Jersey Central Power & Light Company

MADISON AVENUE AT PUNCH BOWL ROAD • MORRISTOWN, N. J. 07960 • 539-6111

February 8, 1973

Mr. J. P. O'Reilly, Director
Directorate of Regulatory Operations, Region 1
United States Atomic Energy Commission
970 Broad Street
Newark, New Jersey 07102

Dear Mr. O'Reilly:

Subject: Oyster Creek Station -- Docket No. 50-219
Control Rod Drive Selector Switch Failure

In response to a request from Mr. F. Cantrell, we are making the following report as an item of interest:

While in the process of a reactor startup, the reactor operator was unable to select the next sequence rod. It was recognized that approximately 20 control rods, which were already withdrawn, could not be moved by manual control. At this point in time, a total of 57 were withdrawn from the core. All the affected control rods could have been scrammed had it become necessary. A jumper was placed across the last switch the operator selected and all control rods were inserted in normal sequence thereby shutting the reactor down.

An investigation revealed that normally closed contact 1-2 of select switch 4S-14-11 had failed in the open position. Since the circuit is arranged in a series logic configuration for all 137 rods, then all rods downstream of number 14-11 could not be selected for manual positioning. Upon replacing the selector switch (Licon switch, part number 01-365620) the circuit returned to normal.

The ability of the reactor protection system to scram all rods with a failed select switch was never jeopardized. The subject was reviewed with the General Electric Company, who advised that DRL was aware that the rod select system was not a safeguard system and that it was possible for these switches to fail in this manner. A maintenance procedure has been developed to facilitate changing the failed selector switch should this event occur while the plant is at power.

We trust you find this report fully responsive to your interest in this operating experience.

Very truly yours,

Donald A. Ross

Donald A. Ross
Manager, Nuclear Generating Stations

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overexposure report attached.

Mr. F. E. Kruesi
Director of Regulatory Operations
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Kruesi:

Subject: Oyster Creek Station
Docket No. 50-219
Personnel Radiation Overexposure

The attached report details the information surrounding the overexposure of three of our personnel at the Oyster Creek Nuclear Generating Station on January 1, 1973 and is being submitted in accordance with the requirements of 10CFR20, paragraph 20.405(a)(1). According to the requirements in paragraph 20.405(c), each of the individuals noted in Enclosure 1 will be notified regarding the nature and extent of overexposure.

Upon discovery of the condition, greater controls were immediately instituted to prevent a recurrence of the situation and more stringent requirements will be instituted with regard to sampling frequency and access control for future maintenance activities.

Very truly yours,

Donald A. Ross

Donald A. Ross
Manager, Nuclear Generating Stations

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Attachments

cc: Mr. J. P. O'Reilly, Director
Directorate of Regulatory Operations, Region 1

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REPORT OF OVEREXPOSURES

As a result of the reactor scram on December 29, 1972 and the attendant problems which were experienced, all five relief valves were being removed from the main steam lines for inspection and ultimate modification. During the initial stage of this maintenance period, three individuals were exposed to concentrations of radioactive material in excess of the amounts specified in Appendix B, Table 1, Column 1 of 10CFR20. A description of the incident follows:

On December 31, 1972, samples taken of containment airborne concentrations were such that access to the containment was unlimited (168 hours) for the maintenance activities involved. A routine containment air sample taken at 8:15 a.m., January 1, 1973, indicated an increased airborne concentration over the previous day with the major contributor, and in fact the only contributor of significance, being Xe^{133}. Access was permitted to the containment but with a reduced stay time of 15.7 hours. Based upon this fact, an increased sampling frequency was initiated and an investigation commenced in an effort to determine the source of this activity. A second sample, taken nearly an hour later at 9:10 a.m., indicated the levels of Xe^{133} had measurably increased, reducing the stay time to 12.3 hours. It was decided at that time to count still a third sample after being in service for a shorter time interval. Tentative plans were made to stop all work in the containment if the sample showed an increasing airborne level which would limit access to five hours or less. Forty minutes later, at 9:50 a.m., the sample was counted and it was discovered that the levels of Xe^{133} had again more than doubled; however, the subsequent access time was reduced to only 6.1 hours and maintenance activities were permitted to continue particularly in light of the fact that a work break was less than two hours away.

By this time, the source of activity had been determined to be originating from the open relief valve flanges which were being cleaned up by several mechanics. Preparations were made to start the condenser mechanical vacuum pump and to perform the valving required in the main steam system so that the gasses coming out of the reactor coolant could be evacuated to the condenser instead of diffusing into the primary containment atmosphere. Directions were given to tightly cover any of the remaining open relief valve flanges and to insure that prior to proceeding to work on any more flanges airflow would be checked to be in the inward direction. In addition, the containment airlock interlock mechanism was made up requiring that at least one of the two airlock doors be closed at all times and thereby insuring that the containment atmosphere was being evacuated via its normal path. However, the fourth sample taken at 11:25 a.m. indicated a Xe^{133} concentration of 4.76×10^{-4} $\mu c/ml$ which limited the allowable stay time to just less than one hour. By the time the sample had been analyzed and calculated, all personnel in the containment had stopped work for their normal break.

At that time, access to the containment was restricted until further samples could be taken and the airborne activity found to have decreased to more acceptable levels. Preliminary calculations were made which indicated that three personnel were in the containment during the period of time involved so that the requirements of 10CFR20, paragraph 20.103(b) were not met. The extent of the occupancy time ranged from 37% to 51% above the allowable time limits. Instructions were given to prevent these affected personnel from gaining access to any area of the plant where airborne activity concentrations were of such a nature that access would not be unlimited. In addition, the increased containment air sampling frequency was maintained and a more strict criteria for access was instituted to insure that no additional personnel overexposures occurred as a result of abnormal concentrations of airborne activity. This, coupled with the operation of the mechanical vacuum pump, the covering of the relief valve flange openings, and the maintenance of the containment airlock interlock, prevented any further exposure problems during the progress of maintenance work in the containment.

Enclosure 1 lists the personnel involved, the average concentrations of Xe^{133} and Xe^{135} to which they were exposed, the permissible stay times based upon the average concentrations, the period of time actually within the containment, and the estimated extent of excessive exposure during this period.

Measures will be taken during future maintenance activities to sample airborne concentrations at a greater frequency when open flanges to the reactor coolant system exist and to make provisions, if possible, to insure that activity cannot diffuse into the surrounding atmosphere. Additionally, more stringent limits will be imposed on access criteria to areas of airborne radioactivity concentrations and plotting of any unanticipated changes in concentration will be initiated to permit basing access decisions on the anticipated future trend.