1. Unusual Event Report No. 50-313/74-1

2. Report Date: August 19, 1974 3. Occurrence Date: July 14, 1974

4. Facility: Arkansas Nuclear One-Unit 1

5. Identification of Occurrence: Failure of NI-1 due to excessive heating of detector cables, reportable under Technical Specification 6.12.3.2c.

6. Conditions Prior to Occurrence:

Steady-State Power		Reactor Power	0 MWth
Hot Standby		Net Output	0 MWe
Cold Shutdown		Percent of Full Power	0 %
Refueling Shutdown			
Routine Startup Operation			
Routine Shutdown Operation	X		

Load Changes During Routine Power Operation

Other (Specify) X
Prior to initial criticality during hot functional testing.

7. Description of Occurrence:

Excessive heat in the area of the nuclear instrumentation detector junction boxes at the reactor vessel resulted in the melting of the center insulator material of the triax cable between the NI-1 source range detector and preamplifier.

8004150722

8. Designation of Apparent Cause of Occurrence:

Design	X	Procedure	
Manufacture		Unusual Service Condition Including Environmental	
Installation/ Construction		Component Failure	
Operator			
Other (Specify)			

9. Analysis of Occurrence:

Technical Specifications do not require the source range detectors to be operable at the hot shutdown condition. No failures in the Power Range detectors occurred, thus no reactor protection functions were compromised. Therefore no safety implications were involved and public health and safety were not endangered. However, due to this condition, it could be possible for power range detectors to fail.

10. Corrective Action:

In order to investigate the extent of damage, the reactor was brought to cold shutdown. Short sections of all NI cables were cut out in the area of the junction boxes and were stripped apart for visual inspection. Only those cables in the red junction box (containing NI-1 and NI-5 junctions) sustained any visible damage. The affected cables and connectors were replaced and were retested per TP 301.02 (NI Detector Cabling Test). All of the Nuclear Instrumentation Detectors were tested per the appropriate approved procedures. All cabling was reconnected, the system was energized and source checking for responses were made. All channels were found to operate properly.

In order to assure that this problem does not reoccur, the following steps were/will be taken: (1) the refueling canal seal plate has been raised to allow more air flow past the detector junction boxes, (2) the

10. Corrective Action (continued)

large primary shield cold leg penetrations have been covered with asbestos material to force the air flow up through the vessel annulus which previously bypassed the detector junction box area, and (3) during the heatup prior to initial criticality, the reactor vessel annulus temperatures will be monitored to assure adequate cooling exists.

11. Failure Data:

There have been no previous failures of this type. The cable which failed can be identified as follows:

Manufacturer: Boston Insulated Wire
Description: Triax Cable Type RG-11U
Purchased under Becthel Spec. E-26

12. Reviews and Approvals:

Reviewed and Approved by: Plant Safety Committee Yes (X) No ( )

Plant Superintendent Yes (X) No ( )

Reference: JWA-457 Date: 8/7/74

Reviewed by: Donald A. Ruter Date: 8/19/74
Licensing Supervisor

Approved by: [signature] Date: 8-20-74
Safety Review Committee

Approved by: [signature] Date: 8/20/74
Manager of Nuclear Services

Approved by: [signature] Date: 8-20-74
Director of Power Production

Approved by: [signature] Date: 8/21/74
Senior Vice President