

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

Central File
50-269
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WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

January 28, 1977

TELEPHONE: AREA 704
373-4083

Mr. Norman C. Moseley, Director
U. S. Nuclear Regulatory Commission
Suite 818
230 Peachtree Street, Northwest
Atlanta, Georgia 30303

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

Dear Mr. Moseley:

Pursuant to the requirements of Oconee Nuclear Station Technical Specification 6.6.2.2 c and d, this report is submitted describing conditions in which measured levels of radioactivity exceeded the control levels by greater than ten times, and describing conditions in which measured levels of radioactivity exceeded the control level by greater than four times, but less than ten times.

On January 24, 1977 analytical results of composite water supply samples collected in October, November, and December, 1976 were reviewed. Given below is a summary of the pertinent results of the radioactivity concentration of these samples:

<u>Sample Location</u>	<u>Type Sample</u>	<u>Tritium Concentration</u>
004.1 Seneca(Control)	Raw Water	(1.90 ± 0.70) E-07 µCi/ml
006.1 Clemson	Raw Water	(1.85 ± 0.13) E-06 µCi/ml
012 Anderson	Raw Water	(7.70 ± 0.80) E-07 µCi/ml
004.1 Seneca(Control)	Finished Water	(1.70 ± 0.70) E-07 µCi/ml
006.1 Clemson	Finished Water	(1.62 ± 0.13) E-06 µCi/ml
000.3 Bridge N. of Site on Hwy. 183 Connecting Canal (Control)	Surface Water	(3.60 ± 0.90) E-07 µCi/ml
000.7 Bridge S. of Site on Hwy. 183	Surface Water	(3.01 ± 0.18) E-05 µCi/ml
005.2 Hwy. 27 Bridge at Newry	Surface Water	(3.58 ± 0.28) E-06 µCi/ml

<u>Sample Location</u>	<u>Type Sample</u>	<u>Tritium Concentration</u>
013 Hartwell Reservoir, 5.8 Miles S. of Keowee Dam	Surface Water	(1.84 ± 0.17) E-06 µCi/ml

Tritium concentrations in the water samples collected are dependent upon the tritium concentrations of liquid effluent released from the station. For the months of October, November, and December, 1976 a total of 461 Curies of tritium were released from the station in liquid effluents. The maximum tailrace concentration of tritium was 3×10^{-3} µCi/ml. The average tailrace concentration of tritium was 1.52×10^{-6} µCi/ml. The station's objective (Technical Specification 3.9) in making effluent releases is to maintain the average concentration of tritium in liquid effluents upon release from the Restricted Area to not more than 5×10^{-6} µCi/ml. Technical Specification 3.9.2 specifies that the quarterly average concentration of tritium released from the Restricted Area shall not exceed 1×10^{-5} µCi/ml. Therefore, it can be seen that the average tritium concentration for the quarter in liquid effluents is within the objective concentration and well below the specified quarterly average concentration.

Dilution and dispersion of tritium in liquid effluents between Oconee Nuclear Station and the Clemson water intake has been calculated using the equation for instantaneous release taken from the U. S. Geological Survey Paper No. 443-B, "Dispersion of Dissolved or Suspended Materials in Flowing Streams" by Robert E. Glover (1964), p.5. This equation accounts for longitudinal dispersion only. Conservatism was used in selecting parameters for substitution in the instantaneous release equation to determine the concentration of effluents at the Clemson water intake. These assumptions were (1) the elevation of Lake Hartwell is 654.00 feet and (2) the flow of the Keowee River is 1100 cfs, the yearly average. Listed below are the resulting calculated concentrations of tritium at the Clemson water intake using the above method.

October	1.95×10^{-6} µCi/ml
November	1.72×10^{-6} µCi/ml
December	0.93×10^{-6} µCi/ml
Average	1.53×10^{-6} µCi/ml

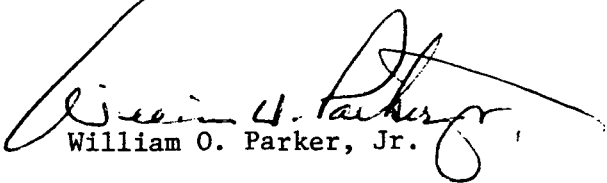
These calculated tritium concentrations are nearly the same as those observed; with water samples collected over October, November, and December, 1976 at the Clemson water intake having an average tritium concentration of about 1.53×10^{-6} µCi/ml. Therefore, the observed concentrations are within the limits of conservative calculated values.

The Final Environmental Statement for Oconee states that "the largest estimates of dose to the individuals from liquid effluents are at Clemson and Pendleton where drinking water is withdrawn from the Keowee River. The radionuclide

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making the most important contribution to dose at these locations is tritium (more than 50%)." The dose estimate for any individual consuming Clemson water containing 1.53×10^{-6} $\mu\text{Ci/ml}$ of tritium is 0.15 mrem/year if these tritium concentrations were maintained over the year. This estimate of dose is less than 0.5% of the dose from natural background and less than 0.1% of the limits of 10CFR20. Therefore, it is concluded that the observed anomalous tritium concentrations do not adversely affect public health and safety.

Very truly yours,



William O. Parker, Jr.

LJB:ge