appropriate haul paths.	5-A
3.2.1.1.A-E	Regarding the use of the Modular Accident Analysis Program (MAAP) 4 code for simulating an ELAP event for BWRs, the NRC endorsed the generic June 2013 NEI position paper, with five conditions, as stated in Section 3.2.1.1 of the TER. These conditions are identified as Confirmatory Items 3.2.1.1.A-E.	6-A
3.2.1.2.A	When the licensee's evaluations related to its open item 01-FLEX-08 are completed, confirm that issues related to primary system leakage from the recirculation pump seals have been adequately addressed.	7-A
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).	8-A
3.2.1.5.A	Confirm completion of licensee's open item, 01-FLEX-05, which states, "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."	9-A
3.2.2.B	When the GOTHIC analyses are completed and spent fuel pool cooling strategies are fully developed, confirm that the licensee's strategy for venting of the refueling floor is consistent with guidance in NEI 12-06, or provides an acceptable alternative to that guidance.	10-A
3.2.2.C	When complete, confirm that the licensee's strategy and actions during an ELAP when a full core offload is in the SFP are adequate to maintain satisfactory SFP cooling.	11-A
3.2.2.D	Confirm that Columbia's SFP makeup strategy provides for SFP makeup without accessing the refueling floor, as recommended in NEI 12-06, Table 3-1 and Table C-3, or that an acceptable alternate approach is developed.	12-A



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3.2.4.2.A.1	Confirm that the licensee's analysis of hydrogen buildup in the battery room appropriately considers measures needed to control hydrogen concentrations.	15-A
3.2.4.2.A.2	Confirm the licensee's evaluation of the need for forced ventilation on the refueling floor.	16-A
3.2.4.2.B	Confirm that the GOTHIC analyses appropriately address RCIC room, SFP area, and battery room temperatures.	17-A
3.2.4.3.A	The licensee stated that it will address the considerations in NEI 12-06, Section 3.2.2, Guideline (12), related to potential loss of heat tracing, in an Integrated Plan update no later than August 28, 2014. Confirm that heat tracing is appropriately considered.	18-A
3.2.4.4.A	The NRC staff reviewed the licensee's communications assessment and determined that it was reasonable (ADAMS Accession No. ML 13091A295). Confirm that the upgrades to Columbia's communications systems are implemented.	19-A
3.2.4.6.A	Analyses and procedure development addressing personnel habitability issues are still in progress. Confirm that the actions conform to the guidance in NEI 12-06, Section 3.2.2, Guideline (11), or that an acceptable alternative is developed.	20-A
3.2.4.8.A	The licensee is performing sizing calculations to show that the FLEX DGs can supply the loads assumed in Phases 2 and 3 of Columbia's mitigating strategies. The results will be submitted in the February 2014 Integrated Plan update. Confirm that the results are acceptable. [Energy Northwest note: The date for the associated OIP update has been changed as stated in the OI-FLEX-54 status above.]	21-A
3.2.4.10.A	The licensee intends to follow the generic resolution related to extended battery duty cycles. Confirm adherence to the NRC staff's position related to this concern.	22-A
3.2.4.10.B	Confirm that the ability of operators to complete specified battery load shed actions within the times stated is validated.	23-A
3.2.4.10.C	Confirm the licensee's development of the ELAP load shedding procedure and that the procedure includes directions for operators to depressurize the main generator manually before shedding the air-side seal oil backup pump if the generator is pressurized with hydrogen.	24-A

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**8.0 References**

1. NRC Order EA-12-049, dated March 12, 2012, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events"
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. NRC Order EA-12-050 dated March 12, 2012, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents"
5. NRC Order EA-13-109 dated June 6, 2013, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions"
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) (TAC No. MF0796)"
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

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Implementation of NRC Order EA-12-049 Mitigation Strategies for Beyond Design Basis External Events"

CLOSURE 3

CH	DESCRIPTION	STATUS	LOCATION
10-1	...	...	...
10-2	...	...	...
10-3	...	...	...
10-4	...	...	...
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10-31	...	...	...

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Summary

Energy Northwest has completed the implementation of the mitigation strategies for beyond design basis external events. The strategies include the installation of surge tanks, the implementation of a new fire protection system, and the implementation of a new emergency power system. The implementation of these strategies has been completed and the plant is now operating in accordance with the requirements of NRC Order EA-12-049.

Attachment

**ENCLOSURE 2**  
**COLUMBIA GENERATING STATION, DOCKET NO. 50-397**  
**FOURTH SIX-MONTH STATUS UPDATE REPORT**  
**FOR THE IMPLEMENTING ACTIONS IDENTIFIED IN SECTION 9.0 OF THE**  
**COMMUNICATION ASSESSMENT CONTAINED IN ENERGY NORTHWEST'S**  
**DOCKETED CORRESPONDENCE G02-12-166 (ML12319A079)**

The following information was updated to the...  
The following information was updated to the...  
The following information was updated to the...

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# 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

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## 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.

## 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 fourth six-month status report. The table below 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.

## CHANGES TO 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

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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 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. Changes to the Communication Implementing Activities Open Item List made since the last update are indicated by a Revision Bar.

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

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Communication Implementing Activities - Open Item List	Status
e. Develop procedure on portable satellite phone battery rotation	Completed
f. Include information on fixed base station locations and usage in procedures	Completed
<b>OI-COMM-03 - Radios:</b>	
a. Determine radio system coverage requirements for an extended loss of AC power event	Completed
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
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
d. Complete Phase 1 of radio upgrade project	Completed
e. Develop estimates of required radio talk time	Completed
f. Determine battery life based on talk time estimates and procure additional batteries as required	Completed
g. Procure portable generators (FLEX) to provide power to radio system	Completed
h. Stage portable generators in FLEX buildings	Completed
i. Identify final storage locations of radios and ensure locations are diverse and reasonably protected. Stage radios in final locations.	Not Started
j. Stage batteries and battery chargers in FLEX buildings	Completed
k. Update work instructions for radio inventory with final location of radios, batteries, and chargers	Completed
l. Develop procedure on radio battery rotation	Completed
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 Refer to OI-FLEX-001

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Communication Implementing Activities - Open Item List	Status
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
<b>OI-COMM-04 - PA System:</b>	
a. Identify those onsite office buildings that do not have a battery-backed PA system	Completed
b. Identify personnel to perform alternate notification of onsite office buildings if PA system is not available	Completed
c. Develop procedure for performing alternate notifications to ensure staff can be notified within 30 minutes	Completed
d. Develop policy requiring building occupants to automatically evacuate buildings and assemble in designated areas for an extended loss of AC power event.	Completed
e. Evaluate upgrading power supplies to PA system in onsite office buildings that are not battery-backed	Completed
<b>OI-COMM-05 - Communication with ORO Facilities:</b>	
a. Provide each ORO identified in Section 4.0 with instructions for proper storage and rotation of satellite phone batteries	Completed
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
<b>OI-COMM-06 - FLEX Buildings:</b>	
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
<b>OI-COMM-07 - Portable Generators:</b>	
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



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<b>OI-COMM-08 - Training:</b>	
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

**References**

1. Letter dated March 12, 2012, from EJ Leeds (NRC) to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, "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 (TAC No. MF0002)"
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"
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"