



TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

February 24, 1975

Mr. Donald F. Knuth, Director
U.S. Nuclear Regulatory Commission
Washington, DC 20545

Dear Mr. Knuth:

On January 15, 1975, airborne radioactivity was discovered in the standby gas treatment system (SGTS) facility at Browns Ferry Nuclear Plant; a report of the initial discovery is included in Office of Inspection and Enforcement Report No. 50-259/75-2 and 50-260/75-2. Investigation has disclosed that a small flow path exists for gases in the plant stack to backflow through an idle standby gas treatment system and escape from that system through any leakage path which might be present.

During the investigation, it was determined that unmonitored radioactive material was being released from the roof vents on the standby gas treatment building to an uncontrolled portion of the plant restricted area. Immediate action to stop the release was to put the SGTS into operation.

A telephone report was made on January 23, 1975, to the NRC Atlanta Regional Office reporting the event as one that would probably require a 30-day written report according to 10 CFR Part 20.405. Subsequent analysis indicates a 30-day written report is not required, but we are submitting this report as a followup to the telephone report.

Air samples were taken. For the isotopes detected, realistic but conservative calculations show that in the vicinity of the release point summations of concentration divided by MPC values from Table II of Appendix B to 10 CFR Part 20 ($\sum(C_A/MPC_A + C_B/MPC_B + C_C/MPC_C \dots)$) ranged from 0.38 to 2.51. Based upon the fact that continuous exposure at MPC levels gives an exposure of 500 mrem/year (0.06 mrem/hour), the realistic estimate of dose to workers in the vicinity of the release point would range from 1 mrem to 6 mrem per 40-hour workweek.

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Mr. Donald F. Knuth

February 24, 1975

In addition to this realistic dose estimate, an estimate of the maximum credible dose to workers within the uncontrolled portion of the plant restricted area has been made for the worst case workweek (January 13-17, 1975) based upon the following conservative assumptions:

1. The release rate from the SGTS roof vents is continuous at the highest monitored concentration (January 17, 1975) and at the measured release flow rate.
2. An individual stands very close to the SGTS building roof vent for a total of 40 hours.
3. A conservative windspeed (less than the average for the week) exists throughout the 40 hours, and the wind direction is constant and oriented to produce a maximum dose to the individual.

The estimate of the maximum credible total dose to an individual using the above assumptions is 68.1 mrem.

It is probable that this release condition existed before January 13, 1975; however, the average release rate up to January 10, 1975, would have been less than 1 percent of that used to estimate the maximum credible dose and less than 10 percent for the period January 10-13, 1975. The basis for these conclusions is that the concentration of airborne radioactivity being released from the SGTS roof vents is proportional to the plant stack airborne radioactivity release rate. Up to January 10, 1975, the average plant stack release rate was less than 1 percent of that existing on January 17, 1975 (when the most active monitored SGTS roof vent sample was obtained) and for the period January 10-13, 1975, less than 10 percent of the January 17, 1975, plant stack release rate.

To prevent further releases from the SGTS building roof vents, the following course of action is being pursued:

1. TVA is developing a design to prevent backflow from the plant stack into the SGTS.
2. A modification is under study to provide a continuous air monitor in the SGTS building to alert plant personnel to increasing radiation levels.

Mr. Donald F. Knuth

February 24, 1975

3. The SGTS will be run during periods of potential backflow from the plant stack into the SGTS until a method to prevent this backflow is implemented.

Very truly yours,

Frederic W. Gilleland

62 J. E. Gilleland
Assistant Manager of Power