PRECURSOR DESCRIPTION AND DATA

NSIC Accession Number: 77916

Date: December 29, 1972

Title: Several Valves Malfunction at Oyster Creek

The failure sequence was:

1. An operator error occurred resulting in a turbine trip/reactor trip.
2. The electromatic relief valve lifted as expected.
3. The "D" electromatic relief valve stuck open resulting in a blowdown of approximately 50,000 gal of water.
4. The reactor mode switch broke, preventing the operator from switching from "run" to "start up." Thus as the pressure dropped the MSIVs should have closed at low steamline pressure.
5. One MSIV failed to automatically close.
6. The MSIV closed after manually cycling the valve.

(see attached page)

Corrective action:

1. The failure of the electromatic relief valve was traced to the assembly that prevents the retainer ring from rotating. To prevent recurrence of this failure a new method was introduced to inhibit retainer ring rotation.
2. The reactor mode switch was replaced.
3. A malfunctioning control switch caused the MSIV to fail. This switch was replaced. Plans were made to develop a new MSIV testing schedule and procedure.

Design purpose of failed system or component: (see attached page)

1. Electromatic relief valves provide pressure control in the reactor pressure vessel.
2. The MSIV allows the reactor pressure vessel to be isolated.
3. The isolation condensers provide an alternate heat sink.
4. The vacuum breakers act to prevent the primary containment from exceeding pressure constraints and prevent back flow of water from the suppression pool into the drywell.

Unavailability of system per WASH 1400:* vapor suppression pool: 1.2×10^{-3}

Unavailability of component per WASH 1400:* check valve: $1 \times 10^{-5}/D$, MSIV and isolation valve: $1 \times 10^{-3}/D$

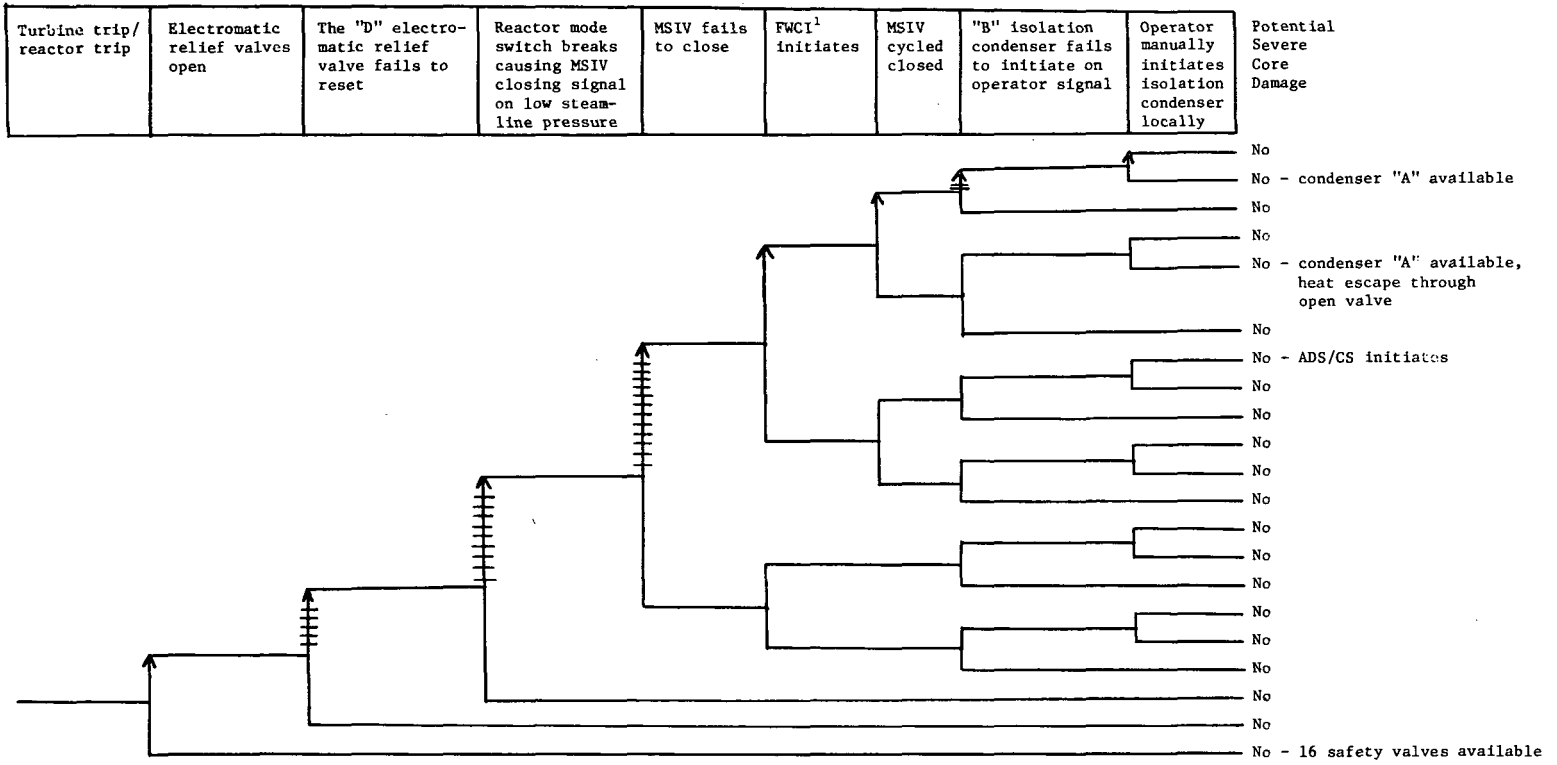
*Unavailabilities are in units of per demand D^{-1}. Failure rates are in units of per hour HR^{-1}.

The failure sequence was: (continued)

7. The return valve on the "B: isolation condenser failed to open even though the valve switch was in the open position.
8. The valve was finally opened manually.

Correction action: (continued)

4. The "B" isolation condenser valve was "frozen" in the closed position which caused the valve motor to fail. The valve was removed, repaired, re-installed and tested satisfactorily.
5. All safety related valves were tested and a vacuum breaker in the suppression pool was found to have failed and another found stuck. Both valves were repaired and tested satisfactorily.



NSIC 77916 — Actual Occurrence of Several Valve Malfunctions at Oyster Creek

[1] FWCI system was presumed to operate.

[2] Only one MSIV failed, thus the core is isolated.

Loss of Coolant Accident	Reactor Maintained Subcritical	HPCI/RCIC Response Adequate	ADS/LPCI CS Response Adequate	Long Term Core Cooling	Potential Severe Core Damage	Sequence No.
Yes					No	1
					Yes	2
					No	3
					Yes	4
					Yes	5
No					Yes	6

NSIC 77916 — Sequence of Interest for Several Valves Malfunctions at Oyster Creek

CATEGORIZATION OF ACCIDENT SEQUENCE PRECURSORS

NSIC ACCESSION NUMBER: 77916

DATE OF LER: January 17, 1973

DATE OF EVENT: December 29, 1972

SYSTEM INVOLVED: reactor control, reactor coolant, isolation condensers

COMPONENT INVOLVED: valves and switches

CAUSE: component failures operator error

SEQUENCE OF INTEREST: loss of coolant

ACTUAL OCCURRENCE: malfunction of several valves

REACTOR NAME: Oyster Creek

DOCKET NUMBER: 50-219

REACTOR TYPE: BWR

DESIGN ELECTRICAL RATING: 650 MWe

REACTOR AGE: 3.65 yr

VENDOR: GE

ARCHITECT-ENGINEERS: Burns and Roe

OPERATORS: Jersey Central Power and Light

LOCATION: 9 miles S of Toms River, New Jersey

DURATION: N/A

PLANT OPERATING CONDITION: scrammed

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

DISCOVERY METHOD: operational event

COMMENT: