PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 130119

Date: September 24, 1977

Title: A Complete Loss of Offsite Power Occurs at Palisades

The failure sequence was:

1. With the reactor at 100% power during an electrical storm, the switchyard "R" bus de-energized and caused a complete loss of offsite power and loss of main condenser cooling.
2. The turbine tripped on high condenser vacuum, and effected reactor and generator trips.
3. Both diesel generators started and supplied electric power to safety-related loads.

Corrective action;

none

Design purpose of failed system or component:

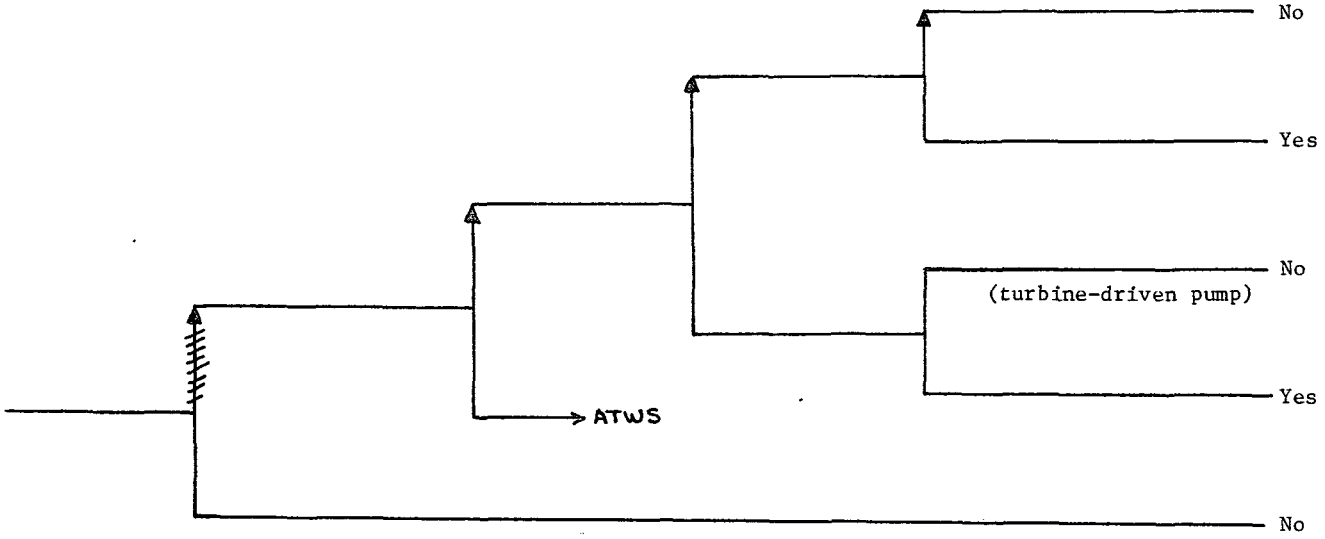
Off-site power provides the preferred source of electric power to plant equipment when the unit generator is not in operation. The condenser circulating water pumps are normally powered from the offsite power source.

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

Unavailability of component per WASH 1400:* —

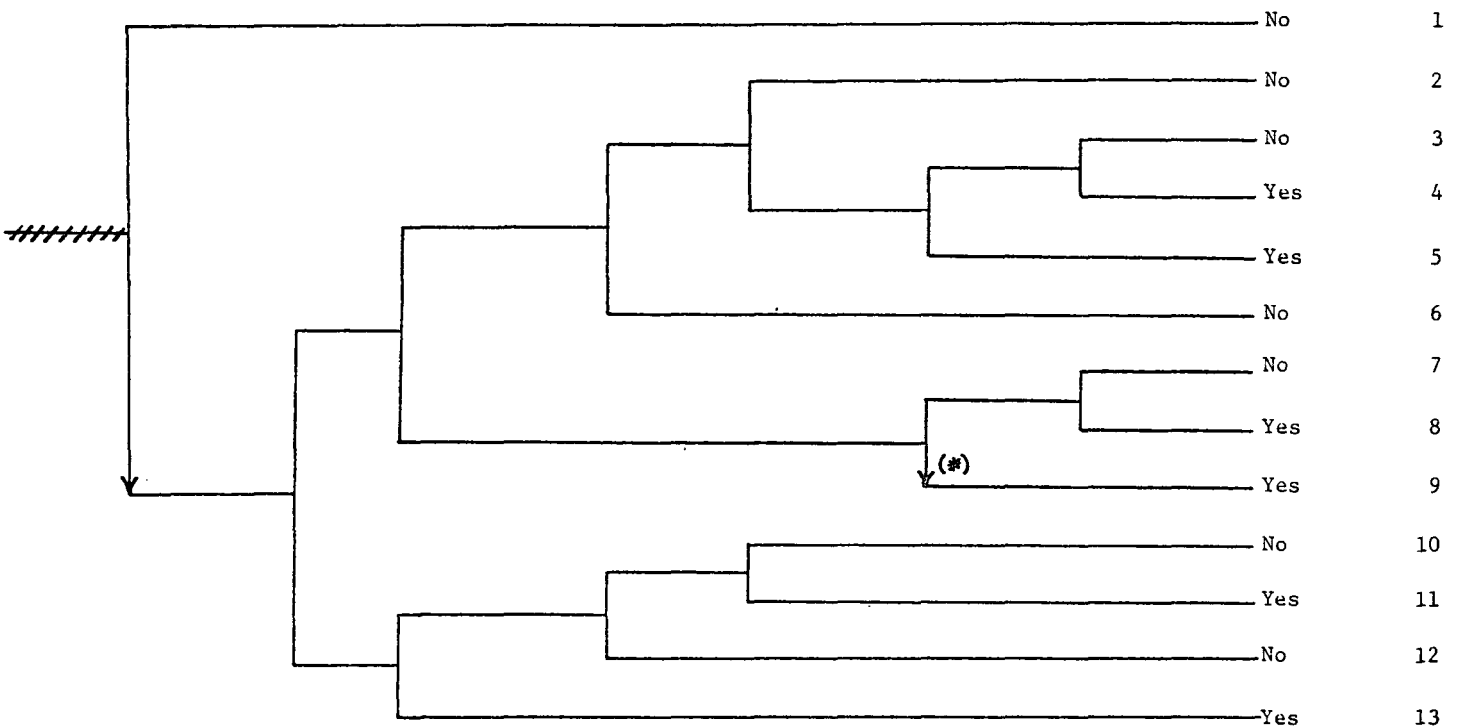
*Unavailabilities are in units of per demand D^{-1}. Failure rates are in units of per hour HR^{-1}.

Reactor at 100% power	Switchyard bus "R" de-energized, resulting in loss of offsite power and loss of condenser cooling	Turbine trip on high back pressure, reactor and unit generator trip	Both diesel-generators start and assume safety-related loads	One of two auxiliary pumps provide AFW to steam generators for reactor cooling (LER does not specify which pump was used)	Potential Severe Core Damage



NSIC 130119 — Actual Occurrence for a Complete Loss of Offsite Power at Palisades

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.
								No	1
								No	2
								No	3
								Yes	4
								Yes	5
								No	6
								No	7
								Yes	8
								Yes	9
								No	10
								Yes	11
								No	12
								Yes	13



NSIC 130119 — Sequence of Interest for a Complete Loss of Offsite Power at Palisades
*Not included in mitigation procedures.

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 130119

DATE OF LER: October 18, 1977

DATE OF EVENT: September 24, 1977

SYSTEM INVOLVED: offsite power

COMPONENT INVOLVED: switchyard "R" bus

CAUSE: bus trip from unknown causes

SEQUENCE OF INTEREST: loss of offsite power

ACTUAL OCCURRENCE: reactor trip due to loss of offsite power

REACTOR NAME: Palisades

DOCKET NUMBER: 50-255

REACTOR TYPE: PWR

DESIGN ELECTRICAL RATING: 805 MWe

REACTOR AGE: 6.5 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: —