

PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 137384

Date: March 18, 1978

Title: Two Makeup Pumps Trip During Testing at Three Mile Island 1

The failure sequence was:

1. During performance of the Emergency Sequence and Power Transfer Test, both makeup pumps failed to start after power was restored to their respective buses. In one case, a lube oil pressure timer relay failed to close, and in the other case, a relay failed to disengage when the pumps initially tripped due to loss of power during the test.

Corrective action;

1. The timer relays were to be replaced during the refueling outage which was in existence during the test.

Design purpose of failed system or component:

1. The timer relay allows the pump to run for six seconds without normal lube oil pressure while the pump is initially coming up to speed.
2. The makeup pumps perform as emergency high pressure injection pumps for LOCA.

Unavailability of system per WASH 1400:\*  $8.6 \times 10^{-3}$

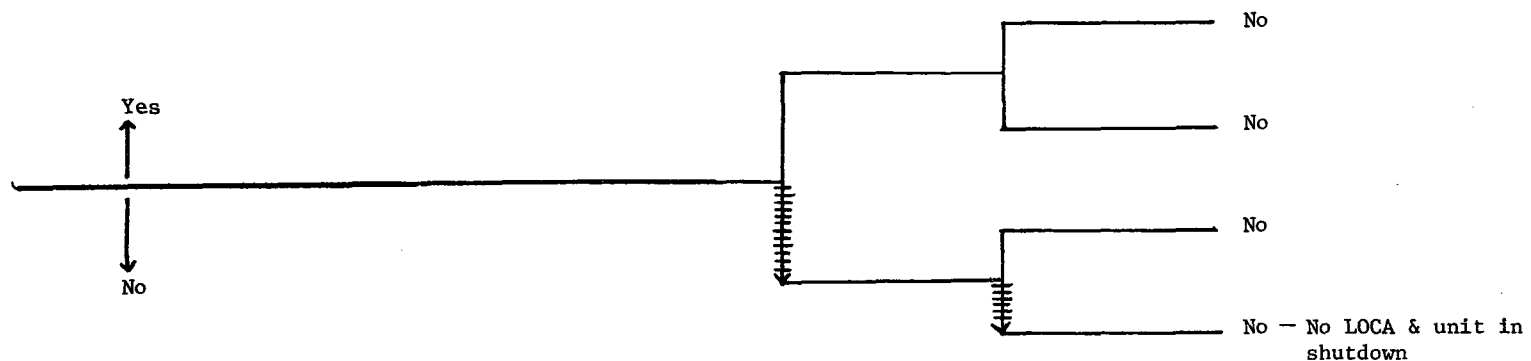
Unavailability of component per WASH 1400:\* pump, failure to start:  $1 \times 10^{-3}/D$

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

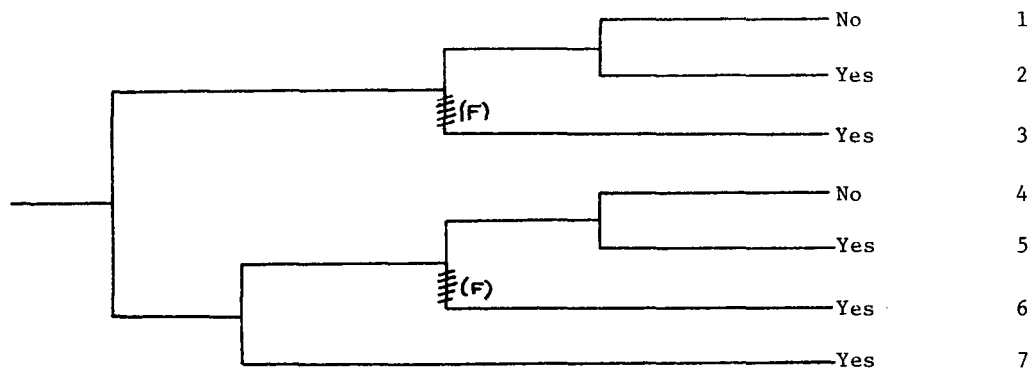
Makeup pumps MU-PIA, MU-PIC running and voltage on buses for MU-PIA, MU-PIC interrupted for testing during refueling	MU-PIA, MU-PIC tripped	Power restored to MU-PIA, MU-PIC buses	MU-PIA start and run	MU-PIC start and run
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Potential  
Severe  
Core  
Damage



NSIC 137384 - Actual Occurrence for Failure of Two Makeup Pumps During Testing at Three Mile Island 1

Small LOCA*	Reactor Trip	Auxiliary Feedwater and Secondary Heat Removal	High Pressure Injection	Low Pressure Recirculation and LPR/HPI Cross-Connect	Potential Severe Core Damage	Sequence No.
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NSIC 137384 - Sequence of Interest for Failure of Two Makeup Pumps During Testing at Three Mile Island 1

\* With loss of offsite power.

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 137384

DATE OF LER: April 5, 1978

DATE OF EVENT: March 18, 1978

SYSTEM INVOLVED: Makeup and High Pressure Injection

COMPONENT INVOLVED: Pumps

CAUSE: Malfunction of time delay relay.

SEQUENCE OF INTEREST: Small LOCA

ACTUAL OCCURRENCE: Relay failure.

REACTOR NAME: Three Mile Island 1

DOCKET NUMBER: 50-289

REACTOR TYPE: PWR

DESIGN ELECTRICAL RATING: 819 MWe

REACTOR AGE: 3.8 yr

VENDOR: B&W

ARCHITECT-ENGINEERS: Gilbert Associates, Inc.

OPERATORS: Metropolitan Edison

LOCATION: 10 miles SE of Harrisburg, PA

DURATION: 360(a) hours

PLANT OPERATING CONDITION: 0% power

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

DISCOVERY METHOD: During test.

COMMENT: Lost 2 of 3 makeup/high pressure injection pumps because of faulty timers. These two pumps are normally those started by an SFAS signal.