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BBS Ltr.#439-74

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
June 18, 1974

RECEIVED
JUN 25 1974
U.S. ATOMIC ENERGY COMMISSION
Mail Section

50-249

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

SUBJECT: LICENSE DPR-25, DRESDEN NUCLEAR POWER STATION, UNIT #3, REPORT OF ABNORMAL OCCURRENCE PER SECTION 6.6.B.1.a OF THE TECHNICAL SPECIFICATIONS.
NIPPLE FAILURE ON FEEDWATER PUMP DISCHARGE LINE.

References: Notification of Region III of AEC Regulatory Operations
Telephone: F. Maura, 1325 hours on 6/10/74
Telegram: J. Keppler, 1345 hours on 6/10/74

Dear Mr. O'Leary:

This letter is to report a condition relating to the operation of the unit at about 1100 hours on June 10, 1974. At this time, station personnel noted a leak in a 3/4 inch test line which was welded to the feedwater pump discharge line. The unit was shutdown to effect repairs. The leakage associated with the failure fell directly to the turbine building floor and flowed into a nearby turbine building drain from which it was pumped to Radwaste. No airborne radioactivity resulted and no personnel exposure was experienced due to the leak.

This malfunction is reportable according to section 1.A.5 of the Technical Specifications which defines an abnormal occurrence as an abnormal degradation of one of the several boundaries which are designed to contain the radioactive materials resulting from the fission process.

PROBLEM

The problem was discovered at approximately 1100 hours on June 10, 1974, when station personnel noted water spraying from a newly installed vibration test line located on the reactor feedwater pump discharge header. At the time, the unit was operating at 440 MWe. The carbon steel line was leaking through a crack in the 3/4 inch nipple which connected the feedwater header to the two valves in the test line. After discovery of the crack, it was determined that the test line could not be isolated without draining the feedwater header line 3-3201-24". This action in turn necessitated a plant shutdown. The unit was shutdown in an orderly fashion with the turbine

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being taken off-line at 1700 hours on June 10, 1974. After shutdown, the feedwater discharge line was drained and the leaking vibration test line was cut out of the feedwater line. A plug was welded in its place and the weld was dye penetrant tested. By 0100 hours on June 11, 1974, the repairs were completed and preparations for the unit startup were begun.

INVESTIGATION

Visual inspection of the nipple showed the failure to be a crack in the nipple body itself, not in welds. The crack was located on the side of the nipple, was vertical in nature, and extended for approximately 1/4 inch. Very near the crack itself was a deep pit or gouge in the nipple. This gouge was due to the welder striking his arc on the nipple before welding the two valves to the nipple. It is very probable that this weld strike arc is the site for the start of the crack and that the crack propogated under the surface of the nipple until it surfaced approximately 3/8 of an inch from the strike arc. The nipple will be sent out for tests to confirm this.

Although the strike arc was the primary cause of the failure, several other contributory causes were noted during the investigation. These include:

1. The strike arc gouge was in a heat affected zone of the nipple. This further weakened the metal in this area. There was no post-weld heat treatment of the area.

2. The feedwater header was cold and level when the test line was installed. Upon operating conditions, the header moved downward by approximately 1 inch. Since the test line was secured to the ceiling by a pipe hanger, a large stress was induced in the test line.

3. The feedwater header was known to be vibrating vertically during startup and operational conditions. This induced a second, cyclic stress on the test line.

CORRECTIVE ACTIONS

Upon discovery of the leaking nipple, and determination that the leak could not be isolated without isolating the feedwater header, the unit was shutdown in a controlled manner.

The feedwater header was isolated after unit shutdown and the leaking test connection was cut out of the feedwater header. A plug was welded into the resultant hole and the weld was dye penetrant tested.

Similar test connections on the feedwater header were checked and none were rigidly held in place, independent of the feedwater line to which it was welded.

This occurrence did not jeopardize the safety of the plant or the public and resulted in no significant contamination problems.

The nature of the failure is such that in-service hydrostatic testing, as is accepted by the codes, is sufficient to prevent or minimize failures of this type on similar equipment. This type of hydrostatic test was performed on this test connection. Because of the nature of the failure, no corrective action can be affected to prevent repetition of the occurrence on this and other equipment.

Cumulative experience regarding contaminated water line leaks of this nature is minimal. For this reason, the corrective actions are considered effective and satisfactory.

Sincerely,

B. B. Stephenson
Superintendent

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