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GO2-13-121

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

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397
ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE
REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051
RELIABLE SPENT FUEL POOL INSTRUMENTATION**

- References:
1. NRC Order EA-12-051 dated March 12, 2012, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation"
 2. Letter GO2-13-036, dated February 28, 2013, from DA Swank (Energy Northwest) to NRC, "Energy Northwest's Response to NRC Order EA-12-051 – Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation"
 3. Letter dated June 20, 2013, from LK Gibson (NRC) to ME Reddemann (Energy Northwest), "Columbia Generating Station – Request for Additional Information Regarding Spent Fuel Pool Instrumentation (TAC No. MF0797)"
 4. Letter GO2-13-100, dated July 19, 2013, from DA Swank (Energy Northwest) to NRC, "Energy Northwest's Response to Request for Additional Information Related to the Overall Integrated Plan for Spent Fuel Pool Instrumentation"

Dear Sir or Madam,

In Reference 1, the Nuclear Regulatory Commission (NRC) issued Order EA-12-051 to Columbia Generating Station (Columbia). The Order was immediately effective and directed Columbia to have a reliable means of remotely monitoring wide range spent fuel pool levels to support effective prioritization of event mitigation and recovery actions for a beyond-design-basis (BDB) external event. Specific requirements were outlined in Attachment 2 of Reference 1.

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NRC

**ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE
IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL
INSTRUMENTATION**

Page 2 of 2

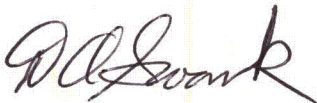
Reference 1 requires submission of a status update report at six-month intervals following the licensee's submittal of the Overall Integrated Plan. Enclosure 1 provides Energy Northwest's first six-month status update report pursuant to Section IV, Condition C.2 of Reference 1. Enclosure 2 provides updates to the Overall Integrated Plan.

In Reference 3, the NRC requested additional information with regard to the Overall Integrated Plan. In Reference 4, Energy Northwest provided an initial response to the NRC's request for additional information with the understanding that the completed responses will be provided to the NRC in a future Energy Northwest status update report. The open items from Reference 4 are added to the status update report template.

There are no new or revised regulatory commitments contained in this letter. If you have any questions or require additional information, please contact Ms. L. L. Williams at (509) 377-8148.

On the date of this letter, I declare under penalty of perjury that the foregoing is true and correct.

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
AJ Rapacz – BPA/1399 (email)

**ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE
IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL
INSTRUMENTATION**

Enclosure 1

Page 1 of 8

ENCLOSURE 1

COLUMBIA GENERATING STATION, DOCKET NO. 50-397

**FIRST SIX MONTH STATUS UPDATE REPORT FOR THE
OVERALL INTEGRATED PLAN FOR RELIABLE SPENT FUEL POOL
INSTRUMENTATION**

ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL INSTRUMENTATION

Enclosure 1
Page 2 of 8

1.0 Introduction

Energy Northwest developed an Overall Integrated Plan (Reference 1) documenting the requirements to install reliable spent fuel pool (SFP) level instrumentation in response to NRC Order EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (Reference 2). This six-month status report provides an update of milestone accomplishments since submittal of the Overall Integrated Plan, 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 (Reference 1), and are current as of August 28, 2013.

- 1) Commenced Reliable SFP Instrumentation Engineering Detailed Design
 - a. In March of 2013 the Energy Northwest design groups (mechanical, electrical, instrumentation, and civil) began the detailed procurement specification and design change development for the Reliable SFP Instrumentation. The overall design and the plant modification packages are approximately 50% completed. The instrumentation vendor has been selected and the equipment has been specified.

3.0 Milestone Schedule Status

The following provides an updated milestone schedule to support the Reliable SFP Instrumentation Overall Integrated Plan. This section provides the activity status of each item, and the expected completion date noting any changes. The Milestone list has been expanded from what was previously submitted in the Overall Integrated Plan as more specific activity milestones have been developed. The dates are planning dates subject to change as design and implementation details are developed.

Milestones	Target Completion Date	Activity Status	Revised Target Completion Date
Correspondence & Reports:			
Submit 60 Day Reliable SFP Instrumentation Status Report	Oct 2012	Completed	N/A
Submit Overall Reliable SFP Instrumentation Integrated Plan	Feb 2013	Completed	N/A

ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL INSTRUMENTATION

Enclosure 1

Page 3 of 8

Milestones	Target Completion Date	Activity Status	Revised Target Completion Date
First Status Update Report for the Reliable SFP Instrumentation Integrated Plan	August 2013	Completed	N/A
Second Status Update Report for the Reliable SFP Instrumentation Integrated Plan	Feb 2014	Not Started	N/A
Third Status Update Report for the Reliable SFP Instrumentation Integrated Plan	August 2014	Not Started	N/A
Final Completion Report for the Reliable SFP Instrumentation Integrated Plan	Feb 2015	Not Started	N/A
Engineering & Modifications:			
Commence Engineering Detailed Design for the Reliable SFP Instrumentation	March 2013	Completed	N/A
Complete Engineering Detailed Design for the Reliable SFP Instrumentation	Jan 2014	Started	N/A
Commence the Reliable SFP Instrumentation Modification Installation	May 2014	Not Started	N/A
Reliable SFP Instrumentation Channels Operational	Dec 2014	Not Started	N/A
Program & Procedures:			
Commence development of the Reliable SFP instrumentation testing, calibration, maintenance, surveillance, and operational procedures	April 2014	Not Started	N/A
Complete development of the Reliable SFP instrumentation testing, calibration, maintenance, surveillance, and operational procedures	May 2014	Not Started	N/A
Establish programmatic controls on SFP instrumentation related activities	Dec 2014	Not Started	N/A

ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL INSTRUMENTATION

Enclosure 1

Page 4 of 8

Milestones	Target Completion Date	Activity Status	Revised Target Completion Date
Operations & Training:			
Commence development of the Reliable SFP Instrumentation training modules	April 2014	Not Started	N/A
Complete development of the Reliable SFP Instrumentation training modules	May 2014	Not Started	N/A
Complete training of station personnel	Oct 2014	Not Started	N/A
Functional testing of Reliable SFP Instrumentation SSCs complete	Dec 2014	Not Started	N/A
Reliable SFP Instrumentation Program turned over to Operations	Dec 2014	Not Started	N/A

4.0 Changes to Compliance Method

The Overall Integrated Plan (submitted in Reference 1) indicated that there would be an alternate display location for viewing level indication in the vendor electronics at the electronic control cabinet for the guided wave radar. This concept has been revised; the signal processor enclosure will now be located in the main control room. Therefore the reliable SFP instrumentation, primary and backup instrument channel display will only be located in the main control room. This design modification continues to meet the guidelines of JLD-ISG-2012-13 and NEI 12-02 section 3.9.

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

At this time, Energy Northwest expects to fully comply with the Order and its implementation date and does not anticipate a request for relief and/or relaxation of the Order.

6.0 Open Items

In Reference 1, Energy Northwest provided the NRC with its "Overall Integrated Plan for Spent Fuel Pool (SFP) Instrumentation." In Reference 3, the NRC requested additional information with regard to the Energy Northwest Overall Integrated Plan for SFP Instrumentation. In Reference 4, Energy Northwest provided an initial response to the NRC's request for additional information (RAI) with the understanding that the

ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL INSTRUMENTATION

Enclosure 1

Page 5 of 8

completed responses will be provided to the NRC in a future Energy Northwest status update report. The required responses are tracked as open items below.

Open Item List	Status
<p>NRC RAI 1.a – Provide a clearly labeled sketch depicting the elevation view of the proposed typical mounting arrangement for the portions of the instrument channel consisting of permanent measurement channel equipment (e.g., fixed level sensors and/or stilling wells, and mounting brackets). Please indicate on this sketch the datum values representing Levels 1, 2, and 3 as well as the top of the fuel. Indicate on this sketch the portion of the level sensor measurement range that is sensitive to measurement of the fuel pool level, with respect to the Levels 1, 2, and 3 datum points.</p>	<p>Started</p>
<p>NRC RAI 2.a – Provide a clearly labeled sketch or marked-up plant drawing of the plan view of the SFP area, depicting the SFP inside dimensions, the planned locations/placement of the primary and back-up SFP level sensor, and the proposed routing of the cables that will extend from the sensors toward the location of the read-out/display device.</p>	<p>Started</p>
<p>NRC RAI 2.b - Please address how other hardware stored in the SFP will not create adverse interaction with the fixed instrument location(s).</p>	<p>Started</p>
<p>NRC RAI 3.b – Provide a description of the manner in which the level sensor (and stilling well, if appropriate) will be attached to the refueling roof and/or other support structures for each planned point of attachment of the probe assembly. Please indicate in a drawing the portions of the level sensor that will serve as points of attachment for mechanical/mounting and electrical connections.</p>	<p>Started</p>
<p>NRC RAI 3.c – Provide a description of the manner by which the mechanical connections will attach the level instrument to permanent SFP structures so as to support the level sensor assembly.</p>	<p>Started</p>
<p>NRC RAI 4.a – Provide a description of the specific method or combination of methods that will be applied to demonstrate the reliability of the permanently installed equipment under Beyond-Design-Basis (BDB) ambient temperature, humidity, shock, vibration, and radiation conditions.</p>	<p>Started</p>

ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL INSTRUMENTATION

Enclosure 1

Page 6 of 8

Open Item List	Status
<p>NRC RAI 4.b – Provide a description of the testing and/or analyses that will be conducted to provide assurance that the equipment will perform reliably under the worst-case credible design basis loading at the location where the equipment will be mounted. Please include a discussion of this seismic reliability demonstration as it applies to 1) the level sensor mounted in the SFP area, and 2) any control boxes, electronics, or read-out and re-transmitting devices that will be employed to convey the level information from the level sensor to the plant operators or emergency responders.</p>	<p>Started</p>
<p>NRC RAI 4.c - Provide a description of the specific method or combination of methods that will be used to confirm the reliability of the permanently installed equipment following seismic conditions to maintain its required accuracy.</p>	<p>Started</p>
<p>RAI 6 - If the level measurement channels are to be powered through a battery system (either directly or through an uninterruptible power supply (UPS), please provide the design criteria that will be applied to size the battery in a manner that ensures, with margin, that the channel will be available to run reliably and continuously following the onset of the BDB event for the minimum duration needed, consistent with the plant mitigation strategies for beyond-design-basis external events (Order EA-12-049).</p>	<p>Started</p>
<p>NRC RAI 7.a - Provide an estimate of the expected instrument channel accuracy performance (e.g., in percent of span) under both a) normal SFP level conditions (approximately Level 1 or higher) and b) at the BDB conditions (i.e., radiation, temperature, humidity, post-seismic and post-shock conditions) that would be present if the SFP level were at the Level 2 and Level 3 datum points.</p>	<p>Started</p>
<p>NRC RAI 7.b - Provide a description of the methodology that will be used for determining the maximum allowed deviation from the instrument channel design accuracy that will be employed under normal operating conditions as an acceptance criterion for a calibration procedure to flag to operators and to technicians that the channel requires adjustment to within the normal condition design accuracy.</p>	<p>Started</p>
<p>NRC RAI 8.a - Provide a description of the capability and provisions the proposed level sensing equipment will have to enable periodic testing and calibration, including how this capability enables the equipment to be tested in-situ.</p>	<p>Started</p>

ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL INSTRUMENTATION

Enclosure 1

Page 7 of 8

Open Item List	Status
NRC RAI 8.b - Provide a description of how such testing and calibration will enable the conduct of regular channel checks of each independent channel against the other, and against any other permanently-installed SFP level instrumentation.	Started
NRC RAI 8.c - Provide a description of how functional checks will be performed, and the frequency at which they will be conducted. Please describe how calibration tests will be performed, and the frequency at which they will be conducted. Provide a discussion as to how these surveillances will be incorporated into the plant surveillance program.	Not Started
NRC RAI 8.d - Provide a description of what preventative maintenance tasks are required to be performed during normal operation, and the planned maximum surveillance interval that is necessary to ensure that the channels are fully conditioned to accurately and reliably perform their functions when needed.	Not Started
NRC RAI 10.a – Provide further information describing the maintenance and testing program the licensee will establish and implement to ensure that regular testing and calibration is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Please include a description of your plans for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment.	Not Started
NRC RAI 10.b - Provide a description of how the guidance in NEI 12-02 section 4.3 regarding compensatory actions for one or both non-functioning channels will be addressed.	Not Started
NRC RAI 10.c - Provide a description of what compensatory actions are planned in the event that one of the instrument channels cannot be restored to functional status within 90 days.	Not Started

7.0 Potential Draft Safety Evaluation Impacts

At this time, Energy Northwest does not believe there are any potential impacts to the Draft Safety Evaluation.

8.0 References

1. Letter GO2-13-036, dated February 28, 2013, DA Swank (Energy Northwest) to the Nuclear Regulatory Commission, "Energy Northwest's Response to NRC Order EA-12-051 – Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation"

ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL INSTRUMENTATION

Enclosure 1

Page 8 of 8

2. NRC Order Number EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012
3. Letter dated June 20, 2013, from LK Gibson (NRC) to ME Reddemann (Energy Northwest) "Columbia Generating Station – Request for Additional Information Regarding Spent Fuel Pool Instrumentation (TAC No. MF0797)"
4. Letter GO2-13-100, dated July 19, 2013, DA Swank (Energy Northwest) to the Nuclear Regulatory Commission, "Energy Northwest Response to Request for Additional Information related to the Overall Integrated Plan for Spent Fuel Pool Instrumentation"

**ENERGY NORTHWEST'S FIRST SIX MONTH STATUS UPDATE REPORT FOR THE
IMPLEMENTATION OF NRC ORDER EA-12-051 RELIABLE SPENT FUEL POOL
INSTRUMENTATION**

Enclosure 2

ENCLOSURE 2

COLUMBIA GENERATING STATION, DOCKET NO. 50-397

**REVISION TO THE OVERALL INTEGRATED PLAN
FOR
RELIABLE SPENT FUEL POOL INSTRUMENTATION**

(Changed Pages Only)

ENERGY NORTHWEST'S RESPONSE TO NRC ORDER EA-12-051 – OVERALL INTEGRATED PLAN FOR RELIABLE SPENT FUEL POOL INSTRUMENTATION

Attachment 1

Page 4 of 11

The following milestone schedule is provided. The dates are subject to change as the detailed design and the implementation details are developed. Changes to the following target dates will be reflected in subsequent six-month status reports.

Milestones

Commence Engineering Detailed Design
Complete Detailed Design
Commence Installation
Spent Fuel Pool Instrumentation Channels Operational

Date

March 2013
January 2014
May 2014
December 2014

2.0 Spent Fuel Pool Configuration

Columbia's Reactor Building has been configured around a Boiling Water Reactor (BWR) Mark II containment structure. The spent fuel pool is located on the top floor of the Reactor Building (elevation []), referred to as the refuel floor, adjacent to the reactor cavity and opposite the dryer separator storage pool. The spent fuel pool, reactor cavity, and dryer separator storage areas are constructed of reinforced-concrete with a stainless steel liner. The spent fuel pool is the only pool used to store irradiated fuel discharged from the reactor vessel.

With the exception of limited time periods for maintenance or refueling operations, station procedures maintain the spent fuel pool opening isolated from the reactor cavity and dryer separator storage area.

The spent fuel pool has a stainless steel liner on top of the concrete. The bottom of the spent fuel pool is located at elevation []. In one corner of the spent fuel pool there is a cask loading pit. The cask loading area is separated by a partial wall that is open at the top and extends up to elevation []. The cask loading pit communicates with the rest of the spent fuel pool via sixteen 1 inch holes (8 on each side of the two internal walls to the spent fuel pool). The fuel rack extends vertically 15 feet ½ inch (nominally) from the bottom of the spent fuel pool with the top of the rack located at elevation []. There are other structures in the pool including hangers for control blades on the south and east walls, a work bench on the west wall and the fuel preparation equipment.

3.0 Identification of Spent Fuel Pool Water Levels

Key spent fuel pool water levels for Columbia will be designated in conformance with the guidance of JLD-ISG-2012-03 and NEI 12-02 and will be identified in station procedures. Each required level is discussed below and may be revised in the final design. Required instrument accuracy levels for the detection of the pool water levels are called out in the guidance and discussed in Section 7.0.

ENERGY NORTHWEST'S RESPONSE TO NRC ORDER EA-12-051 – OVERALL INTEGRATED PLAN FOR RELIABLE SPENT FUEL POOL INSTRUMENTATION

Attachment 1

Page 9 of 11

6.5 Power Supplies

The primary and backup instrument channels will be powered normally from independent divisional power sources such that the loss of one power source does not result in the loss of both channels. Each channel will have a battery power supply that is capable of isolating from the normal supply and supporting the instrument for a minimum of 24 hours. This battery power will be maintained charged through the normal power source.

Both the primary and the backup instrument channels will maintain their design accuracy without recalibration or reconfiguration following a power interruption (including the loss of the redundant battery power) or a change in the power source. The channel electronics store the device configuration in non-volatile flash memory that upon repowering restores the instrument.

The detailed design will determine the normal power source and the additional FLEX power source that will meet the 7 day requirement for both channels. The detailed design will determine the specific details to meet these requirements.

7.0 Accuracy

The accuracy will be consistent with the guidelines of JLD-ISG-2012-03 and NEI 12-02. The guidance requires a resolution of 1 foot for Level 1 and 3.5 feet for Levels 2 and 3.

The primary and the secondary channels maintain their design accuracy following a power interruption without requiring re-calibration. The loop accuracy of the primary system and the backup system is less than 6 inches for the entire span (above Level 1 through to Level 3) for both channels. The total instrument loop uncertainty will be determined by the detailed design and will meet the accuracy requirements (± 1 foot) in NEI 12-02.

8.0 Testing

Testing will be consistent with the guidelines of JLD-ISG-2012-03 and NEI 12-02 and performed in accordance with station procedures. The primary and backup instrument channels will be tested and calibrated. The channels will have the ability to perform in-situ testing. Calibration and testing procedures will be developed in accordance with the station procedures, guidelines and vendor recommendations. Details will be determined in the detailed design.

9.0 Display

Both the primary and backup channel display will be located in the main control room. The location for both channels' display inside the main control room is to be determined by the detailed design. The display will be consistent with the guidelines of JLD-ISG-2012-03 and NEI 12-02.