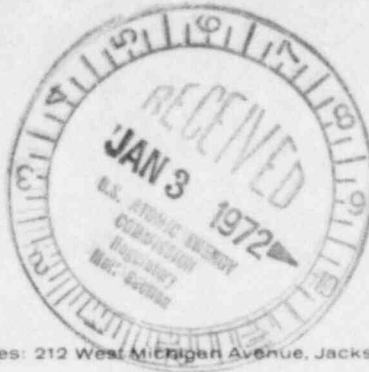


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General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

December 30, 1971

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

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

Dear Dr. Morris:

This letter is written to apprise you of an incident that occurred December 23, 1971, at the Palisades Plant, involving the motor package of control rod drive mechanism (CRDM) No 39.

Plant Conditions at the Time of the Incident

At the time the incident occurred, the reactor was critical at $2 \times 10^{-1}\%$ power, primary coolant system temperature was 528°F, primary coolant system pressure was 2100 psig, three primary coolant pumps were running, and the boron concentration was 1215 ppm. Preparations were being made to test run the turbine-driven feed pumps. Reactor regulating Groups 1, 2 and 3 were withdrawn to their upper electrical limits (131.5 inches) and Group 4 (includes No 39) was being used for reactor regulation and was withdrawn to 122 inches.

Description of the Incident

Regulating Group 4 was being withdrawn to increase reactor power. A four-inch rod deviation alarm was received. Investigation revealed that CRDM No 39 was approximately four inches below the remainder of the rods in regulating Group 4. Manual individual control was selected for CRDM No 39. CRDM No 39 responded intermittently to withdrawal and insert signals.

Control wiring connections were inspected and tested. All appeared satisfactory. It was concluded that the problem was in the CRDM motor package, and most likely due to intermittent or improper operation of the motor brake.

Corrective Action

CRDM No 39 was designated inoperable because it would not respond consistently to control signals. Reactor regulating Group 4 was positioned to its upper electrical limit and the reactor regulation function was transferred to Group P (the four part-length rods). All CRDM except No 39 were

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exercised by moving them approximately one inch in the insert direction and then restoring the CRDM to their original position. All CRDM operated normally, verifying the conclusion that only one CRDM was inoperable.

The reactor was shut down to the hot standby condition on December 26, 1971, to perform maintenance on secondary system. During the shutdown, CRDM No 39 was tested for trip times and motor running currents. The results of this testing were normal and the intermittent operation could not be made to reoccur.

The motor package was replaced with a spare unit. CRDM No 39 was again tested and tested satisfactorily.

The removed motor package was visually examined after removal. The bearing surfaces of the brake appeared to be worn more than would be expected for the amount of operation experienced. No other abnormalities were observed. The motor package was shipped to Combustion Engineering for further inspection.

The motor package was disassembled and inspected by Combustion Engineering. These inspections revealed no defects in any portion of the motor package with the exception of the brake. The brake appeared to have been dragging. This dragging would be sufficient to prevent the motor package from rotating when it was energized as the motor develops very little torque. Test runs showed that the motor would not start if a finger was placed against the shaft.

Conclusions

This incident and further incidents of this nature do not compromise reactor safety because the CRDM is still capable of being tripped. A failure in the motor package does not prevent proper functioning of the clutch unit. The de-energizing of the clutch separates the motor package from the remainder of the CRDM.

The effects of operation with one or more inoperable CRDM have been considered. Appropriate operating limitations are incorporated in the Technical Specifications to insure that hot channel factors and ejected rod worth limits are met. A similar occurrence could not go undetected because of the two rod deviation alarms. These alarms alert an operator to a CRDM position deviation of greater than four inches or eight inches from the remainder of the CRDM group.

Yours very truly,

Ralph B. Sewell (Signed)

RBS/map

Ralph B. Sewell
Nuclear Licensing Administrator