Central Files
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DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083

September 26, 1977

Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
Suite 1217
230 Peachtree Street, Northwest
Atlanta, Georgia 30303

RE: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Mr. O'Reilly:

Pursuant to the requirements of Oconee Nuclear Station Technical Specification 6.6.2.2.d, this report is submitted describing a condition in which a measured level of radioactivity exceeded the control level by greater than 10 times.

On September 20, 1977 analytical results of bottom sediment samples collected in August, 1977 were reviewed. Given below is a summary of the pertinent results of the radioactivity concentration of these samples.

Sample Location	Type of Sample	Radionuclide Concentrations pCi/g (dry)	
000.5 One mile radius of site and Lake Keowee (Control)	Bottom Sediment	Cs-137 Cs-134	< 2.0E-1 < 1.9E-1
005.2 Hwy. 27 at Bridge	Bottom Sediment	Cs-137 Cs-134	4.9E0 3.0E0

The expected buildup of activity in sediment downstream of the station effluent release point may be estimated from the shoreline deposit model (EQT A-5) on page 1.109-30 of Regulatory Guide 1.109. The specific information required for the model is the location water concentration of each radionuclide found in the sediment samples and the station life to date (4 years). Since Cs-134/137 concentrations are rarely detectable at the 005.2 location, the tailrace Cs-134/137 concentrations (which are detectable) were related to the 005.2 location by comparing dilution and dispersion of tritium between the tailrace and the 005.2 location. For

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tritium an average dilution factor of roughly 10 has been observed between the tailrace and the 005.2 location. This factor was applied to the average Cs-134/137 tailrace concentration from January through December, 1976 to derive the water concentrations given in the following table. This table provides a comparison of expected and actual concentrations.

Radionuclide	Water Concentration	Expected Sediment Concentration	Actual Sediment Concentration
	µCi/ml	pCi/g	pCi/g
Cs-137	2.0E-8	1.0E1	4.9E0
Cs-134	1.0E-8	3.0E0	3.0E0

With bottom sediment samples, the calculated or expected concentrations of radionuclides, based on the diluted tailrace concentrations, are comparable to those actually determined by laboratory analyses for all radionuclides. Therefore, the measured results of this sample are within the expected values of radionuclide concentrations in sediment downstream of Oconee Nuclear Station.

Very truly yours,

William O. Parker, Jr.

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