



November 26, 1974

Mr. Edson G. Case, Acting Director
Directorate of Licensing
Office of Regulation
U. S. Atomic Energy Commission
Washington, D.C. 20545

Dear Mr. Case:

UNUSUAL EVENT NO. 250-74-5
TURKEY POINT PLANT UNIT NO. 3
SPENT FUEL PIT AND REACTOR
REFUELING CAVITY LEAKS

The following unusual event report is submitted in accordance with Technical Specification 6.6.2b.

Filling of the Turkey Point Unit No. 3 spent fuel pit and reactor refueling cavity during refueling has revealed leaks in the stainless steel liners of both structures. These leaks were evidenced by water in the leak monitoring channel as well as water seeping through construction joints in the concrete walls.

The leakage from the spent fuel pit liner was found to be approximately 1 gpm. Measurements taken during pre-operational testing in 1972 showed the leakage at that time to be two gallons per hour. While it was known that some leakage existed, it was expected that this minor leakage could be handled by the waste disposal system. Leakage through the concrete was not anticipated. Review of design criteria, codes, and standards has revealed that leak tightness was not a criterion for the concrete structure. The leakage through the concrete occurs when the leak monitoring valves are closed filling the space between the concrete and the liner with water. Closing this valve was intended to be the normal mode of operation to reduce the load on the waste disposal system when excessive leakage was present.

Temporary corrective action for the spent fuel pit leak consisted of installing a small head tank connected to the monitoring channels providing a supply of demineralized water, at a slightly higher head, to fill the spaces between the liner and the concrete. This forces leakage into the spent fuel pit and tends to leach out boric acid and radioactive contamination in the concrete. The effect of this head tank on dilution of the spent fuel pit has been evaluated and it has been determined that no significant dilution will occur.

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The activity release to the environment from the spent fuel pit has been calculated and found to be minimal. The predicted quarterly release is 6.15 mCi which is 0.12% of the Turkey Point Technical Specification quarterly limit.

The total reactor refueling cavity leakage is estimated at 25-30 gpm. Approximately 3 gpm of this leakage is through the leak monitoring channels. The additional 22-27 gpm leakage is either from the liner or from the vessel to cavity seal. Determination of the magnitude of the latter cannot be made due to high radiation levels from the reactor vessel. Here again, leakage through the concrete due to backup in the leak monitoring channels was noted.

The refueling cavity leakage is being pumped through the spent fuel pit demineralizer and back to the cavity.

Makeup water to the refueling cavity and spent fuel pit is supplied from the refueling water storage tank using the refueling water purification pump. The spent fuel pit has level alarms which annunciate in the control room when the level reaches 2" above or 7" below setpoint. This serves to alert the operators of any significant water level change.

Florida Power & Light Company has retained a consultant to determine a solution to this problem. Their preliminary evaluation is that the detrimental effect of the borated water on the concrete is negligible. They will continue to work with Florida Power & Light Company to determine permanent corrective action.

A supplement to this report will be issued when permanent corrective action has been taken.

Very truly yours,



A. D. Schmidt
Director of Power Resources

GEL:df

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