



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO NRC BULLETIN 95-02

COMMONWEALTH EDISON COMPANY

DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

NRC Bulletin 95-02 entitled, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode," was issued on October 17, 1995. It requested all holders of boiling-water reactor (BWR) operating licenses or construction permits for nuclear power reactors to take five actions to ensure that unacceptable buildup of debris that could clog strainers does not occur during normal operation. By letter dated November 14, 1995, Commonwealth Edison Company (ComEd, the licensee) submitted their response to NRC Bulletin 95-02. In its response, the licensee stated that Dresden Unit 2 would clean and desludge the torus during the next refueling outage (D2R14; April 1996), and had last cleaned and desludged the torus for Unit 3 during a refueling outage in late 1994.

Since the initial response to the Bulletin, the licensee, by letters dated April 25 and October 8, 1996, provided the results of testing and inspection of the emergency core cooling system (ECCS) suction strainers performed during the Unit 2 refueling outage (D2R14; April 1996) and a Dresden, Unit 3, forced maintenance outage (D3F21; May 1996).

By letter dated September 4, 1997, the licensee stated that the Unit 3 torus and ring header were cleaned and desludged and the ECCS pumps were tested and the strainers were inspected, during its most recent refueling outage (D3R14; June 1997). In addition, the licensee stated that new larger ECCS strainers had been installed.

2.0 DISCUSSION

The following describes the requested actions in NRC Bulletin 95-02 and the licensee's response to each requested action:

Action 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.

Response:

In response to requested Action 1, the licensee concluded that all pumps taking suction from the pool are operable. The licensee's conclusion is based on the toruses in both units being cleaned and desludged during their most recent refueling outages. For Unit 2, the requested action was completed during D2R14; April 1996, and for Unit 3, the request action was completed in October 1995. In addition, during the same outages, the licensee filtered the water using an underwater filtration system with micron filters, removed and cleaned the suction strainers, and desludged the ECCS ring header. The licensee also conducted inspections of the strainers prior to returning the unit to service to ensure that they were free of debris. The licensee also stated that in-service tests (IST) were conducted on the pumps prior to startup to verify operability prior to startup following a refueling outage.

Since the licensee's initial response to the Bulletin, the licensee has cleaned and desludged the Unit 3 torus and ring header and tested the ECCS pumps in May 1996 and May 1997.

Action 2

Confirm the operability evaluation in requested Action 1, above, through appropriate test(s) and strainer inspection(s) within 120 days of the date of this bulletin.

Response:

In response to requested Action 2, the licensee committed to conduct testing of the ECCS pumps in both units. The testing would include aligning the low-pressure coolant injection (LPCI) system for three-pump operation. The tests would be run for a sufficient duration to allow for approximately six torus water inventory turnovers. Pump flow and suction pressure would be monitored and trended. Unit 2 performed the testing prior to startup from the last refueling outage (D2R14; April 1996). By letter dated April 25, 1996, the licensee provided the test results. The April 25, 1996, letter, stated that there was no suction pressure decrease noted during the testing. Following the test, divers inspected the suction strainers and found an insignificant amount (<1 percent strainer surface area) of fibrous material on the suction strainers.

In the licensee's initial response to the Bulletin, the licensee proposed not to inspect the Unit 3 strainers within the 120 day time frame required by the Bulletin, but delay the inspection until the next outage of sufficient duration, but no later than the next refueling outage (D3R14; March 1997). The licensee considered their proposal to be acceptable because the Unit 3 torus was cleaned and desludged during its last refueling outage and a test run of three ECCS pumps for six hours in October 1995 was conducted with no suction pressure decrease noted during the test. Dresden, Unit 3, entered a forced maintenance outage (D3F21; May 1996). The licensee cleaned and desludged the torus and performed a multiple ECCS pump test and strainer inspection. By letter dated October 8, 1996, the licensee provided the results of the pump test

and strainer inspection. The October 8, 1996, letter stated that there was no suction pressure decrease noted during the pump testing. Following the tests, divers inspected the suction strainers and found an insignificant amount of fibrous material.

Action 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.

Response:

In response to requested Action 3, the licensee has not committed to a time frame for additional cleaning because both toruses have been cleaned recently. The licensee will establish a method and acceptance criteria for determining the appropriate cleaning frequency. The licensee also provided appropriate commitments regarding torus pool inspection, testing and cleaning as part of their response to this Bulletin and Regulatory Guide 1.82, Revision 2. NRC Bulletin 96-03 was issued to resolve the issue of potential clogging of ECCS strainers by loss-of-coolant accident (LOCA) generated debris.

The following is a list of the most recent torus cleanings at the Dresden Station:

Dresden, Unit 2 - desludged torus and ECCS ring headers (D2R14; April 1996)
Dresden, Unit 3 - desludged torus and ECCS ring headers (D3F21; May 1996)
Dresden, Unit 3 - desludged torus and ECCS ring headers (D3R14; May 1997)

Action 4

Review foreign material exclusion (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 if 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 weakness noted may have on the operability of the ECCS should be assessed.

Response:

In response to requested Action 4, the licensee stated that their FME program has already been enhanced in response to NRC Bulletin 93-02 and its supplement. The program enhancements have been in place since late 1994. The licensee cites examples of the improvements made to the program such as use of covers over the drywell vents during outages to reduce the potential

introduction of debris through the downcomers into the suppression pool during drywell outage work. The licensee also conducted a day-long training course to address FME work practices as part of Dresden's craft training.

Action 5

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

Response:

In response to requested Action 5, the licensee committed to continuing the station practice of monitoring and recording pump parameters during IST and to create an electronic surveillance program to review the suction pressure data and evaluate the data for adverse pressure trends on a quarterly basis. The licensee has concluded that sampling of torus water would not be meaningful because the samples would have to be taken from downstream of the suction strainers and would, therefore, not provide meaningful data on the presence of fibrous material in the torus pool.

3.0 EVALUATION

The purpose of the requested actions in the Bulletin is to ensure that ECCS and other pumps drawing suction from the suppression pool do not experience unacceptable buildup of debris that could clog strainers during normal operation which would prevent them from performing their safety function. Action 1 requested licensees to evaluate the operability of their pumps based on the cleanliness of the suppression pool and strainers. Action 2 then requested verification of the licensee's assessment through a pump test and strainer inspection. These two actions serve to ensure that the pumps are currently operable and not experiencing unacceptable debris buildup. Requested Actions 3, 4 and 5 serve to ensure that appropriate measures are taken in the long-term to prevent debris accumulation in the pool.

The licensee has performed an assessment of the operability of all pumps drawing suction from the suppression pool to perform their safety function and concluded that they are operable based on both toruses being cleaned and desludged during their most recent refueling outages. In addition, strainer inspections were conducted prior to startup from the last refueling outages for both Units (D2R14; April 1996 and D3R14; May 1997). The strainers were found to be free of debris. The licensee has also performed an extended run using multiple ECCS pumps at both units. Each test was followed up by inspection of the ECCS suction strainers to ensure they were free of debris. The staff has concluded that the licensee's response and supplemental information meet the intent of requested Actions 1 and 2.

The staff has concluded the licensee's torus cleanings conducted during each unit's most recent refueling outage and the licensee's commitment to establish a method and acceptance criteria for determining the appropriate torus cleaning frequency meet the intent of Requested Action 3 and are acceptable. The staff has also concluded that the licensee's actions already taken to enhance their FME program meet the intent of requested Action 4 and are acceptable. In

response to Requested Action 5, the licensee concluded that they could not sample water from the torus because they do not have the means to take samples while at power. The licensee will continue to monitor pump parameters during ECCS pumps' ISTs, and will evaluate the data for adverse trends. The staff finds the licensee's response to Requested Action 5 to be acceptable. The staff has also concluded that the schedule for implementation of the above actions proposed by the licensee is appropriate given the actions already taken.

4.0 CONCLUSION

Based on the staff's evaluation of the licensee's submittal and additional information, the staff finds the licensee's actions in response to NRC Bulletin 95-02 to be acceptable.

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