



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 17, 2018

Mr. Bradley J. Sawatzke
Acting Chief Executive Officer
Energy Northwest
Columbia Generating Station
MD 1023
North Power Plant Loop
P.O. Box 968
Richland, WA 99352

SUBJECT: COLUMBIA GENERATING STATION - STAFF REVIEW OF SPENT FUEL
POOL EVALUATION ASSOCIATED WITH REEVALUATED SEISMIC HAZARD
IMPLEMENTING NEAR-TERM TASK FORCE RECOMMENDATION 2.1:
SEISMIC (EPID L-2017-JLD-0060)

Dear Mr. Sawatzke:

The purpose of this letter is to inform Energy Northwest (the licensee), of the results of the U.S. Nuclear Regulatory Commission (NRC) staff's review of the spent fuel pool (SFP) evaluation for Columbia Generating Station (Columbia), which was submitted in response to Item 9 of Enclosure 1 of the NRC's March 12, 2012, request for information (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340) issued under Title 10 of the *Code of Federal Regulations* Part 50, Section 50.54(f) (hereafter referred to as the 50.54(f) letter). The NRC staff concludes that the licensee's assessment was performed consistent with the NRC-endorsed SFP Evaluation Guidance Report and that the licensee has provided sufficient information to complete the response to Item 9 of the 50.54(f) letter.

BACKGROUND

On March 12, 2012, the NRC issued the 50.54(f) letter as part of implementing lessons learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 1 to the 50.54(f) letter requested that licensees reevaluate seismic hazards at their sites using present-day methodologies and guidance. Enclosure 1, Item (4), of the 50.54(f) letter requested that licensees perform a comparison of the ground motion response spectrum (GMRS) and the safe shutdown earthquake (SSE). The staff's assessment of the information provided in response to Items (1)-(3) and (5)-(7) and the comparison portion of Item (4) of the 50.54(f) letter was provided by letter dated November 4, 2016 (ADAMS Accession No. ML16285A410). Enclosure 1, Item (9), of the 50.54(f) letter requested that, when the GMRS exceeds the SSE in the 1 to 10 Hertz frequency range, the licensee provide a seismic evaluation of the SFP. More specifically, licensees were asked to consider "...all seismically induced failures that can lead to draining of the SFP."

By letter dated January 31, 2017 (ADAMS Accession No. ML17031A171), the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) Report No. 3002009564 entitled, "Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation" (SFP Evaluation Guidance Report). The SFP Evaluation Guidance Report provides criteria for evaluating the seismic adequacy of an SFP to the reevaluated GMRS hazard levels. This report supplements the guidance in EPRI Report 1025287, "Seismic Evaluation Guidance: Screening, Prioritization and Implementation Details (SPID)" (ADAMS Accession No. ML12333A170). The NRC endorsed the SFP Evaluation Guidance Report by letter dated February 28, 2017 (ADAMS Accession No. ML17034A408), as an acceptable method for licensees to use when responding to Item 9 in Enclosure 1 of the 50.54(f) letter.

By letter dated October 27, 2015 (ADAMS Accession No. ML15194A015), the NRC staff stated that SFP evaluation submittals for sites with GMRS peak spectral accelerations above 0.8g were expected by December 31, 2017.

By letter dated July 6, 2017 (ADAMS Accession No. ML17177A446), the NRC issued a generic audit plan and entered into the audit process described in Office Instruction LIC-111, "Regulatory Audits," dated December 29, 2008 (ADAMS Accession No. ML082900195), to assist in the timely and efficient closure of activities associated with the 50.54(f) letter. The Columbia site was included in the list of applicable licensees. The staff used the audit process as described below during the SFP evaluation review.

REVIEW OF LICENSEE SPENT FUEL POOL EVALUATION

By letter dated December 28, 2017 (ADAMS Accession No. ML18002A424), the licensee submitted its SFP evaluation for Columbia. The NRC staff assessed the licensee's implementation of the SFP Evaluation Guidance Report through the completion of a reviewer checklist, which is included as an enclosure to this letter.

TECHNICAL EVALUATION

Section 4.0 of the SFP Evaluation Guidance Report provides SFP evaluation criteria for plants with GMRS peak spectral accelerations greater than 0.8g. These criteria address SFP structural elements (e.g., floors, walls, and supports); non-structural elements (e.g., penetrations); seismically-induced SFP sloshing; and water losses due to heat-up and boil-off. Section 4.0 also provides applicability criteria that enable licensees to determine if their site-specific conditions are within the bounds considered in developing some of the evaluation criteria in the guidance report. In its review, the staff confirmed that the SFP Evaluation Guidance Report methodology has been followed when calculating the site-specific seismic capacity of the SFP, and that Columbia's site-specific values and conditions are within the acceptable limits and bounds considered for the non-structural evaluation criteria specified in the SFP Evaluation Guidance Report.

SPENT FUEL POOL STRUCTURAL EVALUATION

Section 4.1 of the SFP Evaluation Guidance Report provides an SFP structural evaluation approach used to demonstrate that the SFP structure is sufficiently robust for the reevaluated seismic hazard. This approach supplements the guidance in Section 7 of the SPID and follows acceptable methods used to assess the seismic capacity of structures, systems, and components (SSCs) for nuclear power plants. In short, Sections 4.1.1 and 4.1.2 describe an acceptable method for licensees to use to calculate a site-specific seismic high confidence of

low probability of failure (HCLPF) value for the SFP that is then compared to the site-specific GMRS.

The licensee stated that the SFP structural evaluation approach presented in the SFP Evaluation Guidance Report is applicable and, as a part of the audit process, provided site-specific data to the NRC staff to confirm the stated results for Columbia.

As a part of the audit process, the NRC staff reviewed the information provided in calculation 178089-CA-001, "Columbia Generating Station Spent Fuel Pool Structure Integrity Evaluation", Rev. 0, and confirmed that the site-specific HCLPF value calculated for Columbia's SFP followed the methodology of the SFP Guidance Report and that the HCLPF value is greater than the GMRS. The staff concludes that SFP SSCs were appropriately evaluated and that the licensee has demonstrated that there is high confidence the SFP structure is sufficiently robust to withstand ground motions with peak spectral accelerations up to and including the peak spectral acceleration of Columbia's GMRS.

SPENT FUEL POOL NON-STRUCTURAL EVALUATION

Section 4.2 of the SFP Evaluation Guidance Report provides criteria for evaluating the non-structural aspects of the SFP, such as piping connections, fuel gates, and anti-siphoning devices, as well as SFP sloshing and heat-up and boil-off of SFP water inventory. Additionally, pages 4-11 of the SFP Evaluation Guidance Report provide a summary of the pertinent SFP non-structural parameters important to the methodology described in Section 4.2.

The licensee provided a table in its letter dated December 28, 2017, demonstrating that it followed the SFP non-structural evaluation approach presented in the guidance report and provided site-specific data to confirm its applicability. The staff reviewed the non-structural information provided, which included Columbia's site-specific attributes, against the criteria described in the SFP Evaluation Guidance Report, and confirmed that the methods and conclusions are applicable to the Columbia site. Therefore, the staff concludes that the licensee adequately evaluated the non-structural considerations for SSCs whose failure could lead to potential drain-down of the SFP due to a seismic event. Further, the staff concludes that the licensee demonstrated that a potential drain-down of the SFP as a result of the reevaluated seismic hazard is unlikely.

AUDIT REPORT

The July 6, 2017, generic audit plan describes the NRC staff's intention to issue an audit report that summarizes and documents the NRC's regulatory audit of licensee's submittals associated with reevaluated seismic hazard analyses. The NRC staff's Columbia audit was limited to the review of the calculation discussed above. An audit summary document is included as Enclosure 2 to this letter.

CONCLUSION

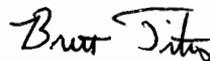
The NRC staff reviewed the licensee's SFP evaluation report. Based on its review, the NRC staff concludes that the licensee's implementation of the SFP integrity evaluation met the criteria of the SFP Evaluation Guidance Report for Columbia and therefore, the licensee responded appropriately to Item (9) in Enclosure 1 of the 50.54(f) letter. The NRC staff further concludes that the licensee has demonstrated an adequate margin to preclude a potential drain-down of the SFP as a result of the reevaluated seismic hazard at Columbia.

B. Sawatzke

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If you have any questions, please contact me at (301) 415-3075 or via e-mail at Brett.Titus@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "Brett Titus". The signature is written in a cursive style with a prominent flourish at the end of the name.

Brett Titus, Senior Project Manager
Beyond-Design-Basis Management Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosures:

1. Technical Review Checklist
2. NRC Staff Audit Summary

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TECHNICAL REVIEW CHECKLIST
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO SPENT FUEL POOL EVALUATIONS FOR HIGH GROUND MOTION
RESPONSE SPECTRUM SITES
IMPLEMENTING NEAR-TERM TASK FORCE RECOMMENDATION 2.1 SEISMIC
COLUMBIA GENERATING STATION
DOCKET NO. 50-397

BACKGROUND

By letter dated March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340), the U.S. Nuclear Regulatory Commission (NRC) issued a request for information to all power reactor licensees and holders of construction permits in active or deferred status, under Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(f) (hereafter referred to as the "50.54(f) letter"). Enclosure 1 of the 50.54(f) letter requests addressees to reevaluate the seismic hazard at their site using present-day methods and guidance for licensing new nuclear power plants, and identify actions to address or modify, as necessary, plant components affected by the reevaluated seismic hazards. Enclosure 1, Item (4), of the 50.54(f) letter requested that licensees perform a comparison of the ground motion response spectrum (GMRS) with the safe shutdown earthquake (SSE). Enclosure 1, Item (9), requests that, when the GMRS exceeds the SSE in the 1 to 10 Hertz (Hz) frequency range, a seismic evaluation be made of the spent fuel pool (SFP). More specifically, plants were asked to consider all seismically induced failures that can lead to draining of the SFP.

Additionally, by letter dated January 31, 2017 (ADAMS Accession No. ML17031A171), the Nuclear Energy Institute (NEI) submitted the Electric Power Research Institute (EPRI) Report No. 3002009564 entitled, "Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation" (SFP Evaluation Guidance Report). The SFP Evaluation Guidance Report supports the completion of SFP evaluations for sites with reevaluated seismic hazard exceedance in the 1 to 10 Hz frequency range. The NRC endorsed the SFP Evaluation Guidance Report by letter dated February 28, 2017 (ADAMS Accession No. ML17034A408), as an acceptable method for licensees to use when responding to Item (9) in Enclosure 1 of the 50.54(f) letter. Licensee deviations from the SFP Evaluation Guidance should be discussed in their SFP evaluation submittal.

By letter dated December 28, 2017 (ADAMS Accession No. ML18002A424), Energy Northwest (the licensee), provided an SFP report in response to Enclosure 1, Item (9), of the 50.54(f) letter for Columbia Generating Station (Columbia). The NRC staff performed its review of the licensee's submittal to assess whether the licensee responded appropriately to Item (9) in Enclosure 1 of the 50.54(f) letter. The NRC staff evaluated whether the SFP Evaluation Guidance Report methodology had been followed when calculating the site-specific seismic capacity of the SFP, and that Columbia's site-specific values and conditions are within the acceptable limits and bounds considered for the non-structural evaluation criteria specified in the SFP Evaluation Guidance Report. The NRC staff also confirmed that the requested information in response to Item (9) of the 50.54(f) letter was provided.

A review checklist was used for consistency and efficiency. The application of this staff review is limited to the SFP evaluation as part of the seismic review as part of the Near-Term Task Force (NTTF) Recommendation 2.1.

**NTTF Recommendation 2.1 Spent Fuel Pool Evaluations
Technical Review Checklist for Columbia Generating Station**

Site Parameters:

I. Site-Specific GMRS

<p>The licensee:</p> <ul style="list-style-type: none"> Used the site-specific GMRS hazard, consistent with the information in the Seismic Hazard and Screening Report (SHSR) or its update, that was evaluated and accepted in the NRC staff assessment when calculating the SFP high confidence of low probability of failure (HCLPF) value. 	<p align="center">Yes</p>
<p>Notes from the reviewer:</p> <ol style="list-style-type: none"> The NRC staff reviewed the licensee's calculation 178089-CA-001, Columbia Generating Station Spent Fuel Pool Structure Integrity Evaluation, Revision 0, as a part of the audit process for Columbia. The calculation derives seismic input values for the Reactor Building by scaling spectra from other seismic input values that were generated for Columbia's seismic probabilistic risk assessment (SPRA) reference earthquake (RE). See conclusion below for details. <p>Deviation(s) or Deficiency(ies), and Resolution:</p> <p>No deviations or deficiencies were identified.</p>	
<p>The NRC staff concludes that:</p> <ul style="list-style-type: none"> The licensee's derivation of the Reactor Building In-Structure Response Spectra (ISRS) using scaled data from the ISRS of the SPRA RE is reasonable for the purposes of this calculation. Scaling of response spectra is a common practice in seismic evaluations, and Columbia's implementation of this practice is reasonable for this purpose. 	

Structural Parameters:

II. Seismic Design of the SFP Structure

<p>The licensee:</p> <ul style="list-style-type: none"> Performed site-specific calculations to demonstrate that the limiting SFP HCLPF capacity value is greater than the peak spectral acceleration of the site-specific GMRS. 	<p>Yes</p>
<p>Notes from the reviewer:</p> <ol style="list-style-type: none"> The NRC staff confirmed that the licensee followed the methodology described in the SFP Evaluation Guidance Report in calculation 178089-CA-001, Revision 0, to calculate an SFP HCLPF capacity. The resulting HCLPF capacity value is greater than the site-specific GMRS, therefore, it is reasonable to conclude that the SFP has sufficient capacity to withstand a seismic event at least up to the GMRS without failure that would lead to a rapid draindown. <p>Deviation(s) or Deficiency(ies), and Resolution:</p> <p>No deviations or deficiencies were identified.</p>	
<p>The NRC staff concludes that:</p> <ul style="list-style-type: none"> The SFP has sufficient capacity to withstand a seismic event at least up to the GMRS without failure that would lead to a rapid draindown. 	

III. SFP Structure Included in the Civil Inspection Program Performed in Accordance with Maintenance Rule

<p>The licensee:</p> <ul style="list-style-type: none"> Stated that the SFP structure is included in the Civil Inspection Program performed in accordance with Maintenance Rule (10 CFR 50.65). 	<p>Yes</p>
<p>Notes from the reviewer:</p> <ol style="list-style-type: none"> The licensee stated that the SFP structure is included in the Columbia Structures Monitoring Program and cited Appendix A of NUREG-2123, "Safety Evaluation Report Related to the License Renewal of Columbia Generating Station Volume 2" (ADAMS Accession No. ML12139A302) as a source. The staff verified via the Columbia Final Safety Analysis Report (FSAR) Section 3.8.4.1.1.6, that the refueling pools are included as a part of the Reactor Building, which is included in the scope of Item Number 50 of Appendix A of NUREG-2123. 	

Deviation(s) or Deficiency(ies), and Resolution:	
No deviations or deficiencies were identified.	
The NRC staff concludes that:	
<ul style="list-style-type: none"> The SFP structure is included in the Civil Inspection Program performed in accordance with Maintenance Rule (10 CFR 50.65). 	

Non-Structural Parameters:

IV. Applicability of Piping Evaluation

The licensee:	
<ul style="list-style-type: none"> Stated that there are no piping penetrations attached to the SFP more than 6 feet (ft.) below the surface of the water. 	No
Notes from the reviewer:	
<ol style="list-style-type: none"> The licensee did not state that all piping penetrations attached to the SFP are no more than 6 ft. below the surface of the water. However, the licensee did cite Sections 3.8.4.1.1.6 and 9.1.2.3.3 of the FSAR, which state that there are no connections provided that allow the fuel storage pool to be drained at any time. Additionally, Section 4.2 of the SFP Evaluation Guidance Report states that the conservative assumption is that SFP inventory is lost down to the level of piping penetrations even though seismically designed piping is inherently rugged and has been shown in past studies not to contribute appreciably to risk. Using this assumption in conjunction with a conservative sloshing assumption, Figure 4-3 of the SFP Evaluation Guidance Report shows that plants have a minimum of 94 hours before drain-down to the upper 1/3 fuel assembly height. 	
Deviation(s) or Deficiency(ies), and Resolution:	
The specific criterion of the SFP Evaluation Guidance Report for no piping penetrations more than 6 ft. below the water surface was not explicitly stated to be met; however, for the reasons cited in the notes above, no deficiencies in the results of the conclusions regarding rapid drain down due to piping failure were identified.	
The NRC staff concludes that:	
<ul style="list-style-type: none"> The licensee has adequately demonstrated that a rapid drain down of the SFP inventory due to a piping failure more than 6 ft. below the surface of the water is very unlikely, and, as demonstrated by the conservative drain down, sloshing, and boil-off analysis, there is adequate time available to take mitigating actions. 	

V. Ductile Behavior of SFP Gates

<p>The licensee:</p> <ul style="list-style-type: none"> Stated that the SFP gate is constructed from a ductile material (e.g. aluminum or stainless steel alloys). 	<p>Yes</p>
<p>Notes from the reviewer:</p> <p>1. The licensee stated that the SFP gates are constructed from aluminum. The staff verified this statement using the information in NUREG-2123, "Safety Evaluation Report Related to the License Renewal of Columbia Generating Station Volume 1" (ADAMS Accession No. ML12139A300). This is consistent with the materials specified in the SFP Evaluation Guidance Report to ensure ductile behavior of the gates.</p> <p>Deviation(s) or Deficiency(ies), and Resolution:</p> <p>No deviations or deficiencies were identified.</p>	
<p>The NRC staff concludes that:</p> <ul style="list-style-type: none"> The SFP gates are constructed from a material expected to exhibit ductile behavior under higher seismic demands. 	

VI. Siphoning Evaluation

<p>The licensee:</p> <ul style="list-style-type: none"> Stated that anti-siphoning devices are installed on piping systems that could lead to siphoning inventory from the SFP. In cases where anti-siphoning devices were not included on the applicable piping, a description documenting the evaluation performed to determine the seismic adequacy of the piping is provided. Stated that the piping of the SFP cooling system cannot lead to rapid drain down due to siphoning. Stated that no anti-siphoning devices are attached to 2" or smaller piping with extremely large extended operators. Provided a seismic adequacy evaluation, in accordance with NP-6041, for cases where active siphoning devices are attached to 2" or smaller piping with extremely large extended operators. 	<p>Yes</p> <p>N/A</p> <p>Yes</p> <p>Yes</p> <p>N/A</p>
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Notes from the reviewer:

1. The licensee stated that anti-siphoning devices are installed on all SFP piping that could lead to siphoning. The staff verified that the FSAR supports this statement (FSAR Sections 9.1.2.3.3 and 9.1.2.3.5).
2. The licensee stated that no 2-inch or smaller piping exits the SFP. The staff verified that the FSAR supports this statement (FSAR Figure 9.1-6.1).

Deviation(s) or Deficiency(ies), and Resolution:

No deviations or deficiencies were identified.

The NRC staff concludes that:

- Anti-siphoning devices exist in applicable piping systems that could lead to siphoning water from the SFP.
- Piping of the SFP cooling system is not likely to lead to rapid draindown due to siphoning.
- No active anti-siphoning devices are attached to 2" or smaller piping with extremely large extended operators.

Yes

Yes

Yes

VII. Sloshing Evaluation

The licensee:

- Specified the SFP dimensions (length, width, and depth).
- Specified that the SFP dimensions are bounded by the dimensions specified in the report (i.e., SFP length and width <125ft.; SFP depth >36ft.).

Yes

Yes

Notes from the reviewer:

1. SFP dimensions (Figures 01.2.11 and 3.8-31 of the Columbia FSAR)
 - SFP Length – 40 ft.
 - SFP Width – 34 ft.
 - SFP Depth – 38.75 ft.
2. Figure 4.2 of the SFP Evaluation Guidance Report shows site-specific results of the remaining water inventory used as the initial condition for evaporative losses, which are evaluated in the next section of the EPRI Report and this checklist.

Deviation(s) or Deficiency(ies), and Resolution:

No deviations or deficiencies were identified.

<p>The NRC staff concludes that:</p> <ul style="list-style-type: none"> • SFP dimensions are bounded by the dimensions specified in the report (i.e., SFP length and width <125 ft.; SFP depth >36 ft.). 	<p>Yes</p>
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VIII. Evaporation Evaluation

<p>The licensee:</p> <ul style="list-style-type: none"> • Provided the surface area of the plant's SFP. • Stated that the surface area of the plant's SFP is greater than 500 ft². • Provided the licensed reactor core thermal power. • Stated that the reactor core thermal power is less than 4,000 megawatt thermal (MW_t) per unit. 	<p>Yes Yes Yes Yes</p>
<p>Notes from the reviewer:</p> <ol style="list-style-type: none"> 1. Surface area of pool = 1360 ft² (Figure 3.8-31 of the Columbia FSAR) 2. Reactor thermal power = 3544 MW_t (Columbia FSAR Section 1.1) <p>Deviation(s) or Deficiency(ies), and Resolution:</p> <p>No deviations or deficiencies were identified.</p>	
<p>The NRC staff concludes:</p> <ul style="list-style-type: none"> • The surface area of the plant's SFP is greater than 500 ft². • The reactor core thermal power is less than 4,000 MW_t per unit. 	<p>Yes Yes</p>

Conclusions:

The NRC staff reviewed the licensee's SFP evaluation report. Based on its review, the NRC staff concludes that the SFP Evaluation Guidance Report methodology has been followed when calculating the site-specific seismic capacity of the SFP, and that Columbia's site-specific values and conditions are within the acceptable limits and bounds considered for the non-structural evaluation criteria specified in the SFP Evaluation Guidance Report. Therefore, the licensee responded appropriately to Item (9) in Enclosure 1 of the 50.54(f) letter. The NRC staff further concludes that the licensee has demonstrated an adequate margin to preclude a potential drain-down of the SFP as a result of the reevaluated seismic hazard at Columbia.

AUDIT SUMMARY BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO
COLUMBIA GENERATING STATION
SPENT FUEL POOL EVALUATION ASSOCIATED WITH REEVALUATED SEISMIC HAZARD
IMPLEMENTING NEAR-TERM TASK FORCE RECOMMENDATION 2.1: SEISMIC
(EPID L-2017-JLD-0060)

BACKGROUND AND AUDIT BASIS

By letter dated March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340), the U.S. Nuclear Regulatory Commission (NRC) issued a request for information under Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(f) (hereafter referred to as the 50.54(f) letter). Enclosure 1 to the 50.54(f) letter requested that licensees reevaluate the seismic hazards for their sites using present-day methods and regulatory guidance used by the NRC staff when reviewing applications for early site permits and combined licenses.

By letter dated October 27, 2015 (ADAMS Accession No. ML15194A015), the NRC made a determination of which licensees were to perform: (1) a seismic probabilistic risk assessment (SPRA), (2) limited scope evaluations, or (3) no further actions based on a comparison of the reevaluated seismic hazard and the site's design-basis earthquake. (Note: Some plant-specific changes regarding whether an SPRA was needed or limited scope evaluations were needed at certain sites have occurred since the issuance of the October 27, 2015, letter.)

By letter dated July 6, 2017 (ADAMS Accession No. ML17177A446), the NRC issued a generic audit plan and entered into the audit process described in Office Instruction LIC-111, "Regulatory Audits," dated December 29, 2008 (ADAMS Accession No. ML082900195), to assist in the timely and efficient closure of activities associated with the 50.54(f) letter. Columbia Generating Station (Columbia) was included in the list of applicable licensees.

REGULATORY AUDIT SCOPE AND METHODOLOGY

The areas of focus for the regulatory audit are the information contained in the spent fuel pool (SFP) evaluation submittal and all associated and relevant supporting documentation used in the development of the SFP evaluation including, but not limited to, methodology, process information, calculations, computer models, etc.

AUDIT ACTIVITIES

The Columbia audit took place at the NRC Headquarters in Rockville, MD, beginning on July 6, 2017. Licensee personnel participated remotely, via email, from their respective offices. A list of the licensee staff and NRC staff that participated in the audit is contained in Table 1.

Table 1

NRC Staff		Licensee Staff	
Name	Title	Name	Title
Brett Titus	Sr. Project Manager	Richard Rogalski	Sr. Licensing Engineer

The licensee proactively uploaded calculation 178089-CA-001, Columbia Generating Station Spent Fuel Pool Structure Integrity Evaluation, Revision 0, which was performed to determine the high confidence low probability of failure (HCLPF) capacity value for the SFP, onto its ePortal (electronic reading room) on January 2, 2018. The licensee informed the staff, via email, that the calculation had been uploaded.

DOCUMENTS AUDITED

178089-CA-001, Columbia Generating Station Spent Fuel Pool Structure Integrity Evaluation, Revision 0

OPEN ITEMS AND REQUEST FOR INFORMATION

Following the review of the SFP HCLPF capacity calculation, there were no open items identified by the NRC staff that required proposed closure paths, and there were no requests for information discussed or planned to be issued.

DEVIATIONS FROM AUDIT PLAN

There were no deviations from the July 6, 2017, generic audit plan.

AUDIT CONCLUSION

The issuance of this document, containing the staff's review of the SFP evaluation submittal, concludes the SFP audit process for Columbia.

SUBJECT: COLUMBIA GENERATING STATION - STAFF REVIEW OF SPENT FUEL POOL EVALUATION ASSOCIATED WITH REEVALUATED SEISMIC HAZARD IMPLEMENTING NEAR-TERM TASK FORCE RECOMMENDATION 2.1: SEISMIC DATED April 17, 2018

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