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1. Reportable Occurrence Report No. 50-368/81-017-01T-1
2. Report Date: 7/02/81
3. Occurrence Date: 04/24/81
4. Facility: Arkansas Nuclear One - Unit 2
Russellville, Arkansas
5. Identification of Occurrence:

This occurrence is reported under Technical Specification 6.9.1.8.e failure or malfunction of one or more components which prevents or could prevent, by itself, the fulfillment of the functional requirements of the system(s) used to cope with accidents analyzed in the FSAR. The degraded RTD response time would increase the Reactor Protective System (RPS) response time for the Low DNBR and High Local Power Density trips.

6. Conditions Prior to Occurrence:

Steady-State Power	<u> X </u>	Reactor Power	<u> </u> MWth
Hot Standby	<u> </u>	Net Output	<u> </u> MWe
Cold Shutdown	<u> </u>	Percent of Full Power	<u> 100 </u> %
Refueling Shutdown	<u> </u>	Load Changes During Routine Power Operation	<u> </u>
Routine Startup Operation	<u> </u>		
Routine Shutdown Operation	<u> </u>		
Other (specify)			

7. Description of Occurrence:

During power operation, the 32 resistance temperature detectors (RTDs) which provide input to the Plant Protective System were tested to determine response time as required by the Technical Specifications. AP&L uses the loop current step response method for this test. Due to the complexity of the test and subsequent data analysis, AP&L has contracted with AMS Corporation of Knoxville, Tenn. to perform the testing. The results of the tests were received from AMS after the unit had been shutdown for refueling. The results of the analysis indicated that 29 of the 32 RTDs had response time constants longer than the required 6.0 seconds. The average time constant measured was 7.5 seconds.

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8. Designation of Apparent Cause of Occurrence:

Design	_____	Procedure	_____ X
Manufacture	_____	Unusual Service Condition Including Environmental	_____
Installation/ Construction	_____	Component Failure (See Failure Data)	_____
Operator	_____		
Other (specify)			

Procedure for application of "Never-Seeze" couplant was not standardized to ensure good contact or to prevent contact with air.

9. Analysis of Occurrence:

Three of the RTD's with slow response times were removed from their thermowells for examination and testing. The couplant ("Never-Seeze") compound was found to be dried out, leaving a powdery residue. "Never-Seeze" is recommended by our NSSS vendor to improve heat transfer between the thermowell and sensor. The three RTDs were taken to AMS laboratories for "plunge" testing and were found to have acceptable response times. It was concluded that the contact of the sensor to the thermowell was inadequate and the cause attributed to the drying out of the couplant.

The degraded RTD response time would increase the RPS response time and could have prevented the RPS from actuation early enough to protect against Low DNBR or High Local Power Density occurrences.

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10. Corrective Action:

Procedures have been revised to give detailed instructions for application "Never-Seeze" couplant in the RTD wells to ensure good RTD sensor to thermowell contact and to reduce contact with air to prevent drying out of the couplant.

Response times of all RTD's will be measured prior to criticality. Increased testing frequency will be instituted to establish an acceptable interval for determination of RTD response times. Response times of RTDs will be measured after approximately 1 month (+25%) of operation in Mode 3 or above. A third response time test will be performed after not more than three (3) months of Mode 3 or above operation following the second test. Based on testing results, the time between the 2nd and third tests may be reduced (if necessary). These and other test results will be used to determine a long term test interval. If a test interval shorter than the current Tech. Spec. requirement is required, a Technical Specification Revision will be submitted.

11. Failure Data:

There have been no similar occurrences.