

# PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 123150

Date: March 10, 1977

Title: Excess Cooldown Rate Results from Loss of ICS Power at Crystal River 3

The failure sequence was:

1. Inverter B output diode failed in the B a.c. inverter, resulting in loss of vital bus B.
2. This resulted in a loss of power to the ICS and consequent reactor trip, turbine trip, and 50% opening of the atmospheric dump valves.
3. Main feedwater was lost due to loss of condenser vacuum.
4. Emergency feedwater was used for reactor cooling.

Corrective action;

1. The B inverter output diode was replaced and the inverter restored to operation.

Design purpose of failed system or component:

1. The inverter provides battery-backed A.C. power for instrumentation loads.

Unavailability of system per WASH 1400:\* vital bus:  $3 \times 10^{-6}/\text{hr}$ .

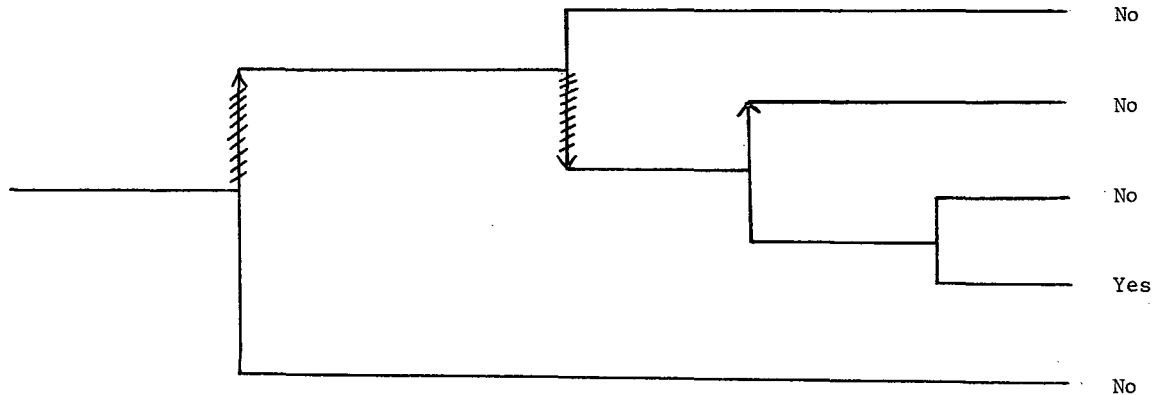
Unavailability of component per WASH 1400:\* power supplies:  $3 \times 10^{-6}/\text{hr}$ .

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

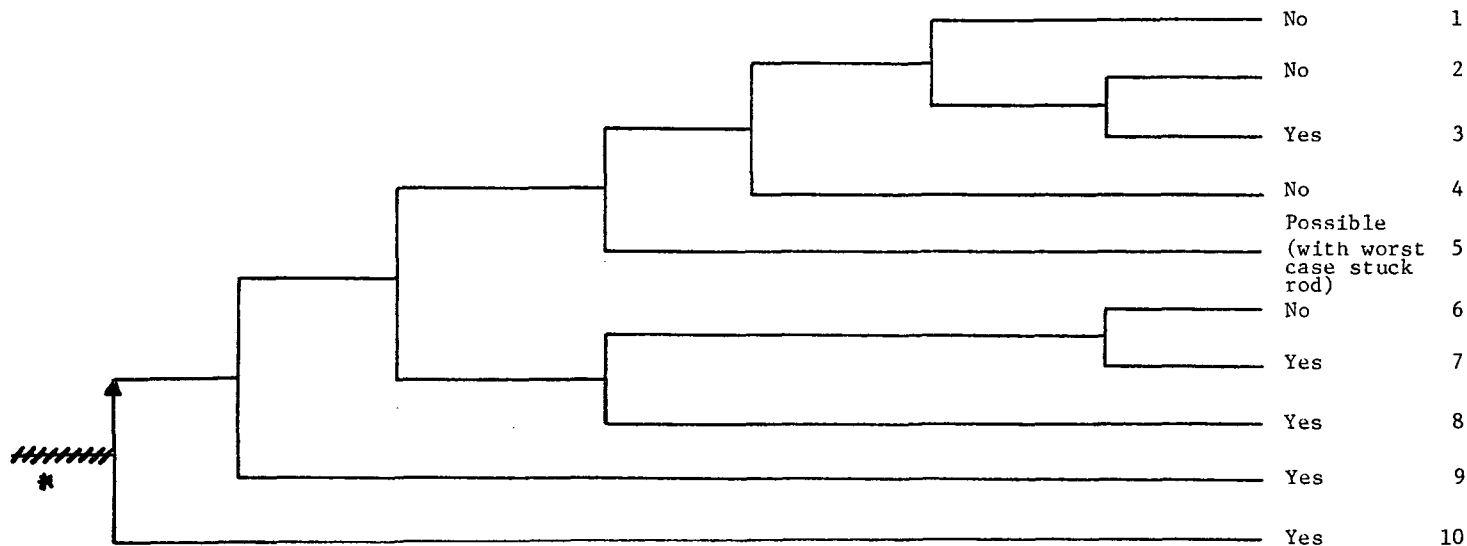
Diode failure in inverter caused loss of vital bus B while at power	Loss of power to ICS: reactor trip, turbine trip, 50% open atmospheric dump valves	Main feedwater available	Emergency feedwater available	Reactor makeup
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Potential  
Severe  
Core  
Damage



NSIC 123150 - Actual Occurrence for Excess Cooldown Rate Results from Loss of ICS Power at Crystal River 3.

Steam Line Break	Reactor Trip	Steam Generator Isolation	Auxiliary Feedwater and Secondary Heat Removal	High Pressure Injection	PORV Opened Due to Con- tinued HPI	PORV or PORV Isola- tion Valve Closure	Long Term Core Cooling	Potential Severe Core Damage	Sequence No.
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NSIC 123150 — Sequence of Interest for Excess Cooldown Rate Results from Loss of ICS Power at Crystal River 3

\* small

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 123150

DATE OF LER: March 10, 1977

DATE OF EVENT: March 3, 1977

SYSTEM INVOLVED: Vital power supply, Integrated Control System

COMPONENT INVOLVED: Inverter

CAUSE: Failed output diode

SEQUENCE OF INTEREST: Stuck open dump valves (Small steam line break)

ACTUAL OCCURRENCE: 50% open atmospheric dump valves

REACTOR NAME: Crystal River 3

DOCKET NUMBER: 50-302

REACTOR TYPE: PWR

DESIGN ELECTRICAL RATING: 825 MWe

REACTOR AGE: 0.25 yr

VENDOR: Babcock & Wilcox

ARCHITECT-ENGINEERS: Gilbert Assoc.

OPERATORS: Florida Power Corp.

LOCATION: 7 miles NW of Crystal River, Fla.

DURATION: N/A

PLANT OPERATING CONDITION: At 40% power.

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

DISCOVERY METHOD: Event while operating

COMMENT: —