

Public Service
Electric and Gas
Company

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Senior Vice President - Nuclear Engineering

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LR-N95195

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Gentlemen:

**NRC BULLETIN 95-02, UNEXPECTED CLOGGING OF A
RESIDUAL HEAT REMOVAL (RHR) PUMP STRAINER
WHILE OPERATING IN SUPPRESSION POOL COOLING MODE
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NO. NPF-57
DOCKET NO. 50-354**

The NRC issued Bulletin 95-02, Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode, on October 17, 1995. NRC Bulletin 95-02 identified five (5) "Requested Actions" to be completed to ensure that unacceptable buildup of debris that could clog suppression pool suction strainers does not occur during normal operation. The Bulletin requested Public Service Electric & Gas (PSE&G) to submit, within 30 days of the date of the Bulletin, a response indicating to what extent PSE&G intends to comply with the Requested Actions. PSE&G hereby submits the response to the NRC Requested Actions 1 through 5 in Attachment 1.

PSE&G plans to complete an inspection of the strainers and accessible areas of the suppression pool during the current Hope Creek outage which began on November 11, 1995. During the inspection, samples of the bottom sediment and torus water will be obtained. These samples will then be analyzed to determine the composition of the sediment and to detect the presence of fibrous materials. Inservice Testing (IST) of pumps which draw suction from the suppression pool will be used to confirm pump operability, and detect unacceptable debris buildup which could clog the suction strainers. Inspections, sampling analysis and pump IST will be completed by February 14, 1996, in accordance with the Bulletin.

A response confirming completion of the testing and inspections including a description of the results will be submitted within 10 days of completion in accordance with Bulletin 95-02.

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Please contact us should you have any questions regarding this submittal.

Sincerely,



Attachment (1)
Affidavit

C Mr. T. T. Martin, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. D. Jaffe, Licensing Project Manager - Hope Creek
U. S. Nuclear Regulatory Commission
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11555 Rockville Pike
Mail Stop 14E21
Rockville, MD 20852

Mr. R. Summers (X24)
Senior Resident Inspector

Mr. K. Tosch, Manager, IV
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Division of Environmental Quality
Bureau of Nuclear Engineering
CN 415
Trenton, NJ 08625

REF: LR-N95195

STATE OF NEW JERSEY)
)
COUNTY OF SALEM) SS.

E. C. Simpson, being duly sworn according to law deposes and says:

I am Senior Vice President - Nuclear Engineering of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter, concerning Hope Creek Generating Station, are true to the best of my knowledge, information and belief.

E C Simpson

Subscribed and Sworn to before me
this 15th day of November 1995

Kimberly Jo Brown
Notary Public of New Jersey

My Commission expires on _____

KIMBERLY JO BROWN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires April 21, 1998

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1. NRC REQUESTED ACTION

Verify the operability of all pumps which draw suction from the suppression pool when performing their safety functions (e.g., ECCS, Containment Spray, etc.), based on an evaluation of suppression pool and suction strainer cleanliness conditions. This evaluation should be based on the pool and strainer conditions during the last inspection or cleaning and an assessment of the potential for the introduction of debris or other materials that could clog the strainers since the pool was last cleaned.

PSE&G RESPONSE

The following pumps were included in the scope of this evaluation:

Core Spray Pumps	1A-P-206, 1B-P-206, 1C-P-206, 1D-P-206
RHR Pumps	1A-P-202, 1B-P-202, 1C-P-202, 1D-P-202
Jockey Pumps	1A-P-228, 1B-P-228, 1C-P-228, 1D-P-228
HPCI Pump	10-P-204
RCIC Pump	10-P-203

Accessible areas of the torus were inspected and those sections with appreciable accumulation were cleaned by either remote vacuum or by a diver during the last refueling outage (RFO5). The bulk of the material removed consisted of a sand-like particulate that settled on the bottom of the torus. This sediment passed through the rough filter (100 micron) of the vacuum. The quantity of material removed was estimated to be about one cubic foot. Other debris was recovered that consisted of a short length of duct tape and a few nuts and bolts. No fibrous material was found and the suction strainers had no appreciable accumulation of debris. The inspection indicated that the amount of foreign material migrating to the torus since construction was minimal. No debris was found that would have challenged any pump by significantly fouling the suction strainers. The pumps have design margin to allow for 50% fouling of the suction strainers under design conditions (75% for jockey pumps).

The potential for the introduction of additional material into the torus since the last cleaning is small. This is evidenced by the insignificant volume of debris found since

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construction during the RFO5 cleaning and inspection. In addition, the operation of the permanently installed torus water cleanup system, and the fact that very little drywell work has been done since the RFO5 cleaning provides assurance that the torus cleanliness has been maintained. Existing procedures are in place (HC.OP-GP.ZZ-0002(Q)) to perform inspections of the drywell area to prevent foreign material from entering the torus before power operation. This is done in support of drywell closeout. Specific steps are in place to remove debris, and to check for loose or damaged insulation and temporary filters on fan coil units that could migrate to the torus under accident conditions.

2. NRC REQUESTED ACTION

The operability evaluation in Requested Action 1 above should be confirmed through appropriate tests(s) and strainer inspection(s) within 120 days of the date of this bulletin.

PSE&G RESPONSE

During RFO6 which began on 11/11/95, Hope Creek has scheduled another inspection of accessible areas of the torus to confirm the operability evaluation discussed in response to Requested Action 1. The inspection will include visual inspection of the pump suction strainers, sampling of the bottom sediment in several locations and sampling of torus water. Testing of the sediment and water samples will be performed to determine the composition of the sediment and to detect the presence of fibrous material.

A review of In-Service Test (IST) data for those pumps that take suction from the torus for testing (i.e., RHR and Core Spray) does not indicate a loss of pump suction pressure that would be indicative of debris buildup since the RFO5 suction strainer inspection. A review of IST data for these pumps obtained prior to RFO5 also does not indicate a loss of pump suction pressure. Although it is not possible with the current plant configuration to perform full flow testing of the HPCI, RCIC, and the associated jockey pumps with suction from the torus, the IST data available for the RHR and Core Spray pumps provides an overall indication that the

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suction strainers in the torus are free from excessive debris fouling. During IST, operation of the pumps which take suction from the torus will be used to confirm that adequate pump suction pressure is maintained, and detect suction strainer fouling. Suction pressure data points are currently included in existing trending programs to provide early detection of strainer fouling that may occur. Proposed changes to the surveillance test procedures are discussed in response to Requested Action 5.

Inspection of the suction strainers, IST of the pumps, and sediment and torus water sample analysis will be completed before 2/14/96 (120 days from Bulletin issue). PSE&G will submit the results of the inspection, IST and sample analysis within 10 days of completion.

3. NRC REQUESTED ACTION

Schedule a suppression pool cleaning. The schedule for cleaning the pool should be consistent with the operability evaluation in Requested Action 1 above. In addition, a program for periodic cleaning of the suppression pool should be established, including procedures for the cleaning of the pool, criteria for determining the appropriate cleaning frequency, and criteria for evaluating the adequacy of the pool cleanliness.

PSE&G RESPONSE

Suppression pool (torus) cleaning will be done during RFO6 concurrent with the planned torus inspection.

An insignificant volume of debris was found in the torus following eight years of operation since construction until the first torus cleaning during RFO5. This may be attributed to effective Foreign Material Exclusion (FME) practices and operation of the permanently installed Torus Water Cleanup system. Criteria for determining the appropriate torus cleaning frequency will be determined based on inspection results.

A procedure for torus inspection and cleaning will be developed. The procedure will include criteria for

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acceptability of sediment/debris levels, requirements to periodically sample the torus water and/or sediment for the presence of fibrous material, and criteria for determining the inspection and torus cleaning frequency. This procedure will be issued before 12/31/96.

4. NRC REQUESTED ACTION

Review FME procedures and their implementation to determine whether adequate control of materials in the drywell, suppression pool, and systems that interface with the suppression pool exists. This review should determine if comprehensive FME controls have been established to prevent materials that could potentially impact pump operation from being introduced into the suppression pool, and whether workers are sufficiently aware of their responsibilities regarding FME. Any identified weaknesses should be corrected. In addition, the effectiveness of the FME controls since the last time the suppression pool was cleaned and the strainers inspected, and the impact that any weaknesses noted may have on the operability of the ECCS should be assessed.

PSE&G RESPONSE

NC.NA-AP.ZZ-0031(Q), Artificial Island Inspection & Housekeeping program, identifies the Primary Containment (Drywell and Torus) as a Zone II area. The requirements for a Zone II area include Personnel/Material Accountability Control Log, barrier rope and single point of entry/exit, and temporary plugs or catch drapes while work is in progress. Inspection for loose material and temporary filters that could eventually be introduced into the torus is performed prior to drywell closure. These administrative controls are currently in place and have been effective in preventing debris from entering the suppression chamber from the drywell. The effectiveness of these controls is demonstrated by the low levels of miscellaneous debris found in the suppression chamber during the last inspection. There is no indication that these controls have been any less effective for Foreign Material Exclusion (FME) since the last inspection/cleaning of the suppression chamber. The effectiveness of these controls will be reevaluated based on the results of the torus inspections to be

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completed during RFO6.

NC.NA-AP.ZZ-0021(Q), System Cleanliness Program, addresses general cleanliness requirements for work done in the plant, and is primarily concerned with internal surfaces of piping systems. This procedure addresses FME according to the type of work being done. The effectiveness of these controls is demonstrated by the low levels of miscellaneous debris found in the suppression chamber during the last inspection. There is no indication that these FME controls have been any less effective since the last inspection/cleaning of the suppression chamber.

NC.NA-AP.ZZ-0021(Q) section 5.8, Debris Intrusion Controls, requires appropriate hold points for inspection to ensure no debris is present at the completion of the task. This section does not specifically include systems that have inputs to the suppression chamber. A revision request has been submitted to specify that inspection hold points are required for systems that have inputs to the suppression chamber. This procedure will be revised before 3/31/96.

Station personnel are required to read (and certify that they read) the Work Standards Handbook. On page 8 under the heading of "Jobsite Conditions", item D refers to the Inspection/Housekeeping Program and item E covers basic FME rules.

Nuclear Training has developed a self study training module entitled "Foreign Material Exclusion". Applicable portions of the training module that includes FME rules, industry events caused by foreign material, a training video on FME, and a self evaluation were presented to selected station personnel.

The General Employee Training (GET) material has been revised to include general FME practices to prevent the introduction of debris which may affect equipment operation.

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5. NRC REQUESTED ACTION

Consider additional measures such as suppression pool water sampling and trending of pump suction pressure to detect clogging of ECCS suction strainers.

PSE&G RESPONSE

The torus inspection and cleaning procedure discussed in response to Requested Action 3 will include requirements to periodically sample the torus water and/or sediment for the presence of fibrous material. The procedure will be issued before 12/31/96.

The suction pressure data from periodic pump In-Service Testing (IST) for those pumps that take suction from the torus for testing (i.e., RHR and Core Spray) is currently incorporated into existing trending programs to provide early detection of potential pump suction strainer clogging in the time period between strainer inspections. The point of obtaining suction pressure data will be moved from the beginning of the test to the point just prior to pump shutdown at the completion of the test. These changes will be incorporated into the next revisions of the surveillance test procedures to improve early detection capability.