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General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

March 6, 1972

Dr. Peter A. Morris, Director
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, DC 20545

Re: Docket No 50-255
Licence No DPR-20

Dear Dr. Morris:

On February 26, 1972, while the Palisades Plant was in a hot shutdown condition, a leak was discovered in a socket weld just upstream of the P-55A charging pump discharge shutoff valve. At the time the leak occurred, the primary system pressure was 2100 psia, primary system temperature was 532°F and boron concentration was 1580 ppm.

In order to make repairs to the weld, it was necessary to isolate the normal primary coolant system charging path and drain the affected portion of the line. In preparation for the repairs, the pressurizer was filled to an 80% level and an alternate makeup path to the primary coolant system was established through the P-55C pump and MO-3072 to the redundant safety injection header. It was estimated that existing primary system known leakage would result in a pressurizer level drop of about 6% per hour. This would allow about eight hours to accomplish the repair before requiring makeup to the primary system. Although an alternate makeup path was available, it was not used because the piping vibrations would interfere with welding performed during the repair.

Normal primary coolant system charging and letdown were secured at 0255 hours. The repair was completed at 0715 hours and normal charging and letdown was reestablished at 0848 hours.

Later the same day at 1408 hours, another slight leak was discovered in the cap on the check valve in the discharge line of the P-55A charging pump. This leak was easily isolated because it was between the pump discharge and discharge shutoff valve. Because the charging system vibration makes welding repairs difficult, the pressurizer level was raised to 60% and primary coolant system charging and letdown was secured. The alternate flow path through the redundant high-pressure safety injection header was established for use if required. The repair was completed and charging and letdown flow reestablished at 1840 hours.

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The cause of the difficulties with the welds in the charging system pump discharge piping is due to the vibration induced by the positive displacement pumps and compounded by the present piping configuration. The leaks experienced in this system have first appeared as a fine crack in the outer surface of the weldment on socket-welded pipe fittings. The leakage first appears as a fine mist, which allows it to be readily detectable. This leakage is solely from the charging system output; check valves and isolation valves prevent back leakage from the primary coolant system.

On February 27, 1972, all welds in the vibration-affected portions of the charging system piping were dye-penetrant tested to detect any indications of surface cracking. No indications were detected. In addition, an interim surveillance program has been established that monitors for changes in the nature of piping system vibrations, the condition of piping hangers and the presence of leakage.

Plans were made sometime ago to modify the charging pump discharge piping configuration to minimize piping vibration. The materials necessary for this modification have been procured but some have not yet been delivered. It is anticipated that these materials will be delivered during April and the modifications will be undertaken shortly thereafter. The reduction of the vibrations should eliminate the difficulties that have been experienced in the charging pump discharge piping.

A safety analysis was performed assuming a break were to occur in all discrete locations of vibration-affected areas of charging system piping. Based on this safety analysis, it was concluded that the Technical Specifications (Article 3.2.3.c) contain appropriate rules to insure that at least one path is available to provide makeup water to the primary coolant system following the discovery of a break anywhere in the vibration-affected areas of charging system piping. These rules also limit the time in which the plant can be operated with only a single path of makeup water to the primary coolant system.

Yours very truly,

Ralph B. Sewell (Signed)

RBS/map

CC: Boyce H. Grier,
USAEC

Ralph B. Sewell
Nuclear Licensing Administrator