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November 16, 1995
C321-95-2339

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555

Dear Sir:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Response to NRC Bulletin 95-02

On October 17, 1995, the USNRC issued Bulletin 95-02, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode. Page 5 of this bulletin contained a 30 day reporting requirement. The attachment to this letter provides the requisite response.

If any additional information or assistance is required, please contact Mr. John Rogers of my staff at 609.971.4893.

John J. Barton
Vice President and Director
Oyster Creek

Sworn and Subscribed to before me this 16th day of November, 1995.

GERALDINE E. LEVIN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 6-8-2000

Geri Levin
A Notary Public of the State of New Jersey

JJB/JJR
Attachment
cc: Oyster Creek NRC Project Manager
Administrator, Region I
Senior Resident Inspector

JE44

Attachment I
Response to BU 95-02

Oyster Creek Nuclear Generating Station is a BWR 2, Mark 1 containment. The Drywell is attached to the Torus by ten drywell vents. The ten vents connect to a common drywell vent header and then through 60 pairs of downcomers into the Torus water. There are three strainers within the Torus which feed a common external ring header. The strainer holes are 3/16 inch in diameter. The ring header is physically external to and lower than the Torus and provides the suction point for the Core Spray and Containment Spray systems.

NRC Requested Action No. 1

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.

GPUN Response No. 1

Torus cleaning has previously been performed in conjunction with other maintenance or modification activities. The Torus was cleaned during the 10R outage (1983-1984), the 12R outage (1988-1989), and 14R outage (1992-1993). The 10R and 12R cleanings were on the entire Torus while the 14R cleaning was performed on half of the Torus bays.

During the 15R outage (1994), specific actions were taken to ensure the continuing operability of the Torus suction strainers:

1. Covers were installed over the Drywell vents (connection between the Drywell and the Torus) during the refueling outage to prevent foreign material from being transported from the Drywell to the Torus during outage activities.

2. The Torus, Drywell vent header, and downcomers were inspected. Small amounts of debris were removed (e.g. tools, flashlights, rubber gloves, tie wraps, rope, plastic bags).

3. The Torus suction strainers and the adjacent areas were remotely inspected and videotaped using a small submarine. Each of the three strainers were found in good condition with no sign of physical distortion or debris accumulation.

4. The Torus sludge was inspected, measured, and analyzed. The sludge depth varied from 1/8 inch to 1/4 inch in approximately one half of the bays. The remaining bays had a depth of between 1/8 inch and 1/2 inch. A sample of the sludge was taken and analyzed by an external laboratory for particle size and composition. Ninety eight percent (98%) of the particles were less than ten microns in size and ninety nine point six percent (99.6%) of the particles were composed of iron oxide. No traces of fiber were found.

5. The Drywell coating was inspected and found to be in good condition

Therefore, the Core Spray and Containment Spray systems have been determined to be fully operable based on the following conclusions:

1. The Core Spray and Containment Spray systems are tested monthly, for approximately one hour per pump. Inservice Test data have revealed no negative trends in any parameter monitored which could be the result of strainer clogging. Additionally, the containment spray system was run in Torus cooling mode during cycle 14 with no negative results.

2. The Drywell vent covers which were installed during the 15R outage and will continue to be installed during subsequent refuelingoutages will prevent foreign material from transporting from the Drywell to the Torus. These covers are only removed after all Drywell work has been completed. The inspection and debris removal performed in 15R have restored and rebaselined the desired level of cleanliness in the Torus.

3. No fibrous material was observed.

4. A review was performed to determine systems which have a direct interface with the Torus. Seven systems were identified. All seven of these systems are Nuclear Safety Related. Systems or structures that are classified Nuclear Safety Related are procedurally defined as either Zone 1 or Zone 2 and the requirements of procedure 119.3 "Tool, Equipment, and Material Accountability" apply. A subsequent review of maintenance records for Job orders issued or closed since November 1994 indicated that the appropriate controls in procedure 119.3 were invoked as required.

NRC Requested Action No. 2

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

GPUN Response No. 2

As part of the Oyster Creek monthly surveillance, a containment spray pump is run for one hour with a flow rate on the order of 4200 gpm. After testing the first pump the second pump is started and run for one hour as well. Therefore, with two pumps in each system the flow conditions are maintained for two hours. In addition, during the summer months these pumps are occasionally run to reduce suppression pool temperatures. In each case, the flow rates and times were sufficient to cycle the suppression pool volume through the strainers approximately once. Core Spray pumps are also tested monthly for up to one half hour per pump at flow rates of approximately 3500 gpm. During the last refueling outage (15R) the suction strainers were inspected and found to be clean.

In response to the NRC request for a test and inspection of the strainers, GPUN believes that the actions in cycle 14 and the inspection and cleaning performed in 15R constitute the equivalent of such a test and inspection. In support of this position GPUN has performed several calculations to demonstrate that the flow conditions assumed in the evaluation are supported analytically.

The first of these calculations was performed to establish the flow distribution between the suction strainers. This was necessary since the Oyster Creek plant is designed with a common suction ring header that is connected to the Torus by three suction strainers. As the containment spray pumps are located at different points along the header, each containment spray system when run alone will produce a unique flow distribution through the strainers.

The second calculation uses a multidimensional model to establish fluid velocity at different points in the Torus. The results of the first calculation are used as inputs to this second calculation to ensure that the appropriate strainer flows are used.

The results of the second calculation show that bulk fluid velocities near the bottom of the Torus are on the order of 0.1ft/sec. Within the Torus bottom sludge thickness (1/8 to 1/2 inches), measured during the 15R inspections, the velocities are calculated to be greater than 0.1 in/sec. An evaluation provided by CDI states that these velocities are sufficient to suspend fibrous material of diameter less than 1 mil (NUKON fiber diameter is 0.25 mil). Therefore, the testing which has been performed would have suspended fibrous material if it had been present.

Based upon the previous discussion, the containment spray pump operations during cycle 14 and the subsequent inspections performed during the 15R outage provide sufficient indication that little or no fiber is present in the Oyster Creek Torus. No additional testing is required.

NRC Requested Action No. 3

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.

GPUN Response No. 3

A Torus inspection and cleaning are scheduled for each refueling outage. The scope and type of Torus cleaning is determined by the results of the inspection. The inspection is conducted using a video camera in a small, remotely controlled submarine. Materials removed from the Torus will be evaluated to assist in determining the effectiveness of the foreign material exclusion program.

Engineering is in the process of developing a specification for de-sludging of the Torus. This specification will include implementation criteria to be used commencing in the next (16R) refueling outage. The buildup rate for sludge has been determined to be approximately 125 lbs per year. De-sludging operations will be scheduled and implemented based on the inspection results, buildup rate, and criteria which will be developed to address Regulatory Guide 1.82, Revision 2.

NRC Requested Action No. 4

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 ECCS 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 ECCS strainers inspected, and the impact that any weaknesses noted may have on the operability of the ECCS should be assessed.

GPUN Response No. 4

The existing FME procedures and requirements have been under review for effectiveness and improvement. A committee was formed to evaluate SOER 95-01 and its implementation at Oyster Creek. Weaknesses have been identified and are being resolved (e.g. the installation of the Drywell vent covers was not a procedural requirement to release the Drywell for general access). These identified weaknesses are believed to be the source of the small amount of debris which was removed from the Torus during the last refueling outage.

A review was performed to determine systems which have a direct interface with the Torus. Seven systems were identified. All seven of these systems are Nuclear Safety Related. Systems or structures that are classified Nuclear Safety Related are procedurally defined as either Zone 1 or Zone 2 and the requirements of procedure 119.3 "Tool, Equipment, and Material Accountability:" apply. A subsequent review of maintenance records for Job orders issued or closed since November 1994 indicated that the appropriate controls in procedure 119.3 were invoked as required. This review of procedural adequacy, when combined with the cleaning performed at the end of the last outage, provide the desired level of assurance that no foreign material has entered the torus.

During normal operations, the Torus and Drywell are classified as a Zone 2 exclusion area. Tools and material entering a Zone 2 area must be precleaned and a unique number assigned prior to entry. An accountability log is kept to track these tools or materials. A documented inspection of a Zone 2 area is required immediately prior to closeout.

During a refueling or major maintenance outage, the Drywell is declassified to a Zone 4, RCA boundary area, due to the amount of personnel and equipment which are required during these periods. To maintain the Zone 2 exclusion area for the Torus, Drywell vent covers are installed to separate the Drywell from the Torus. The Torus is only declassified to Zone 4, RCA boundary, when it is drained for maintenance. Prior to refilling, a documented inspection is performed to ensure that no foreign materials remain.

The Oyster Creek craft are trained in the use of procedure 119.3 along with class B,C, and D cleanliness requirements. 60% of the craft have received training in SOER 95-01. The remainder of the maintenance personnel will receive the SOER training in conjunction with previously scheduled training. Lesson plans for hands-on training for site personnel are under development and will be scheduled into the 1996 training plan. The training for contractor personnel is under review by the Plant Maintenance and Training Departments. As a minimum, contractor supervision will be required to attend training.

NRC Requested Action No. 5

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

GPUN Response No. 5

Samples of Torus water are taken via the Containment Spray system and analyzed monthly. The following parameters are evaluated:

1. pH
2. Chlorides
3. Conductivity
4. Suspended Solids
5. Total Oxygen Content
6. Total Gamma Activity
7. Sulfates

The sample is taken downstream of the Torus strainers. Due to the limitations of system design and Primary Containment requirements, it is not possible to take a sample upstream of the strainers. Core Spray suction pressure is monitored during the quarterly IST surveillance.

Although fiber has not been found in the Torus sludge, the increased evaluation for suspended fibers in the Torus sample is being reviewed.

EPIP/6430 SERIES EMERGENCY PLAN IMPLEMENTING PROCEDURES

PROCEDURE NO.	TITLE	REV. NO.	DATE
EPIP-OC-.01	Classification of Emergency Conditions	3	03/06/94
EPIP-OC-.02	Direction of Emergency Response Emergency Control Center (ECC)	16	07/28/95
EPIP-OC-.03	Emergency Notification	15	07/08/95
EPIP-OC-.04	Communications and Recordkeeping	5	04/21/95
EPIP-OC-.06	Additional Assistance and Notification	14	08/28/95
EPIP-OC-.07	Offsite Medical Assistance Contaminated Injury	3	02/27/95
EPIP-OC-.10	Emergency Radiological Surveys Onsite	4	10/13/95
EPIP-OC-.11	Emergency Radiological Surveys Offsite	6	10/16/95
EPIP-OC-.12	Personnel Accountability	4	04/07/95
EPIP-OC-.13	Site Evacuation and Personnel Mustering at Remote Assembly Areas	3	08/07/95
EPIP-OC-.25	Emergency Operations Facility (EOF)	13	08/28/95
EPIP-OC-.26	The Technical Support Center	13	07/21/95
EPIP-OC-.27	The Operations Support Center	5	10/12/95
EPIP-OC-.28	Activation of the Annex to the Emergency Operations Facility (EOF)	4	04/21/95
EPIP.OC-.31	Environmental Assessment Command Center	6	02/12/95
EPIP-OC-.33	Core Damage Estimation	2	04/21/94
EPIP-OC-.35	Radiological Controls Emergency Actions	9	08/24/95
EPIP-OC-.40	Site Security Emergency Actions	4	07/10/95
EPIP-0C-.41	Emergency Duty Roster Activation	2	08/06/94
EPIP-COM-.43	Operations of the Parsippany Technical Functions Center	4	09/14/94
EPIP-COM-.44	Thyroid Blocking	1	11/03/95
EPIP-COM-.45	Classified Emergency Termination/Recovery	0	03/27/95
6430-ADM-1319.01	Oyster Creek Emergency Preparedness Program	19	04/02/95
6430-ADM-1319.02	Emergency Response Facilities & Equipment Maintenance	11	05/19/95
6430-ADM-1319.04	Prompt Notification System	8	04/07/95