

PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 132943

Date: December 16, 1977

Title: Complete Loss of Offsite Power Occurs at Palisades

The failure sequence was:

1. During normal operation with the reactor at 85% power, switchyard bus "R" became de-energized, causing a complete loss of offsite power and resulting in a loss of main condenser cooling water flow.
2. The reactor was manually tripped.
3. Both diesel generators started and provided power to safety-related loads.

Corrective action:

None; the cause of the "R" bus loss was under investigation.

Design purpose of failed system or component:

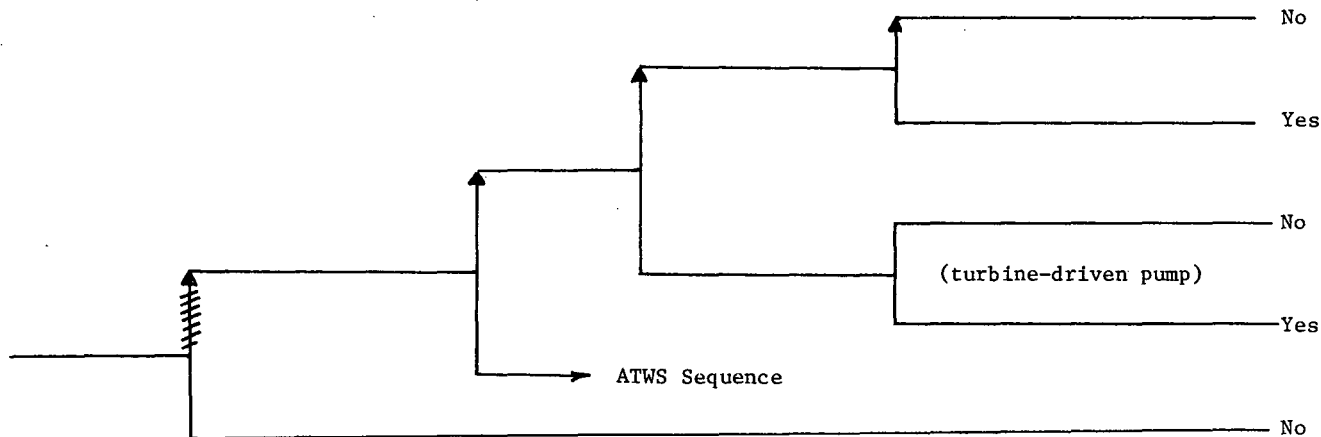
Offsite power provides the preferred source of electric power to plant equipment when the unit generator is not in operation. The condenser circulating water pumps are normally powered from the off-site source.

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

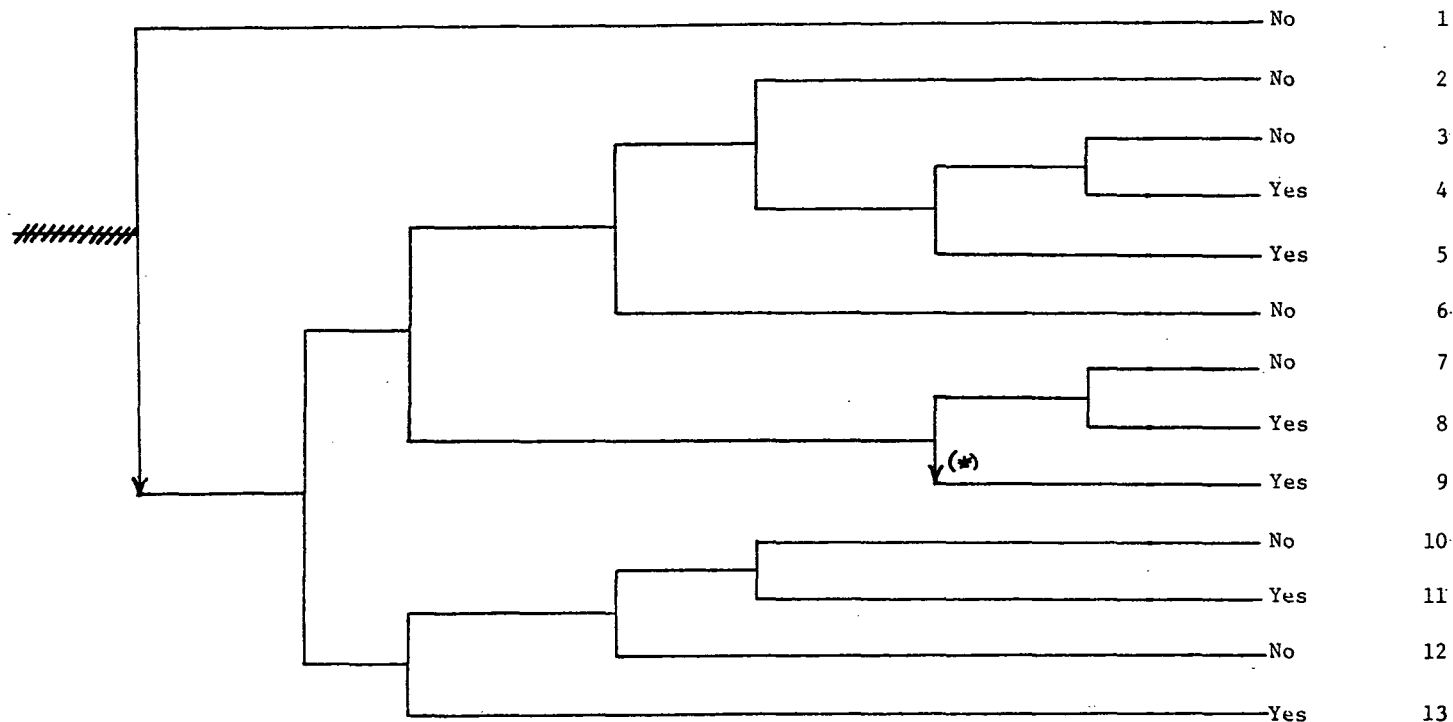
Unavailability of component per WASH 1400:* —

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

Reactor at 85% power	Switchyard bus "R" de-energized, resulting in loss of offsite power and loss of condenser cooling	Reactor trip	Both diesel generators start and assume safety-related loads	One of two auxiliary feedwater pumps provide AFW to steam generators for reactor cooling (LER does not specify which pump was used)	Potential Severe Core Damage
----------------------	---	--------------	--	---	------------------------------



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.
-----------------------	---	-----------------	--	---------------	--------------------------------------	-------------------------	------------------------	------------------------------	--------------



NSIC 132943 - Sequence of Interest for Complete Loss of Offsite Power at Palisades

*Not included in mitigation procedures.

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 132943

DATE OF LER: December 16, 1977

DATE OF EVENT: November 25, 1977

SYSTEM INVOLVED: offsite power

COMPONENT INVOLVED: switchyard bus "R"

CAUSE: bus trip from unknown causes

SEQUENCE OF INTEREST: reactor trip with 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: 85% power

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

DISCOVERY METHOD: during operation

COMMENT: See also 132958