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NL-16-2494

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

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Spent Fuel Pool Evaluation Supplemental Report, Response to NRC Request for
Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the
Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident

References:

1. NRC Letter, *Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the NTTF Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012. ML12053A340.
2. NRC Letter, *Final Determination of Licensee Seismic Probabilistic Risk Assessments Under the Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1 "Seismic" of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated October 27, 2015. ML15194A015.
3. NEI Letter, *transmits EPRI 3002007148 for NRC endorsement*, dated February 23, 2016. ML16055A017.
4. EPRI 3002007148, *Seismic Evaluation Guidance Spent Fuel Pool Integrity Evaluation*, February 2016.
5. NRC Letter, *provides endorsement of EPRI 3002007148*, dated March 17, 2016. ML15350A158.
6. Letter to NRC, *Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Seismic Hazard and Screening Report for CEUS Sites*, dated March 31, 2014 (NL-14-0343). ML14092A017.
7. NRC Letter, *Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Staff Assessment of Information Provided Pursuant to Title 10 of the Code of Federal Regulations Part 50, Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated April 27, 2015. ML15097A424.
8. EPRI 1025287, *Seismic Evaluation Guidance, Screening, Prioritization and Implementation Details [SPID] for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic*, February 2013.

Ladies and Gentlemen:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a Request for Information per 10 CFR 50.54(f) (Reference 1) to all power reactor licensees. Enclosure 1, Item (9) of the 50.54(f) letter requested addressees to provide limited scope spent fuel pool (SFP) evaluations. By letter dated October 27, 2015 (Reference 2), the NRC transmitted final seismic information request tables which identified that Edwin I. Hatch Nuclear Plant – Units 1 and 2, is to conduct a

limited scope SFP evaluation. By Reference 3, Nuclear Energy Institute (NEI) submitted an Electric Power Research Institute (EPRI) report entitled, Seismic Evaluation Guidance Spent Fuel Pool Integrity Evaluation (EPRI 3002007148) (Reference 4) for NRC review and endorsement. NRC endorsement was provided by Reference 5.

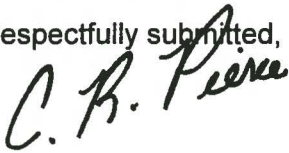
EPRI 3002007148 provides criteria for evaluating the seismic adequacy of a SFP to the reevaluated ground motion response spectrum (GMRS) hazard levels. This report supplements the guidance in the Seismic Evaluation Guidance, Screening, Prioritization and Implementation Details (SPID) (Reference 8), for plants where the GMRS peak spectral acceleration is less than or equal to 0.8g. Section 3.3 of EPRI 3002007148 lists the parameters to be verified to confirm that the results of the report are applicable to Edwin I. Hatch Nuclear Plant – Units 1 and 2, and that the Edwin I. Hatch Nuclear Plant – Units 1 and 2, SFPs are seismically adequate in accordance with the Near Term Task Force (NTTF) 2.1 Seismic evaluation criteria.

The enclosure to this letter provides the data for Edwin I. Hatch Nuclear Plant – Units 1 and 2 that confirms applicability of the EPRI 3002007148 criteria, confirms that the SFPs are seismically adequate, and provides the requested information in response to Item (9) of the 50.54 (f) letter associated with NTTF Recommendation 2.1 Seismic evaluation criteria.

This letter contains no new NRC Commitments. If you have any questions, please contact John Giddens at 205.992.7924.

Mr. C. R. Pierce states he is the Regulatory Affairs Director for Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and, to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,



C. R. Pierce
Regulatory Affairs Director

CRP/JMG/GLS

Sworn to and subscribed before me this 19th day of December, 2016.


Notary Public

My commission expires: 1-2-2018

Enclosure: Site-Specific Spent Fuel Pool Criteria for
Edwin I. Hatch Nuclear Plant – Units 1 and 2



cc: Southern Nuclear Operating Company
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**Edwin I. Hatch Nuclear Plant – Units 1 and 2
Spent Fuel Pool Evaluation Supplemental Report, Response to NRC Request for
Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the
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Enclosure

**Site-Specific Spent Fuel Pool Criteria for
Edwin I. Hatch Nuclear Plant – Units 1 and 2**

Introduction

The 10 CFR 50.54(f) letter requested that, in conjunction with the response to NTTF Recommendation 2.1, a seismic evaluation be made of the SFP. More specifically, plants were asked to consider “all seismically induced failures that can lead to draining of the SFP.” Such an evaluation would be needed for any plant in which the ground motion response spectrum (GMRS) exceeds the safe shutdown earthquake (SSE) in the 1 to 10 Hz frequency range. The staff confirmed through References 2 and 7 that the GMRS exceeds the SSE and concluded that a SFP evaluation is merited for the Edwin I. Hatch Nuclear Plant - Units 1 and 2 (Hatch). By letter dated March 17, 2015 (Reference 5) the staff determined that EPRI 3002007148 was an acceptable approach for performing SFP evaluations for plants where the peak spectral acceleration is less than or equal to 0.8g.

The table below lists the criteria from Section 3.3 of EPRI 3002007148 along with data for Hatch that confirms applicability of the EPRI 3002007148 criteria and confirms that the SFPs are seismically adequate and can retain adequate water inventory for 72 hours in accordance with NTTF 2.1 Seismic evaluation criteria.

SFP Criteria from EPRI 3002007148	Site-Specific Data
Site Parameters	
1. The site-specific GMRS peak spectral acceleration at any frequency should be less than or equal to 0.8g.	The GMRS peak spectral acceleration in the Hatch site-specific GMRS submittal (Reference 6 ML14092A017) as accepted by the NRC in NRC Letter (Reference 7 ML15097A424) is 0.32g, which is $\leq 0.8g$, <u>therefore, this criterion is met.</u>
Structural Parameters	
2. The structure housing the SFP should be designed using an SSE with a peak ground acceleration (PGA) of at least 0.1g.	The SFPs are housed in the Reactor Buildings, which are seismically designed to the site SSEs/DBEs with a PGA of 0.15g (Reference 6). The Hatch PGAs are greater than 0.1g, <u>therefore, this criterion is met.</u>
3. The structural load path to the SFP should consist of some combination of reinforced concrete shear wall elements, reinforced concrete frame elements, post-tensioned concrete elements and/or structural steel frame elements.	<p>The structural load path from the foundation to the SFP consists of two concrete columns on one side and the drywell shield on the other side. In addition, there is a structural steel support system that includes 36” wide flange beams that directly support the Spent Fuel Pool slab.</p> <p>Drawings showing structural details for the Hatch Unit 1 SFP include the following: H-15303, H-15304, H-15336.</p> <p>Drawings showing structural details for the Hatch Unit 2 SFP include the following: H-25428, H-25429, H-26105, H-25606.</p> <p><u>Therefore, this criterion is met for Hatch.</u></p>

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SFP Criteria from EPRI 3002007148	Site-Specific Data
<p>4. The SFP structure should be included in the Civil Inspection Program performed in accordance with Maintenance Rule.</p>	<p>The SFP structures are included in the Hatch Civil Inspection Program in accordance with 10 CFR 50.65, which monitors the performance or condition of structures, systems, or components (SSCs) in a manner sufficient to provide reasonable assurance that these SSCs are capable of fulfilling their intended functions. The applicable procedure is NMP-ES-021 Version 9.0 Structural Monitoring Program for the Maintenance Rule.</p> <p><u>Therefore, this criterion is met for Hatch.</u></p>
<p>Non-Structural Parameters</p>	
<p>5. To confirm applicability of the piping evaluation in Section 3.2 of EPRI 3002007148, piping attached to the SFP up to the first valve should have been evaluated for the SSE.</p>	<p>Piping attached to the SFP is evaluated to the SSE in accordance with Seismic Category I requirements as documented in Unit 2 FSAR section 9.1.3.2.1. This section of the Unit 2 FSAR is applicable to both units, as the Unit 1 FSAR section 10.4 directs the reader to the Unit 2 FSAR.</p> <p><u>Therefore, this criterion is met for Hatch.</u></p>

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SFP Criteria from EPRI 3002007148	Site-Specific Data
<p>6. Anti-siphoning devices should be installed on any piping that could lead to siphoning water from the SFP. In addition, for any cases where active anti-siphoning devices are attached to 2-inch or smaller piping and have extremely large extended operators, the valves should be walked down to confirm adequate lateral support.</p>	<p>Plant Hatch Units 1 and 2 Spent Fuel Pools are shared across the units when the SFP gates are removed. The Fuel Pool Cooling system (G41) does not have passive anti-siphon devices per design. The Plant Hatch Fuel Pool Cooling system (G41) has two water-return diffusers and one make up water diffuser for each unit. The make-up water diffuser has an anti-siphon check valve, while each water-return diffuser has two check valves located in series in the piping, adding up to a total of five (5) anti-siphon devices per unit. These are Active devices. The Decay Heat Removal System (G71) does have passive devices (anti-siphon holes) on the discharge and suction piping going in to the spent fuel pool. Normal pool level is set at elevation 226'-5" and all of the devices are submerged under water, located at elevation 225'-7".</p> <p>As described, anti-siphoning devices are installed on all SFP piping that could lead to siphoning; therefore, <u>this criterion is met for Hatch.</u></p> <p>No anti-siphoning devices are attached to 2-inch or smaller piping with extremely large extended operators; therefore, <u>this criterion is met for Hatch.</u></p>
<p>7. To confirm applicability of the sloshing evaluation in Section 3.2 of EPRI 3002007148, the maximum SFP horizontal dimension (length or width) should be less than 125 ft, the SFP depth should be greater than 36 ft, and the GMRS peak Sa should be <0.1g at frequencies equal to or less than 0.3 Hz.</p>	<p>The Hatch Unit 1 SFP has a length of 33.75 ft, a width of 40 ft and a depth of 39 ft based on Hatch Drawings H-15337, H-15437, H-16033; <u>therefore, this criterion is met.</u></p> <p>The Hatch Unit 2 SFP has a length of 28.5 ft, a width of 40 ft and a depth of 39 ft based on Hatch Drawings H-25568, H-25571, H-25578, H-26105; <u>therefore, this criterion is met.</u></p> <p>The Hatch GMRS maximum spectral acceleration in the frequency range less than 0.3 Hz is 0.058g from Hatch GMRS submittal (Reference 6) which is less than 0.1g, <u>therefore, this criterion is met.</u></p>

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SFP Criteria from EPRI 3002007148	Site-Specific Data
<p>8. To confirm applicability of the evaporation loss evaluation in Section 3.2 of EPRI 3002007148, the SFP surface area should be greater than 500 ft² and the licensed reactor core thermal power should be less than 4,000 MWt per unit.</p>	<p>For Hatch Unit 1, the surface area of the Hatch SFP is 1,350 ft², which is greater than 500 ft²; and licensed reactor thermal power for Hatch Unit 1 is 2,804 MWt which is less than 4,000 MWt per unit, <u>therefore, these criteria are met.</u></p> <p>For Hatch Unit 2, the surface area of the Hatch SFP is 1,140 ft², which is greater than 500 ft²; and licensed reactor thermal power for Hatch Unit 2 is 2,804 MWt which is less than 4,000 MWt per unit, <u>therefore, these criteria are met.</u></p>