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BBS Ltr.#554-74

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
August 2, 1974



Mr. J. F. O'Leary, Director
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

SUBJECT: REPORT OF ABNORMAL OCCURRENCE PER SECTION 6.6.B.1.a OF THE TECHNICAL SPECIFICATIONS.
CRACK IN SEATS OF AO-2-1601-21 AND AO-2-1601-22 AND CRACK IN PIPE ASSOCIATED WITH THESE VALVES.

References: 1) Regulatory Guide 1.16 Rev.1 Appendix A

2) Notification of Region III of AEC Regulatory Operations
Telephone: Mr. F. Maura, 1700 hours on July 26, 1974
Mr. F. Maura, 0815 hours on July 29, 1974

Telegram: Mr. J. Keppler, 1630 hours on July 26, 1974
Mr. J. Keppler, 1630 hours on July 29, 1974

3) Drawing Number: M-25

Report Number: 50-237/1974-32,33,& 34

Report Date: August 2, 1974

Occurrence Date: July 24, 1974 and July 29, 1974

Facility: Dresden Nuclear Power Station, Morris, Illinois

IDENTIFICATION OF OCCURRENCE

Failure of primary containment due to leakage through AO-2-1601-21 & 22 and crack in line 2-8503-8-LX where it connects with line 2-1604-18-LX.

CONDITIONS PRIOR TO OCCURRENCE

Prior to the occurrence, the unit was in the run mode and operating at an electrical load of about 725 megawatts. Thermal power at the time of discovery was about 2258 megawatts. Local leak rate testing of the rubber seated vent valves was in progress.

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DESCRIPTION OF OCCURRENCE

In the morning of July 24, 1974, preparations were being made for the routine quarterly leak rate test of the rubber seated primary containment valves. A perfunctory inspection of the valves was made prior to the actual running of the leak test. It was at this time that cracks in the seat of 2-1601-22 were discovered. A leak rate test was attempted on this valve. As the pressure was increased to 48 psig (leak test pressure), a loud noise was heard and the pressure quickly dissipated (42 psig to 0 psig in about 5 sec.). It was observed that pieces of the valve seat from 1601-22 had dislodged from the valve. This fact then required that the valve be removed from place and a blank flange installed.

After 2-1601-22 was removed, observation of 2-1601-21 revealed that about 40% of its seat was missing. Since it was plainly evident that another attempt at a leak test would be futile (even with 2-1601-22 blank flanged) an orderly shutdown was commenced.

During the outage for valve repair, an entry was made into the drywell for snubber inspection. In the course of this inspection, the missing valve seat pieces were discovered in the drywell near penetration X-126.

After valve 2-1601-21 was repaired and installed, another leak test was conducted with 2-1601-22 blank flanged. This leak test failed. It was then discovered that a hair line crack existed on the bottom of line 2-8503-6-LX and extended longitudinally about an inch into line 2-1604-18-LX. Line 2-8503-8-LX is the line used for nitrogen purge of the drywell and the torus.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE

It is believed that the cause of the occurrence was due to liquid nitrogen reaching both valves. Discussions with the valve manufacturer revealed that the cracked valve seats exhibited the same characteristics as similar valve seats removed by the vendor. In order to remove these seats, the manufacturer has dipped the valves into a vat of liquid nitrogen. It is surmised that liquid nitrogen also caused the line crack.

ANALYSIS OF OCCURRENCE

During the occurrence, the safety of the plant and public was not compromised. Although primary containment integrity had been lost, secondary containment was functional and the standby gas system was operational at the time of the occurrence. Calculations show that leakage from the primary containment would have been approximately 200,000 scfh.

CORRECTIVE ACTION

The immediate corrective action was to initiate an orderly plant shutdown. Necessary repairs were made on the valves and cracked line following approved procedures. Following repairs, the piping section was leak tested

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and found to be within limits. To prevent this type of an occurrence in the future, the nitrogen system is being studied to determine a means of preventing liquid nitrogen from reaching these valves. In the mean time, the low temperature alarm in this volume has been calibrated and function tested. Also responsible people have been reminded of the meaning of and immediate action required upon receiving this alarm. In view of cumulative experience, the corrective action taken was satisfactory.

FAILURE DATA

Concurrently with the Unit #2 occurrence, a similar problem arose on the Unit #3 valves 3-1601-21 & 22. It is felt that liquid nitrogen came in contact with these valves also. This is the first occurrence where it is felt that liquid nitrogen damaged these valves.

Sincerely,

for H. J. Stephenson
B. B. Stephenson
Superintendent

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