

## PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 132958

Date: December 11, 1977

Title: Complete Loss of Offsite Power Occurs at Palisades

The failure sequence was:

1. With the reactor at 100% power, the "R" switchyard bus de-energized because of a spurious signal from the bus stripping relay, resulting in a complete loss of offsite power and consequent loss of main condenser cooling.
2. The reactor was manually tripped.
3. Both diesel generators started and provided power to safety-related equipment.

Corrective action:

1. The "R" bus tripping scheme was modified to minimize loss of the bus due to spurious action of the "R" bus stripping relay. The specific cause of the stripping relay trip had not been determined.

Design purpose of failed system or component:

1. Off-site power provides the preferred source of electric power to plant equipment when the unit generator is not in operation. The condenser circulating water pumps are normally powered from the off-site power source.

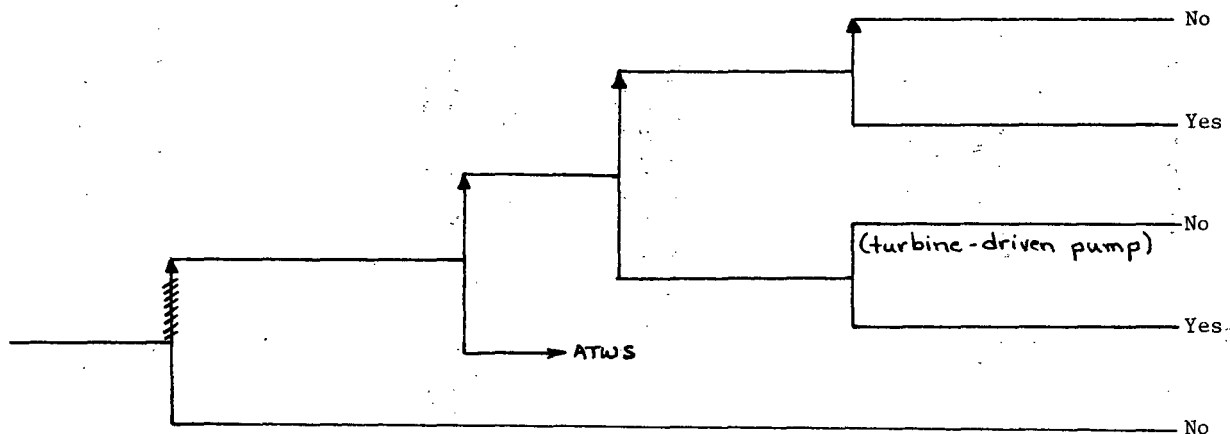
Unavailability of system per WASH 1400:\* loss of offsite power:  $2 \times 10^{-5}$ /hr

Unavailability of component per WASH 1400:\* —

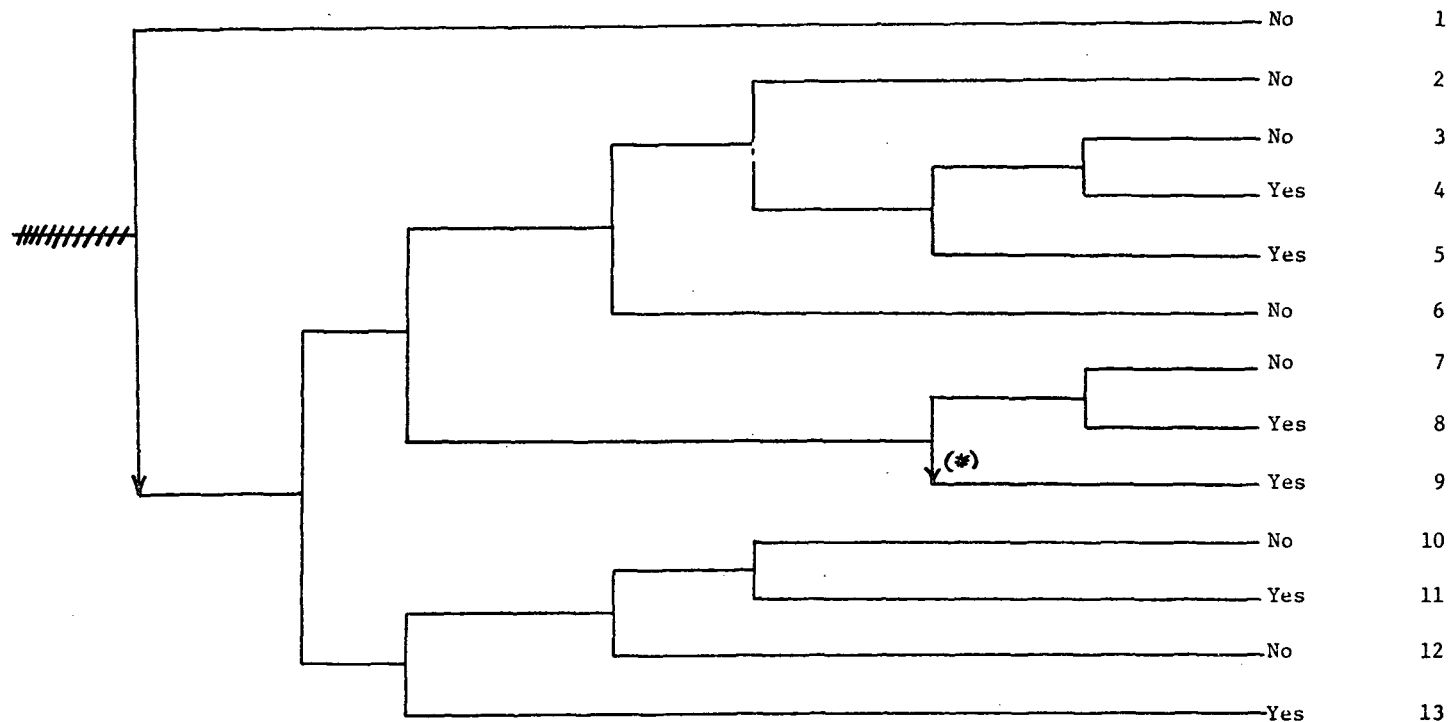
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\* Unavailabilities are in units of per demand  $D^{-1}$ . Failure rates are in units of per hour  $HR^{-1}$ .

Reactor at 100% power	Spurious stripping relay signal results in trip of switchyard bus R and consequent loss of offsite power and loss of condenser cooling	Reactor trip	Both diesel generators start and assume safety-related loads	One of two auxiliary feed-water pumps provide AFW to steam generators for reactor cooling (LER does not specify which pump was used)	Potential Severe Core Damage
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Loss of Offsite Power	Turbine Generator Runs Back and Assumes House Loads	Emergency Power	Auxiliary Feedwater and Secondary Heat Removal	PORV Demanded	PORV or PORV Isolation Valve Closure	High Pressure Injection	Long Term Core Cooling	Potential Severe Core Damage	Sequence No.
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NSIC 132958 — Sequence of Interest for Complete Loss of Offsite Power at Palisades

\*Not included in mitigation procedures.

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 132958

DATE OF LER: December 21, 1977

DATE OF EVENT: December 11, 1977

SYSTEM INVOLVED: off-site power

COMPONENT INVOLVED: switchyard bus "R"

CAUSE: spurious stripping relay signal

SEQUENCE OF INTEREST: loss of offsite power

ACTUAL OCCURRENCE: reactor trip with loss of offsite power

REACTOR NAME: Palisades

DOCKET NUMBER: 50-255

REACTOR TYPE: PWR

DESIGN ELECTRICAL RATING: 805 MWe

REACTOR AGE: 6.8 yr

VENDOR: Combustion Engineering

ARCHITECT-ENGINEERS: Bechtel

OPERATORS: Consumers Power Co.

LOCATION: 5 miles south of South Haven, Mich.

DURATION: N/A

PLANT OPERATING CONDITION: 100% power

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

DISCOVERY METHOD: during operation

COMMENT: See also 132943