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June 11, 2009

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 Request for Additional Information Regarding Relief Request for Examinations and Tests of Snubbers

References:
1) Letter from George P. Barnes (PSEG Nuclear LLC) to USNRC, "Relief Request for Third Interval Inservice Inspection Program for Examinations and Tests of Snubbers and Associated License Amendment Request," dated July 30, 2008
2) Letter from Jeffrie Keenan (PSEG Nuclear LLC) to USNRC, "Response to Request for Additional Information Regarding Relief Request for Examinations and Tests of Snubbers," dated January 30, 2009
3) Email from R. B. Ennis (USNRC) to J. Keenan (PSEG Nuclear LLC), "Hope Creek Generating Station, Draft Request For Additional Information (TAC NO. MD9336)," dated May 14, 2009

In Reference 1, PSEG Nuclear LLC (PSEG) submitted relief request HC-I3R-04 and an associated license amendment request for Hope Creek Generating Station (HCGS) related to examinations and tests for snubbers. The relief request proposed an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants for snubber operational readiness testing. In Reference 2, PSEG provided additional information concerning the relief request.

As followup to a conference call between the Nuclear Regulatory Commission (NRC) staff and PSEG on May 12, 2009, the NRC staff transmitted a a draft request for additional information concerning the relief request in Reference 3. Attachment 1 to this letter provides PSEG's responses.

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NRR

There are no commitments contained in this letter.

Should you have any questions regarding this submittal, please contact Mr. Paul Duke at 856-339-1466.

Sincerely,

Jeffrie Keenan
Manager - Licensing
PSEG Nuclear LLC

Attachment
1. Response to Request for Additional Information

cc: S. Collins, Regional Administrator – NRC Region I
R. Ennis, Project Manager - USNRC
NRC Senior Resident Inspector - Hope Creek
P. Mulligan, Manager IV, NJBNE

DRAFT REQUEST FOR ADDITIONAL INFORMATION

RELATED TO RELIEF REQUEST HC-I3R-04

FOR THIRD TEN-YEAR INSERVICE INSPECTION INTERVAL

HOPE CREEK GENERATING STATION

DOCKET NO. 50-354

By letter dated July 30, 2008, as supplemented by letters dated January 30, and February 6, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML082200316, ML090490674, and ML090560538 respectively), PSEG Nuclear LLC (PSEG or the licensee) submitted relief request HC-I3R-04 and an associated license amendment request for Hope Creek Generating Station (HCGS) related to examinations and tests for snubbers. With respect to relief request HC-I3R-04, PSEG requested relief from certain requirements specified in the American Society of Mechanical Engineers Boiler (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM) for the third inservice inspection (ISI) interval at HCGS.

As followup to a conference call between the Nuclear Regulatory Commission (NRC) staff and PSEG on May 12, 2009, the NRC staff has determined that the following additional information is needed to clarify the submittal:

1) The basis for the snubber degradation rate that is assumed in the white paper for Code Case OMN-15 (Reference 2 in PSEG's relief request dated July 30, 2008) is not clear. Please provide the following information to support extension of the functional test interval at HCGS:

   a. The degradation rate of all installed snubbers at HCGS based on their design, size, age, location and operating environment.

      Response
      The snubber population at HCGS is comprised of Lisega series 30 hydraulic snubbers. The total population is considered to be one defined test plan group (DTPG) within the testing framework of ISTD. Each time a snubber is subjected to operational readiness testing at HCGS a test result is produced and evaluated for potential degradation.

      Since the replacement of mechanical and hydraulic snubbers with Lisega hydraulic snubbers was completed in December 1997, approximately 2,800 visual examinations have been performed. One instance of degradation (empty reservoir) has been observed during visual examinations. The snubber was removed, functionally tested satisfactorily, and replaced before plant restart. No significant degradation trend has been observed.

      During the same period, since December 1997, approximately 400 functional tests have been performed. The cumulative service life of the tested snubbers is approximately 2,500 years. In addition to the two functional test failures described in References 1 and 2, two instances of degradation (fluid leakage)

have been observed upon removal for functional testing. In both instances, the snubbers were functionally tested and satisfied the functional test acceptance criteria, but were replaced before plant restart. No significant degradation trend has been observed. Functional test result averages (i.e., lock-up and bleed rate results in compression and in tension) do not show a trend that would indicate significant degradation.

Instances of snubber degradation observed outside of examination and functional testing (e.g., during inspection and maintenance activities) have similarly been rare and have not shown a distinguishable trend.

Since the initial installation of the Lisega hydraulic snubbers at HCGS during RF07 (total quantity 630), there have been no instances of significant degradation observed. Therefore, within the predicted service life span for the Lisega snubbers at HCGS, the degradation rate is very low per fuel cycle (less than 0.3%) since 1997 when the Lisega hydraulic snubbers were first installed. No increase in degradation rate has been observed.

b. Available data (i.e., manufacturer, maintenance, service life monitoring (SLM), inspection and testing, and repair and replacement work) to support the quality and operational readiness of snubbers at HCGS for an extended interval without performing ISTD required functional testing.

Response
Under the proposed alternative in Reference 1, snubber operational readiness test intervals may be extended only after establishing a higher minimum level of operational readiness than is required by Section ISTD.

The mechanical snubbers previously installed at the HCGS were replaced by Lisega hydraulic snubbers during RF07 in the fall of 1997. From that time until the present, a sample of snubbers has been selected for inservice operational readiness testing during each refuel cycle. The most recent series of tests conducted during RF15 in the spring of 2009 resulted in 55 acceptable tests, and no unacceptable tests on snubbers. The majority of the tested snubbers had been in service for more than eleven years without maintenance, spanning eight fuel cycles. During the past eight fuel cycles, visual examinations have been conducted in accordance with the schedule specified in HCGS Technical Specification Table 4.7.5-1 (similar to Table ISTD-4252-1) on all accessible and inaccessible snubbers. For the Lisega hydraulic snubbers inservice at HCGS, there has been no observable degradation trend over the past eight fuel cycles.

c. Success rate of completing previous test campaigns (using 37 sample plan) at HCGS without performing any additional testing of snubbers as required by ISTD-5420.

Response
All Lisega snubbers were installed during RF07 in the fall of 1997. There have been eight test campaigns successfully completed using the sample plan described in Technical Specification Surveillance Requirement 4.7.5.e.2 (similar to the 37 sample plan from ISTD). During seven of the test campaigns, there were no test expansions required. During RF12 two snubber test failures were

recorded. This resulted in additional testing. The two snubber test failures were evaluated to determine the mode and cause of failure. The test failures were determined to have been caused by excessive pipe vibration which was addressed through piping modification and system operating procedures. After RF12, the two snubbers have been tested successfully in the next two subsequent outages. Approximately 400 snubbers have been tested from RF08 through RF15 with 2 failures. This results in a very low rate of test failure equal to 0.5% of the snubbers tested over eight test campaigns.

2) ISTD provides guidance for assigning unacceptable snubbers to a Failure Mode Group (FMG) where they are no longer counted in satisfying the mathematical expression for testing of the Defined Test Plan Group (DTPG) (as defined in ISTD-5331 and ISTD-5431). Conversely, Code Case OMN-15 does not provide any guidance related to assigning unacceptable snubbers found during DTPG testing to a FMG. Additionally, ISTD-5311 (10% sample testing plan) requires that the sample shall include representation from the DTPG, and ISTD-5411 (37 testing sample plan) requires that a sample of 37 snubbers shall be selected randomly from the DTPG. Code Case OMN-15 does not provide any direction related to snubber sample selection method when using Table 1, Column. B. Please provide the following:

a. Details about the plan for HCGS for assigning any unacceptable snubbers to a FMG, when testing the DTPG using the mathematical expression listed in Table 1, Column B of Code Case OMN-15.

Response
Since the OMN-15 Test Plan 1 is based upon Wald Sequential statistics, the application of separate failure mode groups is not anticipated. Requirements of failure mode groups (FMGs) described in ISTD-5270 would not be applied in the HCGS application of this code case. All continued testing will be in the respective DTPG. For each unacceptable snubber, an additional 21 snubbers are required to be tested to satisfy the requirements for Test Plan 1 in Code Case OMN-15, Table 1, Column B.

b. Details about the sample selection method (e.g., representation or random) for HCGS, when using Table 1, Column B of the Code Case OMN-15.

Response
Since the OMN-15 Test Plan 1 is based upon Wald Sequential statistics, the sample selection method would be random, consistent with ISTD-5411 and ISTD-5413, with a subsequent review to ensure that the samples are also representative.

3) The Code Case does not address treatment of isolated snubber failures. To avoid improper classification of unacceptable snubbers as "isolated failures," the ISTD Subgroup committee is in the process of the deleting the "isolated failure" category from ISTD. Please provide the plan regarding categorizing unacceptable snubbers as "isolated failures" for HCGS when using Code Case OMN-15.

Response
PSEG recognizes that the term "isolated failure" can be misapplied. Since the OMN-15 Code Case depends upon the Wald Sequential statistics to provide assurances of

completing a successful test campaign, HCGS will not use the classification of "isolated failure" to eliminate the requirement for additional testing. All snubber test failures which are observed while using this code case will require additional testing in order to cross the accept line and complete testing within the DTPG.

4) The Code Case does not address how unacceptable snubbers are accounted for during the extended test interval. For example, unacceptable snubbers could be identified during maintenance, service life monitoring, and visual examination (operational readiness testing, when visual exam fails) activities conducted during the extended test interval. Please provide the following:

a. Details of plans to address unacceptable snubbers found during the extended test interval to maintain their operational readiness.

Response

Although this Code Case allows extended testing intervals, other requirements of ISTD concerning failure evaluations would still apply. All examination and test failures would be evaluated in accordance with ISTD-1800 and ISTD-4270 or ISTD-5271. Corrective action would be implemented as required by ISTD-4280 and ISTD-5280.

If failures were revealed during an extended test interval (e.g., as a result of plant walkdowns, or system maintenance), the condition would be documented and corrective action would be initiated to resolve the problem, including an evaluation of the extent of condition, commensurate with the significance of the issue. Extent of condition evaluations, including consideration of the potential for a common mode failure, are required by plant procedures in accordance with the plant corrective action program for significant safety related deficiencies. This program requires prompt completion of the evaluation and actions to preclude recurrence. Since this would have been observed at a time other than during the test campaign, it would not create any additional requirement as far as the test campaign was concerned. However, if this were determined to represent some systemic issue, the engineering evaluation of the equipment failure would require further action as a plant health issue.

During the extended test interval, snubber service life is required to be evaluated at least once each fuel cycle and increased or decreased, if warranted, in accordance with ISTD-6200. Snubber examination results and maintenance history are among the considerations included in the evaluation of service life during the extended test interval.

If a transient dynamic event occurs during the extended test interval that may affect snubber operability, affected snubbers and systems are required to be reviewed and appropriate corrective action is required to be taken in accordance with ISTD-1750.

For snubbers placed in the same location as snubbers that failed the previous inservice operational readiness test, retests will be performed in accordance with ISTD-5500 (i.e., at the time of next scheduled operational readiness testing unless the cause of the failure is clearly established and corrected). In addition,

PSEG will visually examine replacement snubbers in accordance with ISTD-4230 during each fuel cycle in the extended test interval.

b. Details about the use of additional means to maintain snubber operational readiness and integrity when the extended interval is more than one fuel cycle.

Response
HCGS will perform visual examinations of the entire snubber population in accordance with the requirements of ISTD-4200 and implement a service life monitoring program in accordance with ISTD-6000. Based on the snubber performance observed during the previous eight fuel cycles, the service life monitoring and visual examination measures are sufficient to maintain snubber operational readiness and integrity when the extended interval is more than one fuel cycle.

5) Use of Code Case OMN-15 allows skipping of functional testing of snubbers up to three fuel cycles (54 months). Visual examination of snubbers can be skipped up to two fuel cycles (36 months), as permitted by ISTD, Table ISTD-4252-1. During the teleconference on May 12, 2009, PSEG staff mentioned that visual examination is a key element in detecting problems or defects with hydraulic snubbers at HCGS. Please describe actions that will be taken to maintain operational readiness of snubbers in the absence of both visual examination and functional testing during the extended interval.

Response
HCGS will perform visual examinations of the entire snubber population in accordance with the requirements of ISTD-4200 and implement a service life monitoring program in accordance with ISTD-6000. To provide further assurance of operational readiness during extended test intervals, PSEG will continue to perform approximately half of the visual examinations during each fuel cycle (accessible/inaccessible). With the snubber performance indicated by the previous eight fuel cycles, PSEG concludes these measures provide an acceptable level of quality and safety in the snubber population at HCGS

References

1. Letter from George P. Barnes (PSEG Nuclear LLC) to USNRC, "Relief Request for Third Interval Inservice Inspection Program for Examinations and Tests of Snubbers and Associated License Amendment Request," dated July 30, 2008
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