



April 22, 1975

Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Rusche:

ABNORMAL OCCURRENCE NO. 251-75-1
APRIL 22, 1975
OCCURRENCE DATE: APRIL 13, 1975
TURKEY POINT UNIT NO. 4

A. CONDITIONS PRIOR TO OCCURRENCE

The reactor was in refueling shutdown condition, the reactor coolant temperature was approximately 102 F, the reactor vessel head was removed, the refueling cavity and refueling canal were filled with borated water with a boron concentration of 2,000 ppm. There was no movement of fuel in progress.

The spent fuel pit (SFP) contained approximately 306,000 gallons of water with a boron concentration of 2,000 ppm at a temperature of 130 F. There were 53 irradiated fuel assemblies stored in the SFP at the time of this occurrence. An emergency SFP cooling pump with hose connections was in operation while the normal SFP pump was being repaired.

B. DESCRIPTION OF OCCURRENCE

The SFP cooling pump bearing failed and the pump was removed from service on April 12, 1975 about 8:30 A.M.

Based on a review of the repairs required to return the pump to service, responsible plant management personnel concluded that the estimated time to repair the SFP pump would exceed the 24 hours specified in Off-Normal-Condition Procedure No. 3508.1 for the SFP cooling pump to be out of service with irradiated fuel assemblies in the SFP.

An emergency SFP pump was installed, tested, and placed in service to establish cooling flow thorough the SFP cooling system by 2:25 A.M., April 13, 1975.

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An operator discovered water flowing out of the SFP pump and heat exchanger room about 8:25 A.M., April 13, 1975. An immediate investigation revealed that the emergency SFP pump discharge hose connection had separated from the SFP cooling system piping. Immediate operator action was to stop the flow of water by stopping the pump and closing the pump suction and discharge valves.

The affected areas were surveyed and identified. Temporary barriers were installed and radiation caution signs were conspicuously posted to prevent inadvertent entry by unauthorized personnel.

A larger capacity pump was installed utilizing stainless steel pipe connections to replace the smaller capacity emergency SFP pump. The larger capacity pump remained in service until the normal SFP pump was repaired.

C. DESIGNATION OF APPARENT CAUSE OF OCCURRENCE

After review, analyses, and evaluation it was concluded that procedure deficiencies were the cause of this occurrence. Procedures did not specify the type of pump and suitable connections.

D. ANALYSIS OF OCCURRENCE

The quantity of SFP water released was calculated to be 7,400 gallons by measuring the change in SFP level. Approximately 4,440 gallons was recovered in the liquid waste holdup tank through the drain system. Approximately 2,960 gallons of water was absorbed by the ground in a controlled area adjacent to the plant auxiliary building.

Analyses of samples of SFP water indicated an activity of 0.0028 microcuries per milliliter with Cobalt-58 as the predominate radionuclide. Cobalt-58 with a half-life of 71 days is formed by the activation of impurities in the reactor coolant system.

SFP water released was less than one percent of the allowable quarterly liquid release limit.

There were no injuries to personnel and no exposure of personnel to excessive concentrations of radioactive materials as a result of this occurrence.

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The temperature of the water in the SFP was monitored during the period the SFP cooling pump was out of service. The SFP water temperature rise during this period was less than calculated and reached a maximum temperature of 137 F, thereby demonstrating the conservatism of our calculations.

The conditions during this occurrence were reviewed, analyzed, and evaluated. It was concluded that the 53 irradiated fuel assemblies were protected by maintaining proper water level in the SFP and the affected areas were confined to a controlled area adjacent to the plant auxiliary building. Therefore, neither the irradiated fuel assemblies nor the health and safety of the public were endangered by this occurrence.

E. CORRECTIVE ACTION

The areas affected by this occurrence were cleaned and the radioactivity levels reduced to background.

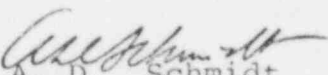
The SFP pump was repaired by replacing the failed bearing, pump shaft, and pump seals. The pump was tested to demonstrate satisfactory performance and returned to service.

Off-Normal-Condition Procedure No. 3508.1 will be revised to correct the deficiencies identified in this occurrence.

F. FAILURE DATA

This is the first failure of the SFP cooling system piping pressure boundary.

Very truly yours,


A. D. Schmidt
Vice President
Power Resources

VTC/cpc

cc: Mr. Norman C. Moseley
Jack R. Newman, Esquire