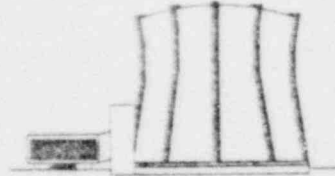


TEXAS ENGINEERING EXPERIMENT STATION

THE TEXAS A&M UNIVERSITY SYSTEM
COLLEGE STATION, TEXAS 77843



5 February 1981

NUCLEAR SCIENCE CENTER
713/845-758

Mr. Karl V. Seyfrit
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76012



Dear Mr. Seyfrit:

The following information is provided in reference to two items that were discussed by telephone with your office. The first was a report to Mr. Aneshansley on 1-22-81 concerning calibration of the NSCR regulating rod. The second was a report to Mr. Madsen on 2-2-81 concerning characteristics of the NSCR safety amplifier when a detector experiences high voltage arcing. The findings are not considered by the staff of the NSC to be reportable occurrences but we do want to update you on our evaluations, actions and results.

Calibration of the Regulating Control Rod for Core VI

Annual reactor maintenance of the NSCR is scheduled each January and calibration of Core VI control rods were scheduled to be performed within a three or four week period. Due to our operating schedule it was necessary to schedule Fridays and in some cases Monday mornings for reactor maintenance. The Tech Spec's state that all rods will be calibrated at one year intervals but not to exceed 14 months. Due to this extended period of maintenance the regulating rod was calibrated on 1-19-81. The previous calibration was performed on 11-12-79. This raises a question of the interpretation of the 14 month interval for control rod calibration. It is our interpretation that calibration of the regulating rod within the month of January (the 14th month) satisfies the intent of the Tech Spec's. All other control rods were calibrated within the one year period. The regulating rod calibration of 1-19-81 resulted in a total reactivity worth of 44 cents as compared to a value of 48 cents obtained on 11-12-79. The NSC will establish a program to review reactor maintenance on a quarterly basis to insure reactor maintenance is performed prior to deadline dates.

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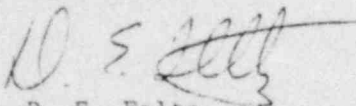
Safety Amplifier Response to Noise Transients

On 1-30-81 during operation of the NSCR at a power level of 300 Kw a loss of detector high voltage and channel 1 high power indication were received on the safety amplifier resulting in the scram of two safety control rods. The remaining two safety control rods did not scram. Also there was no safety amplifier scram indication on the reactor console panalarm. All other power measuring channels indicated there was no change in reactor power just prior to the scram. The cause for these events was found to be noise transients introduced by high voltage arcing of the channel 1 detector. This was verified by switching the inputs of channel 1 and channel 2 detectors resulting in the transfer of the problem to channel 2. The instrument response raises two questions:

1. Why did only two control rods scram?
2. Why was there no safety amplifier scram indication on the reactor console panalarm?

The safety amplifier circuitry was studied to determine the response to a noise transient introduced by detector high voltage arcing. The high voltage and high power scram alarms are monitored by SCR circuits that respond to very short signal durations. The transient signals produced these alarm indications. The control rod scram circuit involves mechanical relays that due to their time response did not latch during the transient signal. However, during the transient there was a momentary reduction in magnet current sufficient to drop the two rods. The safety evaluation conducted by the NSC staff indicates there was not a failure of the safety amplifier and there was redundant monitoring by safety channel 2 in the event a power increase occurred. As stated earlier other safety measuring channels indicated there was no reactor power increase just prior to the scram. The review of the safety amplifier circuitry and functions will be presented by lecture to the NSCR operations staff to insure adequate understanding of its design performance.

Sincerely,



D. E. Feltz
Associate Director

DEF/ym

cc: Dr. Robert R. Berg, Chairman
Reactor Safety Board