PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 160559

Date: November 14, 1980

Title: Inadvertent Opening of Relief Valve at Pilgrim 1

The failure sequence was:

1. The reactor was at full power.
2. Liquid nitrogen passing by its ambient air vaporizer froze an inline nitrogen supply regulator in place while it was in the fail-open position, due to oversight in system design.
3. The full pressure nitrogen supply actuated a reactor vessel relief valve's solenoid, which caused the "A" relief valve to open.
4. The valve was manually cycled 4 to 5 times in an attempt to close it, but the valve remained open.
5. The high nitrogen pressure at the relief valve's solenoid prevented closure of the relief valve while the reactor was at operating pressure.
6. The operator reduced core power to 50% and initiated a manual scram.
7. The reactor continued to depressurize. At 340 psig reactor pressure the "A" relief valve was manually cycled and closed.

Corrective action:

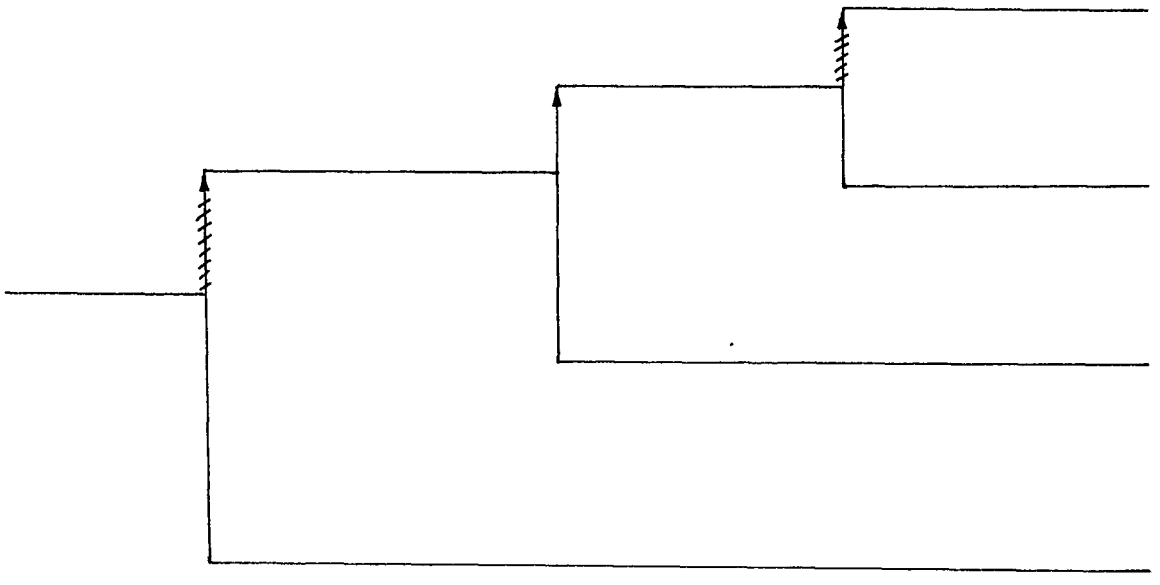
1. The relief valve's solenoid actuator supply was switched from nitrogen to compressed air while changes in the nitrogen system were considered.
2. Replacement of the nitrogen regulator valve was considered along with reduction in the nitrogen supply tank pressure and installation of a nitrogen header relief valve.

Design purpose of failed system or component:

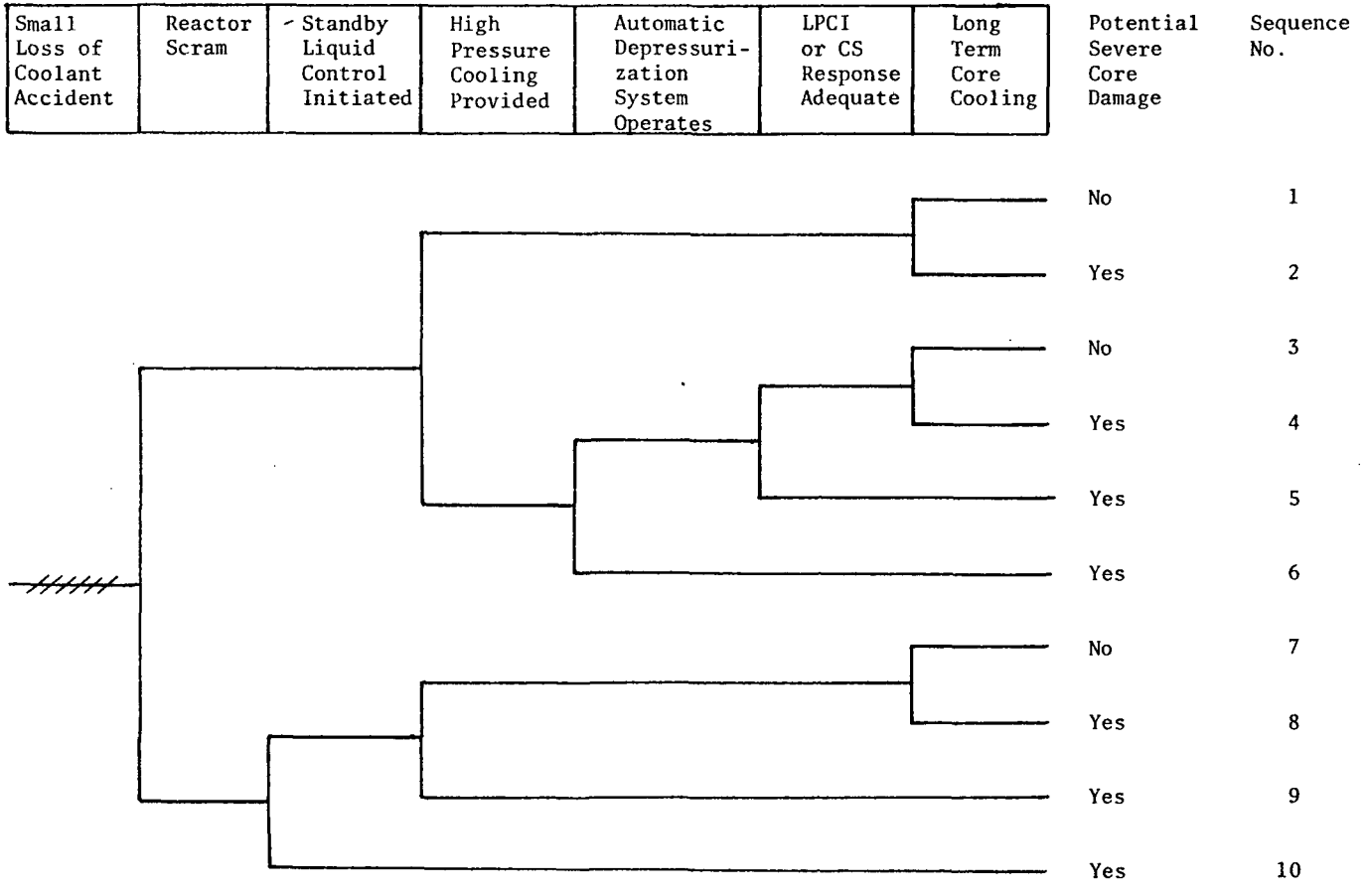
The nitrogen system provides motive power for opening and closing reactor relief valves (among other control functions) upon automatic demands as well as manual demands.

The reactor relief valve provides RCS pressure protection.

Reactor at full power	Failure in nitrogen supply system opens relief valve, resulting in RCS blowdown	Reactor manually scrammed at 50% power	Attempts to close the valve fail until reactor pressure reaches 20 psig	Potential Severe Core Damage



NSIC 160559 - Actual Occurrence for Inadvertent Opening of Reactor Relief Valve at Pilgrim 1



NSIC 160559 - Sequence of Interest for Inadvertent Opening of Relief Valve at Pilgrim 1

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 160559

LER NO.: 80-080

DATE OF LER: November 14, 1980

DATE OF EVENT: October 31, 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: Inadvertent opening and sticking of a reactor relief valve

REACTOR NAME: Pilgrim 1

DOCKET NUMBER: 50-293

REACTOR TYPE: BWR

DESIGN ELECTRICAL RATING: 655 MWe

REACTOR AGE: 8.4 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: Inadequate performance

DISCOVERY METHOD: Operational event

COMMENT: See accession 160497 for a similar event at Pilgrim 1, LER 80-69, but with a different cause.