

DUKE POWER COMPANY
OCONEE UNIT 1

Report No.: RO-269/77-31

Report Date: January 26, 1978

Occurrence Date: December 29, 1977

Facility: Oconee Unit 1, Seneca, South Carolina

Identification of Occurrence: RCS Pressure Channel Inoperable

Conditions Prior to Occurrence: 90 percent full power

Description of Occurrence:

On December 27, 1977, unidentified Reactor Coolant System leakage of less than 1 gpm was detected. At 2131 RPS Channel A tripped on low pressure/temperature and was placed in manual bypass. At 0200 on December 28 the previously detected leak was determined to be coming from the area of Engineered Safeguard Channel 1 and RPS Channel A Pressure Transmitter. A reactor shutdown was initiated at 0209 due to high Reactor Building (RB) activity. At 0600 personnel entered the RB and determined that pressure switch 1 PS-364 was leaking and valved it out. Reactor power reduction was stopped at 39 percent full power and with the isolation of 1PS-364, RPS Channel A was returned to service..

At 2400 during PT/1&2/0600/01, it was determined that RC Loop A wide range (WR) pressure was indicating high. Further investigation determined that ES Analog Channel 1 WR pressure was indicating high and would not trip at required setpoints. ES Analog Channel 1 was placed in trip condition. Pressure transmitter 1PT-21P, which is located approximately 5 feet from and slightly below 1PS-364 was recalibrated and ES Analog Channel 1 was returned to service.

Apparent Cause of Occurrence:

The diaphragm of pressure switch 1PS-364 evidently failed as steam was seen blowing from the switch. This failure caused RPS Channel A to trip. The steam from the switch failure evidently impacted on and shifted the zero setting of pressure transmitter 1PT-21P. The zero shift caused the high reading on ES Analog Channel 1.

Analysis of Occurrence:

Pressure switch 1PS-364 provides a signal to prevent valves LP-1, -2 from opening with RCS pressure greater than 400 psig. The failed diaphragm caused RPS Channel A to trip. RPS Channels B, C & D remained fully operational during the incident as required by Technical Specifications 3.5.1. Valves LP-1, -2 had been tagged shut prior to this incident.

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The zero setpoint of pressure transmitter 1PT-21P shifted when it was heated by steam from the switch failure. ES Analog Channel 1 which provides a signal for LPI and HPI initiation became inoperable, however, channels 2 and 3 remained fully operational as required by Technical Specification 3.5.1. The health and safety of the public were not endangered by this incident.

Corrective Action:

Pressure switch 1PS-364 is presently valved out and will be replaced during a future outage. Pressure transmitter 1PT-21P was recalibrated and returned to service.