

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE
37401



May 24, 1974

Mr. John F. O'Leary, Director
Directorate of Licensing
Office of Regulation
U.S. Atomic Energy Commission
Washington, DC 20545

Dear Mr. O'Leary:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 -
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - ABNORMAL
OCCURRENCE REPORT BFAO-7431W

The enclosed report is to provide details concerning 15 of the 16 pipe hangers on the torus spray header which failed and allowed the header to drop and rest on several of the drywell vents and is submitted in accordance with Appendix A to Regulatory Guide 1.16, Revision 1, October 1973. This event occurred on Browns Ferry Nuclear Plant unit 1 on May 14, 1974 (discovery date).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

E. F. Thomas
Director of Power Production

Enclosure
CC (Enclosure):

Mr. Norman C. Moseley, Director
Region II Regulatory Operations Office, USAEC
230 Peachtree Street, NW., Suite 818
Atlanta, Georgia 30303



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Corrective Action (continued)

the exception of one-half of a 4-inch pipe clamp, spacer for the clamp, and a 2-foot-long hanger bar. A review by TVA Design, the Plant Operations Review Committee, and the Safety Review Board was conducted; and approval to operate the unit with these three unaccounted-for parts was obtained.

Following the installation of approved larger hangers, functional tests of the spray system were satisfactorily conducted. Visual inspections of the piping, sprays, and hanger system following the spray test were conducted. All components were found in good serviceable condition.

The spray header penetrations through the torus shell were dye penetrant checked. No indications of distress were revealed. All structural components and support features within the torus above and below the waterlevel were inspected. On one of the four 30-inch ring header suction strainers a nut had worked loose on a bolt in the three independent hold-down dogs, permitting the strainer to become dislocated. The three independent hold-down dogs were replaced by one continuous hold-down ring and the nuts were staked to prevent loosening. A similar modification was made to the other three suction strainers.

A piece of walkway grating approximately 30 inches by 30 inches had become dislodged from the catwalk within the torus and had fallen into the torus water. It was retrieved from a location immediately adjacent to the point of dislodgement. This grating was returned to its original position and welded in place. All other grating was checked and confirmed to be held securely by tack welds or clamps or was made secure by welding.

Some of the catwalk support structure bolts were found loose. Corrections were made by tightening the nuts and staking in place. Remaining components were found in good condition.

Failure Data

No previous failures of the torus containment spray header hangers have been experienced. The torus spray header was designed and fabricated by Pittsburg Des Moines Steel Company.

ABNORMAL OCCURRENCE REPORT

Report No: BFAO-7431W
Report Date: May 24, 1974
Occurrence Date: May 14, 1974 (discovery date)
Facility: Browns Ferry Nuclear Plant unit 1.

Identification of Occurrence

Fifteen (15) of the sixteen (16) pipe hangers on the torus spray header failed and allowed the header to drop and rest on several of the drywell vents.

Conditions Prior to Occurrence

The unit was in cold shutdown condition when the occurrence was discovered. The unit had been operated in the startup test program up to rated power before this outage.

Description of Occurrence

Following repairs to a torus spray supply valve (FCV 74-58), leakage tests were conducted on the valve. Visual observation of leakage through the valve was possible by inspecting leakage from the spray nozzles in the torus. The torus was entered; and, upon viewing the torus spray header, it was discovered that the pipe hangers had failed.

Designation of Apparent Cause of Occurrence

The single apparent cause of the occurrence was deficient design of the hanger assembly. The hanger support bolts were 1/4" diameter ASTM A193, Grade B7 bolts. Movement of the suspended header during extensive relief valve actuation for torus vibration tests was a probable cause of failure of the 1/4" bolts with subsequent failure of the hanger system.

Analysis of Occurrence

Torus spray header integrity was not violated by the hanger failures, and it may have been operable if called upon. The torus spray system has not been operated since preoperational testing.

The torus spray may be used following an accident to cool gases collected in the free volume above the suppression pool. Its use is not mandatory however, since the hot gases would under pressure pass to the drywell through the vacuum breakers and be cooled by the containment cooling spray.

Corrective Action

The original hangers were removed, and larger hangers approved by General Electric Company and TVA Design were installed. Divers were utilized in recovering hanger material which fell into the torus water pool. All parts were accounted for with