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Nuclear Engineering
Safety Engineering
Industrial Hygiene
Health Physics

22 March 1991

Mr. A. Bill Beach
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, TX 76011

REFERENCE: License R-23, Docket# 50-59

Dear Mr. Beach:

The purpose of this letter is to provide your office with a record of events surrounding the failed K-10 relay in the AGN-201M reactor. During the performance of the Rod Drop Time Maintenance procedure Safety Rod #1 was driven fully into the core. Once the rod up indicator light activated it was noted that the rod motor was still running, the reactor operator (R.O. Berry) stopped the rod insertion at this time. The reactor was scrammed but it was noted that the rod down light did not illuminate nor did the carriage drive out of the core. The control panel was secured and Safety Rod #1 was removed from the core.

Once the rod was removed from the core it was placed into the inspection stand. Upon inspection it was found that the carriage assembly had been pushed into the mechanical upper stop and the the rod had dropped only about one inch when scrammed. The rod was stuck in this position, the carriage was freed by manual rotation of the lead screw in the reverse direction. Once this was done the rod was able to drop through the carriage assembly and fully down. The rod and carriage assembly were inspected and no damage was noted on either of these components. The rod up switch was inspected, the switch appeared to operate normally but was replaced with an identical switch since in May of 1989 a similiar switch failure occurred on Safety Rod #2. It was noted that the control rod motor drive fuses F-10 and F-12 were blown, these and all the other fuses for the control rod drive motors were replaced with the proper one amp fuses.

The rod was then tested on the inspection stand, the rod was slowly raised to it's maximum height. Once again the rod up light illuminated but the motor power was not secured. The wiring diagram for this circuit was then inspected and it was noted that the rod up limit switch signal is an input to the K-10 relay. This K-10 relay was removed from the control panel and found to be in a failed condition. This was determined by the fact that this relay indicated a zero resistance reading rather than 700 ohms + 10% as listed on the side of the relay. A new identical relay was found and when tested the resistance reading was 680 ohms. The new relay was placed into the control panel and the rod was tested again on the test stand. The rod was completely inspected and lubricated prior to placing it back into the reactor. The retest was performed and the rod drop time for Safety Rod#1 was 116 msec.. Both Larry Yendell and Blaine Murray from your office had telephone conversations with R.O. Berry concerning this matter, it any further questions exist please call him at (409) 845-4988.

Sincerely,

John W. Poston
Professor and Department Head

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