

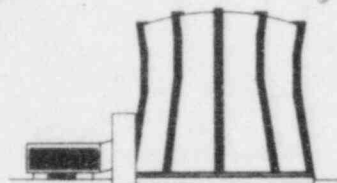
TEXAS ENGINEERING EXPERIMENT STATION

THE TEXAS A&M UNIVERSITY SYSTEM

COLLEGE STATION, TEXAS 77843-3575

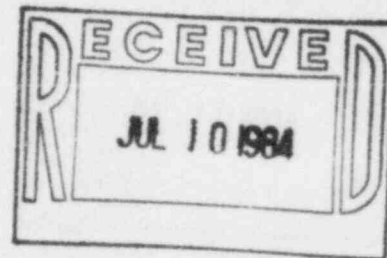
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2 July 1984



NUCLEAR SCIENCE CENTER  
409/845-7551

Mr. E. Johnson  
Office of Inspection and Enforcement  
Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76012



Dear Mr. Johnson:

I am forwarding the final report of the reportable occurrence of 26 June 1984. This report is being submitted in accordance with NSC Technical Specification requirements Section 6.6.2 of the Nuclear Science Center Reactor, License R-83, Texas A&M University.

Respectfully,

*Barry Willits*

Barry Willits, Manager  
Reactor Operations

BW/ym

Enclosure

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Reportable Occurrence #84-4  
Failure of Reactor Safety System  
Channel During Reactor Operation

Reportable Occurrence

On 26 June 1984 at 1312 during normal reactor operation, the Reactor Operator noted that the Fuel Element Temperature recorder did not correspond to the digital indication as shown on the DORIC temperature readout. Reactor power had been returned to 950 kw at 1310 following a brief reduction in power to load an experiment. The digital temperature for the fuel element thermocouple #2 indicated 694.4°F (approximately the same reading prior to the transient) yet the temperature recorder indicated approximately 565°F. The operator immediately informed the Senior Reactor Operator and Manager of Reactor Operations of the apparent abnormality. The Fuel Element Temperature recorder is hard-wired to monitor thermocouple #2 of the operational Instrumented Fuel Element, and the digital instrument (DORIC) can be selected to read thermocouple #1 or #2. The digital thermocouple instrument was selected to thermocouple #1 which indicated a temperature consistent with the digital reading of thermocouple #2. The operator observed proper response and indication on all other reactor power level indication consistent with both digital thermocouple readings. A visual check of the temperature recorder showed no apparent binding of the pen or drive mechanism, or any obvious cause for the improper response. At 1313 a reactor shutdown was commenced in accordance with SOP III-B, while closely monitoring the digital thermocouple instrument and reactor power level instruments in addition to the Fuel Element Temperature recorder. All indication, with the exception of the fuel temperature recorder, responded normally. The recorder reading remained at the original indication of 565°F during the shutdown.

Corrective Action

Following the shutdown, initial troubleshooting of the recorder caused the pen movement to begin functioning correctly when a slight pressure was applied to the slidewire potentiometer control cable. It should also be noted that the chart recorder showed the instrument tracked the initial down power maneuver to load the experiment. Then when reactor power was increased, the recorder trace showed a normal increase from approximately 450°F until it suddenly stopped at about 565°F. Subsequent troubleshooting failed to duplicate the problem, and an operational check of the recorder was performed satisfactorily. An additional check of the instrument consisting of the applicable portion of the Prestartup Checklist, was made to verify that the LSSS scram was functioning. NSC management concluded that the fuel element temperature recorder was functioning correctly and that the failure was spurious and could not be reproduced.

A reactor startup was commenced while closely observing the temperature recorder and the digital thermocouple indication. The recorder responded normally, and at 1458 reactor power was stabilized at 950 kw. At this point normal reactor operation was resumed. Subsequent reactor operation has resulted in no recurrence of the temperature recorder failure, although the instrument is being closely monitored during reactor startups and power transients. NSC management in review of the reportable occurrence has determined that the operators acted promptly and in accordance with approved SOP's. The temperature recorder failure was a spurious occurrence and that at no point during the incident was an operational power limit or safety limit exceeded.