



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Docket 40-8681
PDR

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Docket No. 40-8681
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MEMORANDUM FOR: Docket File No. 40-8681
FROM: Daniel M. Gillen
Uranium Recovery Field Office
Region IV
SUBJECT: REVIEW OF 10 CFR 40.65 ENVIRONMENTAL MONITORING
REPORT FOR THE ENERGY FUELS NUCLEAR WHITE MESA MILL
(APRIL - JUNE, 1982)

By letter dated August 27, 1982, Energy Fuels Nuclear (EFN) submitted an environmental monitoring report for the second quarter of 1982 in compliance with 10 CFR 40.65 and license requirements for implementation of 40 CFR 190. This memorandum presents the URFO staff review of the data with respect to past data and applicable standards. A review of this submittal with respect to the requirements of 40 CFR 190 can be found in a separate memorandum to the file from D. Sollenberger.

Air Particulate Sampling

Air particulate data for the quarter were reported for five locations: at the nearest residence, at the meteorological station (north of the mill), at two locations south and southeast of the tailings, and at Black Mesa, which represents background concentrations. The highest results reported irrespective of any particular sample, were: 6.03×10^{-15} $\mu\text{Ci/ml}$ for uranium, 1.42×10^{-14} $\mu\text{Ci/ml}$ for thorium-230, 2.62×10^{-15} $\mu\text{Ci/ml}$ for radium-226, and 2.40×10^{-14} $\mu\text{Ci/ml}$ for lead-210. All of the values were less than the most restrictive MPC limits for unrestricted areas. Thorium-230 concentrations measured near the tailings areas resulted in percentages of MPC limits much higher than any other air concentrations. However, these concentrations were still only 17.9% and 9.5% of the most restrictive MPC limits for unrestricted areas. These thorium-230 concentrations represent a noticeable increase from the previous data and should be looked at closely in the future environmental data reviews. The air particulate data showed no other significant change from the data in the previous monitoring report (January to March 1982).

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Stack Sampling

Stack sampling results for the second quarter of 1982 were reported for the yellowcake dryer stack and the sample plant stack No. 1. The highest reported release rate from the stacks was 2.19×10^{-2} Ci per quarter for uranium from the yellowcake dryer stack. This concentration and resulting release rate represent a significant increase over the previous quarter's data and also exceed both the MPC for restricted areas and the yellowcake release value predicted in the March 31, 1982 Environmental Impact Appraisal.

However, these concentrations are measured inside the tops of the stacks, which are at least ten meters above the ground, and the majority of the particulates emitted from the stacks are transported offsite. Therefore, it is unlikely that doses within the restricted area boundary would be considerably affected by these concentrations. Furthermore, the offsite air particulate values, discussed above, comply with the unrestricted area MPC limits, and no significant increase in uranium was monitored at the nearest residence.

All other stack data for this quarter are less than the MPC's for restricted areas and show no significant change from previous data. The uranium release from the dryer stack and its effects offsite should be closely followed in subsequent environmental data reviews.

Groundwater Sampling

In accordance with the licensed program, the results of sampling at ten groundwater locations were reported. No groundwater monitoring of wells used for drinking water or livestock within 2 km of the tailings was conducted because the licensee has previously reported that no wells within this area are presently used for those purposes.

The highest reported results for the quarter, irrespective of any particular groundwater sample, were 2.37×10^{-8} $\mu\text{Ci/ml}$ for uranium 2.00×10^{-10} $\mu\text{Ci/ml}$ for thorium-230, 1.00×10^{-9} $\mu\text{Ci/ml}$ for radium-226, 1.80×10^{-9} $\mu\text{Ci/ml}$ for lead-210, and 2.00×10^{-9} $\mu\text{Ci/ml}$ for polonium-210. All of these values are below the 10 CFR 20 MPC's for unrestricted areas. These values do not vary significantly from the pre-operational groundwater data (Dames & Moore, "Initial Baseline and Pre-Operational Monitoring," March, 1980), nor from previous operational data. The required chemical groundwater data were not reported with the radionuclide data.

Surface Water Sampling

The results of two surface water samples at Cottonwood Creek and Westwater Canyon were reported for the quarter. The highest reported results were:

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1.21×10^{-8} $\mu\text{Ci/ml}$ for uranium, less than detectable for thorium-230, 4.00×10^{-10} $\mu\text{Ci/ml}$ for radium-226, 3.40×10^{-9} $\mu\text{Ci/ml}$ for lead-210, and 1.20×10^{-9} $\mu\text{Ci/ml}$ for polonium-210. All of these values are below the MPC's for unrestricted areas. The highest reported value for total suspended solids was 5 mg/liter. The surface water data show no significant change when compared with previous monitoring data.

Radon Sampling

Radon gas sampling data were collected at the five air particulate monitoring locations. The highest reported value was 1.80×10^{10} $\mu\text{Ci/ml}$, which is 6% of the MPC limit for unrestricted areas. The data shows no significant change from previous data.

Direct Radiation

Direct gamma radiation was monitored using environmental TLD's at the five air particulate monitoring locations. The highest reported value was 27.7 mrem/qtr measured at Black Mesa, which represents background. The direct radiation data were similar to previous quarters' data and were typical of background levels in the area.

Soil

The required annual soil samples were taken during this quarter at the five air particulate monitoring locations and were measured for uranium and radium-226 in accordance with the license program. The highest reported values for all locations were 0.4 pCi/gm for uranium and 2.7 pCi/gm for radium-226. These soil sample results represent no significant change from last years data, and are typical of background levels in the area.

Vegetation

Vegetation samples of dry concentrations of crested wheatgrass were collected during this quarter. Three samples of crested wheatgrass were taken at locations northeast, northwest, and southwest of the mill and were measured for radium-226 and lead-210 in accordance with the licensed program. The highest reported values were 0.13 pCi/gm for radium-226 and 0.64 pCi/gm for lead-210 both measured at the location northwest of the mill. These values represent no significant change from data collected the previous year.

The doses from the ingestion of meat from cattle grazing on contaminated vegetation were determined using the concentration of 0.13 pCi/gm of radium-226 in vegetation measured at the sampling location northeast of the mill. This number was adjusted to determine the wet concentration by dividing by 5. The background concentration of 2.20×10^{-6} $\mu\text{Ci/kg}$ (from Dames & Moore,

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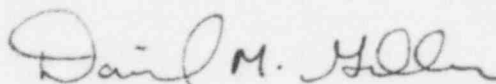
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"Initial Baseline and Pre-Operational Monitoring," May 1, 1980) was subtracted to determine the mill-contributed concentration of 0.24×10^{-4} $\mu\text{Ci}/\text{kg}$. The maximum dose at the nearest residence resulting from this radium-226 concentration in the vegetation was 0.37 mrem/year to the bone. The dose was computed based on information provided by the licr .see that cattle are grazed in the area for about one sixth of the year. This dose is very close to the bone dose due to meat ingestion calculated in the March 31, 1982 radiological assessment of existing conditions at the mill.

Conclusions

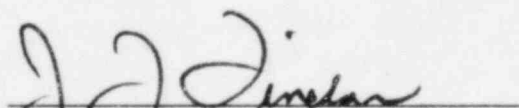
With the exception of the chemical groundwater data, the licensee has submitted the data required by Source Material License No. SUA-1358. The staff has concluded that no significant variations from previous environmental data are evident and that the reported data are within applicable limits.

By a November 10, 1982 telephone conversation, the licensee was informed that chemical groundwater data was missing from this environmental monitoring report. EFN has indicated that the data will immediately be submitted as a supplement to the second quarter of 1982 report.



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Region IV

Approved By:



John J. Linehan, Section Chief
Uranium Recovery Field Office
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Case Closed: 04008681311E