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REGULATORY DOCKET FILE COPY

November 10, 1977

BBS LTR #1061-77



Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operations - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Mr. Keppler:

Per the request of R.C. Knop of your office, this letter will provide you with the information concerning the recirculation piping pressurization event that occurred on Dresden Unit 2 on November 2, 1977.

During normal reactor refueling operations with the reactor in a re-fuel mode, fuel in the vessel, and the vessel head removed, 2A recirculation pump and associated piping between the recirculation pump suction and discharge valves was inadvertently pressurized to 1435 PSIG due to a malfunction in the seal purge system.

The purpose of the recirculation pump seal purge system is to keep the recirculation pump seals clean by maintaining a constant flow of clean water into the #1 seal cavity. The water used in the purge system is taken from the control rod drive hydraulic system with the subsequent flow routed individually to each pump. The injection flow to the primary seal area of each pump is regulated through a restricting orifice, a flow regulating valve and a rotameter. Over pressure protection is provided by a relief valve.

On November 2, 1977, at approximately 0510 hours the "A" recirculation pump was cleared for service following the replacement of the pump seal assembly. At that time the seal purge system was returned to service, while the recirculation loop remained isolated. At approximately 1200 hours the pressure in the number one seal cavity of the recirculation pump was noted to be greater than 1200 PSIG as monitored in the control room. Subsequent investigation revealed the pressure to be 1435 PSIG in the pump, discharge, and suction piping. As a result the immediate action taken was to isolate the seal purge system from "A" recirculation pump. The seal purge system to "B" recirculation pump was isolated previously in the outage and the recirculation loop isolation valves remained open.

The resulting high pressure condition should have been relieved by the operation of the seal purge relief valve, which has a required set pressure of 1250 PSIG. However, the relief valve did not actuate at the pressure and pressurization of "A" recirculation loop occurred.

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We have reviewed this event for a possible violation of Section 1.2 of the Technical Specifications and have concluded that no such violation has occurred because the pressurization event was similar to a hydrostatic test as explained in the following paragraph.

In this event "A" recirculation pump was pressurized to 1435 PSIG at approximately 78°F while isolated from the reactor vessel. The pressurization lasted for approximately seven hours. On June 27, 1967, the primary system was pressurized to 1575 PSIG at approximately 140°F during the construction hydrostatic test per ASME Boiler and Pressure Vessel Code, Section III, Article 7 and USAS Power Piping Code B31.1-1967 paragraph 137.41.(a). Basically "2A" recirculation loop was subjected to a pressure of 140 PSIG less than the construction hydrostatic test. The components affected in the recirculation loop included the recirculation pump (design 1450 PSIG at 575°F), pump discharge piping (design, 1325 PSIG at 580°F) and pump suction piping (design, 1175 PSIG at 565°F). Therefore, the recirculation pump was pressurized to 15 PSI, less than its design pressure. Moreover, the suction and discharge recirculation piping could be pressurized to 1762 PSIG and 1987 PSIG respectively per the USAS Power Piping Code B31.1-1967 to perform a hydrostatic test of that piping. As a result, there was no safety significance to the public and plant personnel with this event.

The corrective action planned by the Station to prevent a recurrence of this event is as follows:

1. Test the purge system relief valves on Unit 2 and 3 to verify the lifting pressure.
2. Verify the relief valve lifting pressure. Once each refueling cycle.
3. Review operating procedures for the seal purge recirculation pump system and revise as necessary.



E.B. Stephenson
Station Superintendent
Dresden Nuclear Power Station

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