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10 CFR 54

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

Hope Creek Generating Station
Facility Operating License No. NPF-57
NRC Docket No. 50-354

Subject: Response to NRC Request for Additional Information, dated June 1, 2010, Related to Sections 4.6 and 4.7 of the Hope Creek Generating Station License Renewal Application

Reference: Letter from Ms. Bennett Brady (USNRC) to Mr. Thomas Joyce (PSEG Nuclear, LLC) "REQUEST FOR ADDITIONAL INFORMATION REGARDING SECTIONS 4.6 AND 4.7 OF THE HOPE CREEK GENERATING STATION LICENSE RENEWAL APPLICATION (TAC NO. ME1832)", dated June 1, 2010

In the referenced letter, the NRC requested additional information related to Sections 4.6 and 4.7 of the Hope Creek Generating Station License Renewal Application (LRA). Enclosed is the response to this request for additional information.

There are no new or revised regulatory commitments contained in this letter.

If you have any questions, please contact Mr. Ali Fakhar, PSEG Manager - License Renewal, at 856-339-1646.

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I declare under penalty of perjury that the foregoing is true and correct.

Executed on 6-24-10

Sincerely,

Paul J. Davison

Paul J. Davison
Vice President, Operations Support
PSEG Nuclear LLC

Enclosure: Response to Request for Additional Information

cc: S. Collins, Regional Administrator – USNRC Region I
B. Brady, Project Manager, License Renewal – USNRC
R. Ennis, Project Manager - USNRC
NRC Senior Resident Inspector – Hope Creek
P. Mulligan, Manager IV, NJBNE
L. Marabella, Corporate Commitment Tracking Coordinator
T. Devik, Hope Creek Commitment Tracking Coordinator

Enclosure

Response to Request for Additional Information related to Sections 4.6 and 4.7 of the Hope Creek Generating Station License Renewal Application

RAI 4.6-01
RAI 4.7-01

RAI 4.6-01

Background:

Standard Review Plan License Renewal (NUREG 1800), Section 4.6.1.1 states that containment liner plates, metal containment, and penetration sleeves may be designed and/or analyzed in accordance with ASME Code requirements. The ASME Code contains explicit metal fatigue or cyclic considerations that can be used for the time-limited aging analyses (TLAAs).

Issue:

The Hope Creek Generating Station (HCGS) license renewal application (LRA) Section 4.6.2 "Primary Containment Process Penetrations and Bellows Fatigue Analysis," states that the maximum 40-year cumulative usage factor (CUF) ratio (CUF/allowable) identified for feedwater penetrations P-2A and P-2B P heads will be included in the Metal Fatigue of Reactor Coolant Pressure Boundary Program (B.3.1.1) as a program enhancement. All relevant plant transient events will be tracked to ensure that the CUF remains less than 0.1 for these two triple flued heads.

Request:

Explain how the tracking of all relevant plant transient events for feedwater penetrations P-2A and P-2B will ensure that the CUF remains less than 0.1. The staff needs the above information to ensure that the effects of aging on the intended function will be adequately managed for the period of extended operation as required by 10 CFR 54.21(c)(1)(iii).

PSEG Response:

Feedwater penetrations P-2A and P-2B are located in a no break zone for a High Energy Line Break. Therefore, their allowable CUF is 0.1. The CUF ratio is used to represent the fraction of allowable CUF. The design CUF is divided by the allowable CUF to determine the CUF ratio. The 40 year design fatigue value for these penetrations is 0.0957; therefore the CUF ratio is 0.957. The Hope Creek criteria for determining locations which should be considered for the Fatigue Monitoring program included identifying the limiting (highest fatigue) location for each piping segment and then selecting the components with a CUF ratio greater than 0.4 for monitoring.

A review of all penetrations determined these two penetrations to be bounding and therefore, the relevant transients for feedwater penetrations P-2A and P-2B will be monitored using the Metal Fatigue of Reactor Coolant Pressure Boundary Aging Management Program (Hope Creek LRA Appendix B, Section B.3.1.1).

As described in the Hope Creek LRA disposition discussion under Section 4.6.2 (Primary Containment Process Penetrations and Bellows Fatigue Analysis), the Metal Fatigue of Reactor Coolant Pressure Boundary program will monitor the numbers of cycles of the design transients and the corresponding CUF for the triple flued head. All necessary plant transient events will be tracked to ensure that the CUF remains less than the allowable CUF limit for all monitored components. In the event the monitored CUF is predicted to exceed the allowable value for any

component prior to 60 years of operation, appropriate corrective action will be taken in accordance with the corrective action process prior to the allowable limits being exceeded. HCGS has an existing program in place to track operating thermal and pressure cycles and to assess their effect on vessel fatigue. The requirements for monitoring these components will be incorporated into the Metal Fatigue of Reactor Coolant Pressure Boundary (B.3.1.1) aging management program as a program enhancement as identified in Hope Creek LRA Appendix B, Section B.3.1.1 as Enhancement 1 on Page B-223. The required implementing actions will be completed prior to the period of extended operation. As such, the Metal Fatigue of Reactor Coolant Pressure Boundary program will manage the effects of aging due to fatigue on the containment process penetrations and the flexible bellows in accordance with 10 CFR 54.21(c)(1)(iii).

RAI 4.7-01

Background:

In LRA Section 2.3.3.8, "Scoping and Screening," the applicant listed a total of 18 cranes and hoists as in scope for license renewal. Table 3.3.2-8 of the LRA requires a TLAA of Crane/Hoist Bridge/Trolley girders for aging management due to Cumulative Fatigue Damage/Fatigue in accordance with the GALL Report recommendations.

Issue:

LRA Section 4.7.1, "Crane Load Cycle Limit," identifies TLAAs for only two cranes, the "Reactor Building Polar Crane" and the "Service Water Intake Structure Gantry Crane." TLAAs for other cranes with support girders and in the scope of license renewal are not included in LRA Section 4.7.1.

Request:

Provide an explanation or clarification of why the "Reactor Building Polar Crane" and the "Service Water Intake Gantry Crane" are the only two cranes with a TLAA when the overall number of cranes within scope is at 18. The staff needs the above information to confirm that an evaluation of the fatigue of the in scope crane girders has been performed that will remain valid for the period of extended operation as required by 10 CFR 54.21(c)(1).

PSEG Response:

TLAAs are provided only for those cranes which were considered to meet the definition of a TLAA per 10 CFR 54.3(a). The review for potential TLAAs related to cranes and hoists for the Hope Creek License Renewal Application (LRA) did not identify calculations or analyses for any of the in-scope cranes that involved time-limited assumptions. Structural and seismic calculations were provided for the Reactor Building Polar Crane and the Service Water Intake Gantry Crane. These calculations, along with other plant documents for the two cranes, were found to reference design specifications in conformance with CMAA-70, "Specifications for Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes." Contained within CMAA-70 are a set of design limitations on load cycles based on service class, design configurations, and allowable stresses. As a result, the Reactor Building Polar Crane

and Service Water Intake Gantry Crane were conservatively considered to have a TLAA and were further evaluated with a service class consisting of 100,000 to 500,000 load cycles in Section 4.7.1 of the LRA.

The only other in-scope crane girders for Hope Creek are associated with the Main Steam Tunnel Underhung Bridge Crane and the Diesel Generator Underhung Cranes. These non-safety related cranes were evaluated as potential TLAAs; however, no calculations or analyses were identified that meet the definition of a TLAA per 10 CFR 54.3(a). The other in-scope cranes are simpler devices, such as hoists and monorails, which do not have a time limited analysis. The Main Steam Tunnel Underhung Bridge Crane and the Diesel Generator Underhung Cranes are infrequently operated cranes used for maintenance purposes with long idle periods between uses and are designed for the same service class as the Reactor Building Polar Crane. The Reactor Building Polar Crane is in regular use and intermittent operation, significantly more frequently than what is expected for the Main Steam Tunnel and Diesel Generator underhung cranes over the 60 year period. With an estimated total of 2,720 lifts over a 60 year period, as documented in Section 4.7.1 of the LRA, and a plant service use exceeding that of the above mentioned cranes, the evaluation for the Reactor Building Polar Crane is considered conservatively representative of the total expected load cycles experienced by the Main Steam Tunnel and Diesel Generator underhung cranes.