

PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 97779

Date: December 3, 1974

Title: Reactor Coolant Pump Underpower/Overpower Monitoring Relays Fail to Function at Arkansas Nuclear 1

The failure sequence was:

1. With the reactor at 20% power, RCPs A and D were shutdown for two pump testing. The RPS saw neither pump trip.
2. RCPs A and D were restarted and RCPs B and C were tripped. The RPS saw neither pump trip.
3. Subsequent testing indicated the RPS failed to see a RCP D trip but did see a RCP A trip.
4. Concurrent with a trip of the C RCP, the D pump monitor relay also tripped (D pump still running), resulting in a reactor trip.

(See attached page)

Corrective action:

The relays were correctly readjusted for the pump power monitor application.

Design purpose of failed system or component:

The pump power monitors provide pump operating status indication to the RPS. The RPS is designed to trip the reactor if more than one pump is lost during four pump operation or if any pump is lost during less than four loop operation.

Unavailability of system per WASH 1400: * Not considered.

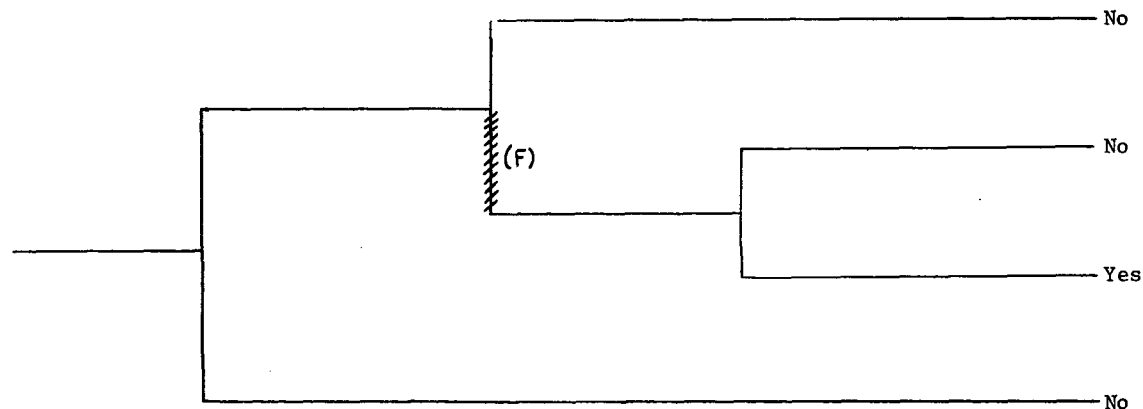
Unavailability of component per WASH 1400: * Relay, failure to de-energize: not specified.

*Unavailabilities are in units of per demand D^{-1} . Failure rates are in units of per hour HR^{-1} .

The failure sequence was: (continued)

5. Investigation revealed that the relays had been adjusted two days before in accordance with the relay manufacturers instructions. However, in this application, the relays had to be adjusted to operate at a specific pre-determined power level.

Reactor at Power With Three RCPs Operating	Reactor Coolant Pump Fails During Operation	RPS Senses Pump Failure to Run and Trips	Other RPS Trips Provide Protection Prior to Core Damage	Potential Severe Core Damage
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NSIC 97779 — Sequence of Interest for Reactor Coolant Pump Undervoltage/Overpower
Monitoring Relays Fail to Function at Arkansas Nuclear 1

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 97779

DATE OF LER: December 3, 1974

DATE OF EVENT: November 24, 1974

SYSTEM INVOLVED: Reactor Protection System

COMPONENT INVOLVED: Pump Power Monitor Relays

CAUSE: Relays incorrectly adjusted

SEQUENCE OF INTEREST: Reactor coolant pump trip during three loop operation

ACTUAL OCCURRENCE: Failure of RPS to see trips during testing

REACTOR NAME: Arkansas Nuclear 1

DOCKET NUMBER: 50-313

REACTOR TYPE: PWR

DESIGN ELECTRICAL RATING: 850 MWe

REACTOR AGE: .30 yr

VENDOR: B&W

ARCHITECT-ENGINEERS: Bechtel

OPERATORS: Arkansas Power & Light Co.

LOCATION: 6 miles NW of Russelville, Ark.

DURATION: 48 hours

PLANT OPERATING CONDITION: 20% power

SAFETY FEATURE TYPE OF FAILURE: (a) inadequate performance; (b) failed to start;
(c) made inoperable; (d) _____

DISCOVERY METHOD: During testing

COMMENT: