

OYSTER CREEK NUCLEAR GENERATING STATION  
FORKED RIVER, NEW JERSEY 08731

Abnormal Occurrence  
Report No. 50-219/74/12

Report Date

February 25, 1974

Occurrence Date

February 15, 1974

Identification of Occurrence

Violation of the Technical Specifications, paragraph 2.3.7, low pressure main steam line pressure switches RE23A and B were found to trip at pressures less than minimum required value of 860 psig. This event is considered to be an abnormal occurrence as defined in the Technical Specifications, paragraph 1.15A.

Conditions Prior to Occurrence

The plant was operating at steady-state power.

The major plant parameters at the time of the occurrence were:

Power:	Reactor: 1904 MWt
	Electric: 670 MWe
Flow:	Recirc. $59.86 \times 10^6$ lb/hr
	Feedwater: $7.11 \times 10^6$ lb/hr
Reactor Pressure:	1020 psig
Stack Gas:	29,329 $\mu$ Ci/sec

Description of Occurrence

On Friday, February 15, 1974, at 1525, while performing a surveillance test on the four main steam line low pressure switches, it was discovered that RE23A and B tripped at 855 and 853 psig, respectively. These values are below the minimum required trip point of 860 psig, which is derived by adding to the Technical Specification limit of 850 psig head correction factor.

The as found switch settings were:

Test Results

RE23A	855 psig
RE23B	853 psig
RE23C	860 psig
RE23D	861 psig

8103036583

The pressure switches were then recalibrated and checked to actuate as follows:

Test Results

RE23A	860 psig
RE23B	860 psig

Apparent Cause of Occurrence

Design is considered to be the major factor contributing to this event. Switch repeatability is a recognized problem and work is in progress to formulate a final solution. The steps required to achieve this end were delineated in Abnormal Occurrence Report No. 50-219/74/1.

Analysis of Occurrence

As indicated in the bases of the Technical Specification, "The low pressure isolation of the main steam lines at 850 psig was provided to give protection against fast reactor depressurization and the resultant rapid cooldown of the vessel. Advantage was taken of the scram feature which occurs when the main steam isolation valves are closed to provide for reactor shut-down so that high power operation at low reactor pressure does not occur, thus providing protection for the fuel cladding integrity safety limit."

The adverse consequences of reactor isolation occurring at reactor pressure approximately 7 psig below the specified minimum value of 860 psig is limited to those effects attendant to a greater than normal reactor cooldown rate. The fuel cladding integrity safety limit only comes into effect for power operation at reactor pressures less than 600 psig or for power operation greater than 354 MWt with less than 10% recirculation flow. Therefore, the consequences of a 7 psig lower than normal reactor isolation and scram set point has no threatening effect whatsoever on the fuel cladding integrity.

The effects of a too rapid cooldown due to the lower isolation pressure are inconsequential since there is approximately a 1°F difference between the saturation temperature for 860 psig and 853 psig.

Corrective Action

Continuing corrective actions being taken at this time are as follows:

1. Investigation is being conducted into the basis for the steam line low pressure setting of 850 psig. Development of a Technical Specification change to lower the set point will follow if results of transient analyses indicate this possibility.

2. Recommendations to possibly reduce or eliminate the sensor set point change problem have been received. It was reported that General Electric tests on a pulsating line to simulate plant conditions show that precycled Barksdale switches show improvement but that the switches still do not meet 1% repeatability. General Electric, therefore, recommended an Ashcroft switch as it is more accurate. The Ashcroft catalog number is 61 S 6080 BN20-06L-1028.

As a result, one switch of each type (precycled Barksdale and Ashcroft) are being purchased for test and evaluation at Oyster Creek.

#### Failure Data

Manufacturer data pertinent to these switches are as follows:

Meletron Corp. (subsidiary of Barksdale)  
Los Angeles, California  
Pressure Actuated Switch  
Model 372  
Catalog No. 372-6SS49A-293  
Range 20-1400 psig  
Proof Psi. 1750 G

Previous Abnormal Occurrence Reports involving these switches are:

1. Letter to Mr. A. Giambusso from Mr. D. A. Ross dated December 24, 1973.
2. Abnormal Occurrence Report No. 50-219/74/1.
3. Abnormal Occurrence Report No. 50-219/74/9.
4. Abnormal Occurrence Report No. 50-219/74/10