

PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 160497

Date: October 20, 1980

Title: Inadvertent Opening of Safety Relief Valve at Pilgrim 1

The failure sequence was:

1. Operating pressure in the nitrogen supply line to the solenoid valve that operates the safety relief valve was in excess of the design specifications for the solenoid valve, resulting in leakage through the solenoid valve seat into the diaphragm of the safety relief valve.
2. The reactor was operating at steady state at 95% power. At the associated high reactor pressure, the leakage through the valve seat was enough to lift the relief valve.
3. The reactor was manually scrammed.
4. Attempts were made to close the relief valve, per operating procedures, which entailed switching the valve to the open position (which opens the nitrogen supply valve) and then to the closed position.
5. The high nitrogen pressure (160 psi) delivered when the nitrogen supply valve opened, was above the set point (135 psi) at which the solenoid valve could respond to a "close" signal when the reactor is pressurized.
6. The relief valve remained open until the reactor depressurized.
7. The unit was successfully taken to cold shutdown.

Corrective action:

1. Operation at reduced nitrogen supply pressure (110 psi) was to be implemented.
2. Station procedures were to be revised to require an operator verification check of nitrogen pressure once per shift.

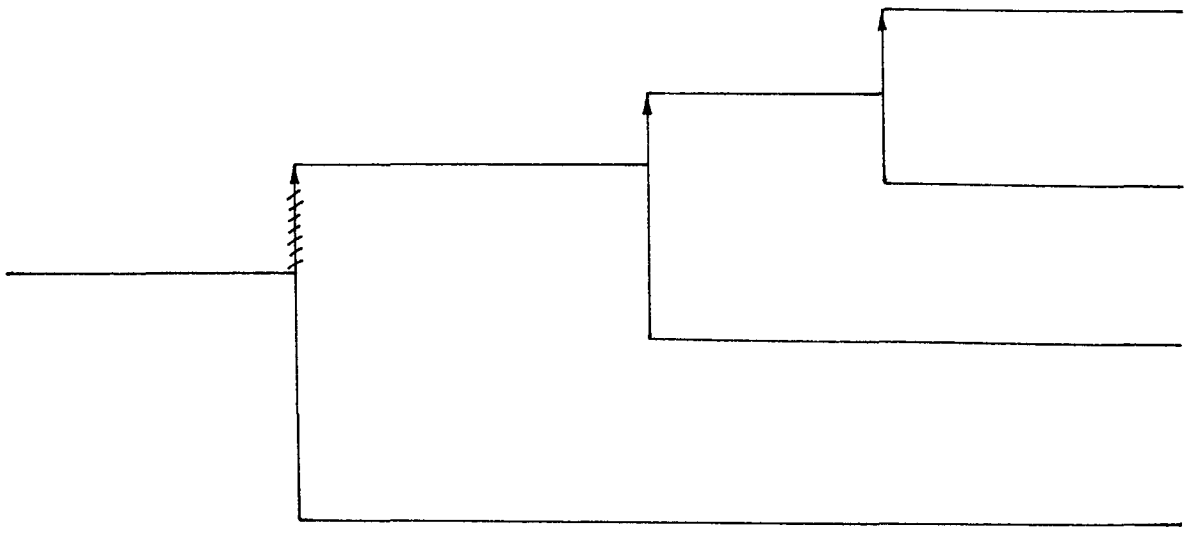
Design purpose of failed system or component:

The nitrogen system provides control gas to actuate the opening and closing of reactor relief valves upon automatic control demands as well as manual demands.

The reactor relief system provides overpressure protection for the RCS.

Reactor operating at full power	Safety relief valve opens due to N ₂ system pressure exceeding design specs for relief valve operators	Reactor is manually tripped	Procedure followed to close the valve results in valve stuck open
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Potential
Severe
Core
Damage

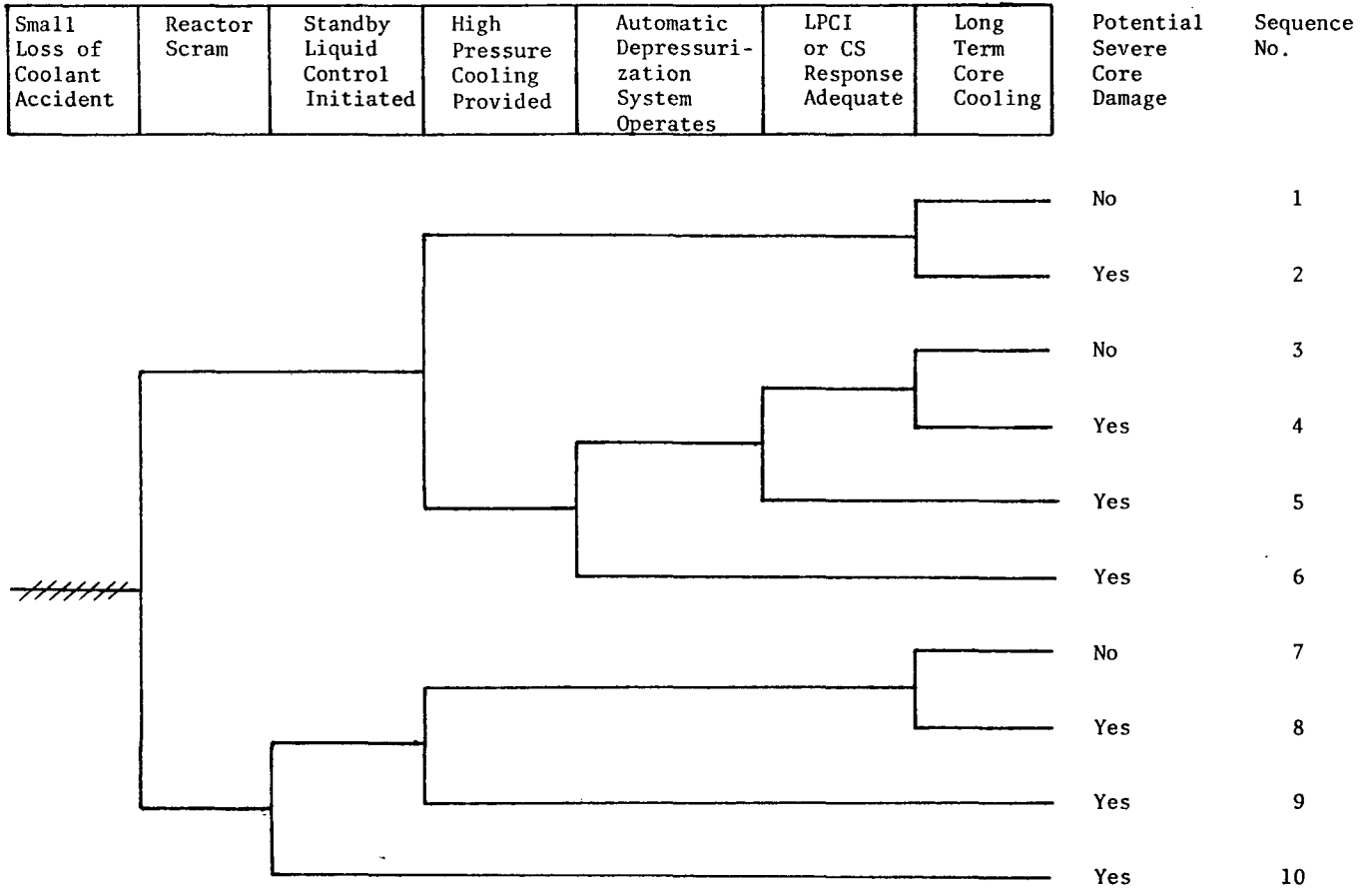


No - reactor successfully shut down

No

No - auto scram and safety injection available

No



NSIC 160497 - Sequence of Interest for Inadvertent Opening of Relief Valve at Pilgrim 1

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 160497

LER NO.: 80-069

DATE OF LER: October 20, 1980

DATE OF EVENT: October 7, 1980

SYSTEM INVOLVED: Pressure relief system

COMPONENT INVOLVED: Relief valve

CAUSE: Excessive nitrogen pressure to valve operator

SEQUENCE OF INTEREST: Main steam line break

ACTUAL OCCURRENCE: Stuck open relief valve

REACTOR NAME: Pilgrim 1

DOCKET NUMBER: 50-293

REACTOR TYPE: BWR

DESIGN ELECTRICAL RATING: 655 MWe

REACTOR AGE: 8.3 years

VENDOR: General Electric

ARCHITECT-ENGINEERS: Bechtel

OPERATORS: Boston Edison Co.

LOCATION: 4 miles SE of Plymouth, Massachusetts

DURATION: N/A

PLANT OPERATING CONDITION: Full power

TYPE OF FAILURE: Design basis event

DISCOVERY METHOD: Operational event

COMMENT: All safety systems were available. See Accession No. 160559 for a similar event at Pilgrim 1 (50-293, LER 80-080, Nov. 14, 1980) but with a different cause.