Jersey Central Power & Light Company

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MEMBER OF THE General GPU ELECTRIC POWER COMPANIES SYSTEM Public Utilities Corporation

January 15, 1974

Mr. A. Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Giambusso:

Subject: Oyster Creek Station
Docket No. 50-219
Abnormal Occurrence Report No. 50-219/74/1

The purpose of this letter is to forward to you the attached Abnormal Occurrence Report in compliance with paragraph 6.6.2.a of the Technical Specifications. The attached report was prepared in accordance with the "Standard Format for Reporting Abnormal Occurrences" given in Appendix A of Regulatory Guide 1.16, Revision 1. It is planned that all future Abnormal Occurrence Reports will be prepared and forwarded in this manner.

Enclosed are forty copies of this submittal.

Very truly yours,

Donald A. Ross

Donald A. Ross
Manager, Nuclear Generating Stations

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Enclosures

cc: Mr. J. P. O'Reilly, Director
Directorate of Regulatory Operations, Region I

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OYSTER CREEK NUCLEAR GENERATING STATION
FORKED RIVER, NEW JERSEY 08731

Abnormal Occurrence
Report No. 50-219/74/1

Report Date:

January 14, 1974

Occurrence Date:

January 4, 1974

Identification of Occurrence:

Violation of the Technical Specifications, paragraph 2.3.7, low pressure main steam line pressure switch (RE23C) was found to trip at a pressure less than 850 psig. Additionally, in the investigation and review of this event by the PORC, it was determined that an instrument sensing line head correction of 9 to 10 psig was not accounted for in the original switch trip set point of 850 psig, thus resulting in a condition whereby all the RE23 sensors have been set in violation of this specification since initial startup. This event is considered to be an abnormal occurrence as defined in the Technical Specifications, paragraph 1.15A and G.

Conditions Prior to Occurrence:

The plant was operating at steady state power.

The major plant parameters at the time of the event were as follows:

Power - Core, 1830 MWt
Elec., 642 MWe (g)
Flow - Recirc., 60.2×10^6 #/hr.
Feed:, 6.77×10^6 #/hr.
Stack Gas - 24,000 μCi/sec.

Description of Occurrence:

On Friday, January 4, 1974, at 1105, while performing routine surveillance testing on the four main steam line low pressure switches, it was discovered that RE23C tripped at 841 psig. This was 9 psig below its set point of 850 psig. As part of the review process for this occurrence, it was discovered that the 850 psig set pressure did not take into account the instrument sensing line head correction. To account for this factor, the switch settings should have been as follows:

RE23A - 859 psig
RE23B - 860 psig
RE23C - 859 psig
RE23D - 860 psig

As found switch settings were:

RE23A - 850 psig
RE23B - 851 psig
RE23C - 841 psig
RE23D - 851 psig

Apparent Cause of Occurrence:

Design, procedure and unusual service condition are factors contributing to the cause of this event.

Sensor drift is a recognized problem and work is in progress to formulate a final solution. An investigative program has been initiated by the manufacturer, but as yet, a formal report of the results has not been issued.

The failure to properly account for the instrument sensing line head pressure has been attributed to an apparent improper application of the Technical Specification requirements.

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 shutdown 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 pressures approximately 9-10 psi below the specified minimum value of 850 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 9-10 psi 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 set pressure are inconsequential since there is only about 1°F difference between the saturation temperature for 850 psig and 840 psig.

The adverse safety effect of RE23C actuating at 841 psig is in the loss of system redundancy. The other three sensors, RE23A, B, and D, would have limited the adverse consequences to those previously discussed.

Corrective Action:

The pressure switch RE23C, upon discovery of the condition, was recalibrated and checked to actuate at 852 psig.

The following actions are planned to prevent repetition of this event:

1. Evaluate "hydraulic noise" data collected and conduct further testing to determine whether, as an interim measure, the operating set point can be increased above the 850 psig plus head correction value, and still provide some reasonable operating margin to avoid spurious trips. (Letter to Mr. A. Giambusso from Mr. D. A. Ross, dated December 24, 1973.) It should be noted that the sensors have not been recalibrated to take into consideration the head correction factor as of this time. In making this decision, consideration was given to the test data already collected and the very minimal adverse safety significance of a 9-10 psi lower than required set pressure.

2. To insure the avoidance of spurious trips, pursue an investigation into the basis for the steam line low pressure setting of 850 psig and develop a Technical Specification change to lower the set point if results of transient analyses indicate this possibility.

3. Evaluate vendor recommendations as soon as they are available to possibly reduce or eliminate the sensor set point drift problem. (Letter to Mr. A. Giambusso from Mr. D. A. Ross, dated December 24, 1973.)

Failure Data:

Manufacturer data pertinent to these switches are as follows:

Meletron Corporation (subsidiary of Barksdale)
Los Angeles, California
Pressure Actuated Switch
Model 372
Catalog #372-6SS49A-293
Range 20-1400 psig
Proof psi 1750 G

ADDENDUM TO ABNORMAL OCCURRENCE REPORT NO. 50-219/74/1

On Thursday, January 10, 1974, prior to recalibrating the low pressure main steam line sensors to take the head correction factor into account, a surveillance check was again performed on these sensors. In addition, set point repeatability of the sensors was also checked by observing two consecutive trip points on the test. The following results were obtained:

	Test #1	Test #2	Test #3	Final "As Left" Set Point
RE23A	832	840	---	860
RE23B	845	840	---	860
RE23C	855	875	875	860
RE23D	845	845	---	860

Upon reviewing the results of this surveillance check on Friday, January 11, 1974, it was decided to perform the check again for repeatability. The "as found" set points of this calibration check yielded the following results:

	Before Calibration		After Calibration
	Test #1	Test #2	
RE23A	862	862	860
RE23B	860	860	860
RE23C	860	860	860
RE23D	850	851	860