



Regulatory

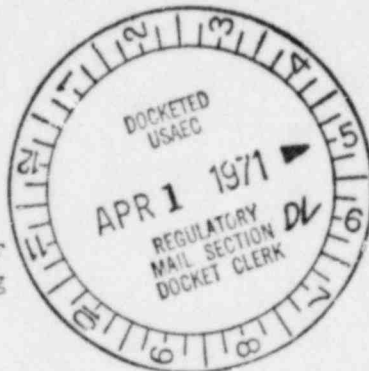
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Consumers Power Company

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

March 26, 1971



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

Re: Docket 50-55  
DPR-6 (ZEK)

Dear Dr. Morris:

Attention: Mr. D. J. Skovholt

Control rod drive B-6 could not be withdrawn from the fully inserted position during control rod drive checkouts prior to fuel loading on March 2, 1971. The grid bars were raised and two of the channels next to control rod B-6 were removed, revealing a foreign object lodged between the index tube and the conical thimble end of control rod drive B-6. The object retrieved was a roller from a control blade. The two channels were then reinstalled, the grid bars lowered into place and the drive retested satisfactorily. All control rod drives were then scram-time tested with satisfactory results.

The roller removed from the reactor was covered with a reddish-brown crud. Measurements of the roller taken following decontamination were:

- Activity - 200 mR/Hr at Contact
- 20 mR/Hr at 1 Foot
- Diameter at Edge - 0.479 Inch
- Diameter at Center - 0.476 Inch

The thirty-two (32) blades installed in 1965 all had rollers with a diameter of 0.485 inch. The rollers installed on the blades prior to 1965 were 0.567 inch in diameter.

A total of sixteen Type 2-A control blades had been removed and replaced during the refueling and prior to discovery of the roller in drive B-6. These blades were all inspected and no missing rollers were found. The spare blade stored in the spent fuel pool was also examined and all rollers were present. The bottom rollers on blade No 27 (one of the removed Type 2-A control blades) were examined with the periscope and photographs were taken. This examination showed the same wear pattern on these

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rollers as on the one extracted from the reactor on March 2, 1971. There were rubbing or wear marks in the center of the roller which would be expected from its travel on the round support tube. Examination of the roller shaft indicated no unusual wear. Blade No 27 was chosen because it had spent much of its operating life withdrawn from the core as have all the peripheral blades.

The blade (No 7) mounted on drive B-6 was also removed for examination. All rollers on this blade were examined and appeared to be in good condition. The upper roller was smooth and shiny across the entire flat surface of the roller. The bottom roller again showed wear on the center of the roller. Blade No 7, in general, had less crud on it than did blade No 27. The roller pins also appeared to be in good condition. The radiation readings taken on this blade were made in the spent fuel pool and were:

Contact Bottom Roller	1 R/Hr
Contact 2 Feet From Bottom	2 R/Hr
Contact Center of Blade	4 R/Hr
Contact 4 Feet From Bottom	40 R/Hr
Contact 6 Inches From Top	10,000 R/Hr
Through 1 Foot of Water at Top	10,000 R/Hr

Due to the concave wear pattern and the low radiation levels associated with the recovered roller, it is concluded that it is a lower roller from one of the present outer sixteen (Type I) control rods. The layer of crud on this roller compared to the shiny surfaces observed on rollers attached to those blades examined suggests that this roller may have been detached from a blade for some time. The low radiation dose rates tend to confirm this conclusion. The roller probably became lodged between the index tube and the conical thimble end of control rod drive B-6 during the period following plant start-up, January 24, 1971 and March 14, 1971, when the last reactor recirculating pump was secured in preparation for the refueling outage. January 24 was the last time control rod B-6 had been withdrawn prior to March 2, 1971.

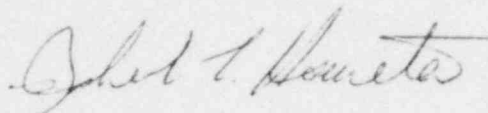
The visual examination (by periscope) of the rollers on two blades revealed no excessive wear or degradation of rollers, pins or castings. Therefore, it was concluded that the separation of this roller from the blade casting was an isolated occurrence and not the result of a general flaw of all blades. Also, it was decided that no further investigation was necessary prior to returning to power operation. As reported by Consumers Power Company in the "First Semiannual Report of Operations" dated November 27, 1964, and Technical Specification Change Request dated December 2, 1964, operation of control rods with several rollers missing would not adversely affect scram times. The rollers are present only to reduce long-term wear on control rod blade sheaths and support-tube-and-channel-assembly surfaces. In addition, the control rod drive housing extension and index tube configuration is such that, if another roller were to lodge in this location, it could not prevent the insertion of a control blade although it probably would prevent the withdrawal of a control blade.

Dr. Peter A. Morris  
March 26, 1971

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A roller and pin, from one of the sixteen (16) control rod blades removed during the recent refueling outage, will be removed in the near future and the pin examined for wear. The results from this examination will determine what action, if any, will be taken during the next refueling outage. These results will be reported to the Division of Reactor Licensing.

Yours very truly,



Robert L. Haueter  
Electric Production  
Superintendent - Nuclear

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