URFO:TTO Docket No. 40-1341 04001341670E

MEMORANDUM FOR: Docket File No. 40-1341

FROM:

Thomas T. Olsen, Project Manager Licensing Branch 1 Uranium Recovery Field Office, Region IV

SUBJECT: REVIEW OF THE 10 CFR 40.65 ENVIRONMENTAL MONITORING REPORT FOR THE TENNESSEE VALLEY AUTHORITY'S EDGEMONT MILL FOR NOVEMBER 1, 1987 THROUGH APRIL 30, 1988

By letter dated July 26, 1988, the Tennessee Valley Authority (TVA) submitted an environmental monitoring report for the period November 1, 1987 through April 30, 1988, in compliance with 10 CFR 40.65 and License Condition Nos. 14, 24 and 27 of Source Material License SUA-816. This memorandum presents the URFO staff review of this data with respect to past data and applicable standards.

Air Monitoring

The atmospheric radiological monitoring network consists of continuous low-volume air sampling at five locations: west of the mill site in the town of Edgemont (EG-02), south of the mill site in Cottonwood Community (EG-03), southeast of the mill site about 500 meters east of the primary haul road (EG-04), south-southeast of the mill site about 500 meters east-southeast of disposal site (EG-05), and at a control location 3,000 meters northeast of the mill site (EG-01). The report stated that the air samplers identified as "EG" are located with the nonradiological total suspended particulate (TSP) high-volume air samplers. Gross alpha and beta analyses are performed on samples collected weekly, while monthly composites are analyzed for total uranium, thorium-230, radium-226 and lead-210.

The data indicated that the locations, parameters, collection frequencies and lower limits of detection (LLDs) were as required by License Condition No. 14. The maximum concentration for all radionuclides was less than 2 percent of their respective MPCs for unrestricted areas.

Station EG-01 showed a gross alpha measurement of approximately 22 percent of MPC. The gross beta measurements at all samplers averaged approximately 2.4 percent of MPC.

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Surface Water

Monthly surface-water samples were collected at two control locations, at four locations along Cottonwood Creek and in two locations along the Cheyenne River. Analyses were performed for gross beta, U-nat, Ra-226 and Th-230. Average gross beta values downstream of the mill were 524 pCi/l, which is approximately 1,747 percent of MPC. The highest gross beta values upstream and downstream of the mill were reported as 1,943 and 2,917 percent of the MPC, respectively. The highest gross beta values exhibited at both the control and indicator stations are consistent with activity measurements recorded in all previous years. This supports the licensee's premise that this is a natural condition; however, high beta activity could also result from continuous blowing of materials into these streams.

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The highest concentrations of uranium, thorium and radium were all less than 4.0 percent of their respective MPCs for unrestricted areas. The locations, parameters and LLDs were in accordance with License Condition No. 14.

Ground-Water Monitoring

TVA implemented a new ground-water detection monitoring program in April of 1988 to comply with 10 CFR 40, Appendix A. Their new sampling protocol for these wells has not yet been implemented but, scheduled sampling results are required by October of 1988.

Nonradiological Air Quality

Nonradiological air quality is monitored at five locations. Six-month arithmetic means for total suspended particulates were computed. Six-month arithmetic means are discussed in the following for comparison purposes. Means for this reporting period range from zero percent less (Station EG-05) to 27 percent less (Station EG-01) than the mean values for the most recent six-month period. This decrease is mainly attributable to lower levels during winter conditions and is generally consistent with the trend in previous years.

EG-01 did show an increase of 26 percent but, this is thought to be an impact from specific decommissioning activities at the site.

Nonradiological Surface-Water Monitoring

TVA constructed a series of diversion ditches around the mill site to isolate runoff. Because of this system, TVA was required to sample these ditches during baseline flow conditions and storm conditions, should they occur. This requirement was initially addressed in the FES and is referenced in Source Material License SUA-816 as License Condition No. 14. Only nonradiological parameters were to be examined as part of this monitoring program. In May of 1987, TVA changed the site location for their surface-water sampling station CRE. TVA relocated the CRE surface-water sampling station 600 feet downstream from the original location. This was to insure that a representative sample is collected due to stream channel shifting. No surface water samples were collected during this period because of severe weather crosses existing at the site.

Nonradiological Ground-Water Monitoring

The monitor wells were examined to determine whether any significant charges occurred to ground-water depths during the period, and whether any changes which did occur might be attributed to the decommissioning activities. Water level changes during the period show a decrease of -0.9 foot over the entire monitor area. The maximum fluctuation was -4.92 feet and occurred at Well M-11. The large cacrease in water level is probably attributed to seasonal conditions.

Specific conductance, total dissolved solids and pix were relatively unchanged with little variability. Wide fluctuations were evident in selenium, sulfates and nitrates, with chlorides remaining fairly stable. However, Well M-111 showed concentrations of arsenic at the 51 ug/1 level, all other wells were consistent with the previous temporal sampling results.

Penetrating Radiation

Penetrating radiation exposure rates were measured at 18 environmental locations in accordance with License Condition No. 14. The results were compared to the average levels from each location since November 1, 1985. The data indicated that penetrating radiation exposures were stable at each location. No significant airborne gamma emitting radionuclides resulted from the earthwork or tailings movement.

Vegetation Monitoring

TVA collected vegetation samples once during the growing season and at the end of the working season at six locations as required by License Condition No. 14. The Ra-226 and Pb-210 values were consistent with previous data, and no upward trend is apparent.

Radiological Sediment

TVA collected three sediment samples which transected the streams at each of the six continuous surface water sampling locations, as required by License Condition No. 14. Samples were analyzed for total uranium, Th-230 and Ra-226. In the vicinity of the mill site, Ra-226 concentrations were higher than at the control locations. Farther downstream at the site boundary, the levels were essentially equivalent to the control location for the two streams. No offsite contaminated sediment was identified.

Nonradiological Sediment

In accordance with License Condition No. 14, mill site sediment samples in Cottonwood Creek were collected at six locations. The samples were analyzed for chloride, sulfate, arsenic, manganese, molybdenum, nickel, selenium and vanadium. Baseline concentrations of all parameters except sulfates and

manganese tended to be higher in Cottonwood Creek at the County bridge (CCC) than at any other location. Concentrations of all parameters were much less at the mouth of Cottonwood Creek (CCM) than previous concentrations sampled upstream at CCC.

Soil Monitoring

TVA collected soil samples at the vegetation sampling locations and the one control location. The samples were analyzed for Ra-226 and Pb-210 as required by License Condition No. 14. Natural uranium results were also reported, although not specifically required by SUA-816. The data revealed that indicator stations located northwest and west of the mill site exhibited the highest values for these parameters. However, these values were consistent with previously submitted data, and no upward trend is apparent.

Periodic Documented Inspections

No State nonradiological environmental audits were conducted during this monitoring period. TVA inspections of TSP and meteorological monitoring and dust mitigation activities were performed.

Changes in Land and Water Use

No significant changes in land or water use were identified for this monitoring period.

Conclusion

TVA submitted all the data required by License Condition Nos. 14, 24 and 27 of Source Material License SUA-816. Lower limits of detection were reported for all analyses and were appropriate. No significant upward trends were observed; consequently, no further licensing action is considered necessary at this time.

>)5/ Thomas T. Olsen, Project Manager Licensing Branch 1 Uranium Recovery Field Office Region IV

Approved by:

Edward F. Hawkins, Chief Licensing Branch 1 Uranium Recovery Field Office, Region IV

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