

## DISTRIBUTION

Docket File 40-8681  
PDR/DCS  
Region IV  
PHildenbrand  
URFO r/f

40-8681/PRH/83/12/14/0

- 1 -

DEC 30 1983

URFO:PRH  
Docket No. 40-8681  
04008681441E

MEMORANDUM FOR: Docket File No. 40-8681

FROM: Paul R. Hildenbrand, Project Manager  
Licensing Branch 1  
Uranium Recovery Field Office, Region IV

SUBJECT: REVIEW OF 10 CFR 40.65 SEMI-ANNUAL ENVIRONMENTAL  
MONITORING REPORT FOR ENERGY FUELS NUCLEAR WHITE  
MESA MILL - PERIOD OF JANUARY 1, 1983 THROUGH  
JUNE 30, 1983

By letter dated September 1, 1983, Energy Fuels Nuclear (EFN) submitted a semi-annual environmental monitoring report covering the first half of 1983. The report was submitted in accordance with 10 CFR 40.65 and License Condition No. 38. This memorandum presents the URFO staff review of the report with respect to past data and applicable standards.

Air Particulate Sampling

Air particulate data was collected at five locations: 1) the meteorological station (BLV-1), 2) the nearest residence (BLV-2), 3) Black Mesa (BLV-3), which represents background, 4) a location south of the tailings area (BLV-4), and 5) a location southeast of the tailings area (BLV-5). Samples were analyzed for Th-230, Ra-226, Pb-210 and natural uranium. All reported values were less than 10% of MPC for unrestricted areas and are consistent with past data.

Stack Sampling

The mill ceased operation on February 3, 1983. Consequently, only one dryer stack sample was collected during the reporting period (January 27, 1983) and analyzed for natural uranium. Sample results indicate a release rate of 0.036 Ci/yr. of U-nat which is less than the release rate predicted in the FES (0.06 Ci/yr.). A comparison of data over the last

FC	:	:	:	:	:	:	:
AME	:	:	:	:	:	:	:
ATE	:	:	:	:	:	:	:
ATE	:	:	:	:	:	:	:

8401310416 831230  
PDR ADOCK 04008681  
C PDR

DEC 30 1983

year indicates a steady downward trend of U-nat being emitted from the stack with no inconsistencies in reported data being indicated.

#### Groundwater Sampling

The groundwater monitoring program was performed in accordance with Amendment No. 13 of SUA-1358 issued on June 28, 1982. Samples were obtained quarterly from monitor wells 1 through 4, 11 through 13 (surrounding the tailings cells) and the culinary well. Monitor wells 9 and 10 (shallow wells) were dry and, as previously reported, wells 6 through 8 were destroyed during the construction of tailings cell No. 3.

Uranium values reported for Wells 1, 2, 3, 4, 12 and 13 show significant variances during the one year period for which data is available. Since these wells are not completed in a mineralized zone, detectable uranium values would not be expected unless seepage from the tailings cells was occurring.

On January 25, 1983, the sample taken from Well No. 1 indicated 11 mg/l U while samples taken before and after that date were reported as being less than 1 mg/l U. There has also been a steady decrease in pH at this well since January 25, 1983 (from 7.9 in December 1982, to 7.1 in April 1983).

Well No. 2 has shown a general upward trend in chloride and uranium since January 1983. Chloride concentrations have increased from 5.5 mg/l in December 1982, to 25 mg/l in April 1983, while uranium has increased from less than 1 mg/l to 5 mg/l over the same time period.

Since July 1982, Well No. 3 has shown uranium values ranging from less than 1 mg/l to as high as 37 mg/l in December 1982. These values have been decreasing during 1983 (12 mg/l in January and 3 mg/l in April). Since chloride and pH have remained fairly constant during this time, it is possible that the anomalous uranium values in this well are due to analytical error or poor sampling techniques.

The sample taken from Well No. 4 on January 25, 1982, showed an anomalous uranium value of 8.2 mg/l while samples taken before and after that date analyzed at less than 1 mg/l. All other parameters remained constant, indicating that the January 1983 uranium value is most probably erroneous.

FC :	:	:	:	:	:	:
AME :	:	:	:	:	:	:
ATE :83/12/30	:	:	:	:	:	:

DEC 30 1983

Well No. 12 was reported to have 24 mg/l uranium in December 1982. The reported uranium values have decreased throughout the year to 3 mg/l in May 1983. It is not understood at this time why this well contained such a high initial concentration of uranium or why it has steadily decreased with time.

Well No. 13 has exhibited the same phenomenon as Well No. 12, with an accompanying increase in pH (7.3 to 7.8 since December 1982).

#### Surface Water Sampling

Cottonwood Creek and Westwater Canyon were sampled twice during the reporting period. The samples were analyzed for natural uranium, Th-230, Ra-226, Pb-210, and Po-210. The reported value for Ra-226 from the February 1983 sampling of Cottonwood Creek was  $4.0 \times 10^{-9}$  uCi/ml, which is 13% of MPC for unrestricted areas. Subsequent sampling of Cottonwood Creek in April 1983 resulted in a Ra-226 value of  $1.7 \times 10^{-9}$  uCi/ml which is 5.7% of MPC for unrestricted areas. All other analyses of Cottonwood Creek and Westwater Canyon were less than 4% of MPC for unrestricted areas. A review of the past year's data revealed no significant changes or trends in any of the parameters analyzed.

#### Radon Sampling

Radon gas sampling was performed at the five air particulate monitoring stations (BLV-1 through BLV-5). All reported values were less than 10% of MPC for unrestricted areas. The highest measurements were recorded at BLV-1 (Met. station) and BLV-4 (south tailings area). These measurements averaged 5 and 4.8% of MPC for unrestricted areas respectively. A review of previous data revealed no evidence of significant changes or trends of Rn-222 at any of the sampling stations.

#### Direct Radiation

Direct gamma radiation was monitored using environmental TLD's located at the five air particulate monitoring stations (BLV-1 through BLV-5). These TLD's were changed quarterly. Most stations showed a decrease in net direct radiation from the previous quarter's data (10/1/82 - 1/3/83). All reported values were less than 1.4 times background.

FC :	:	:	:	:	:	:
AME :	:	:	:	:	:	:
ATE : 83/12/30	:	:	:	:	:	:

DEC 30 1983

Vegetation Sampling

Grass samples were collected at three locations around the mill in April 1983, and were analyzed for Ra-226 and Pb-210. The data indicates a 20 to 30% increase in Pb-210 over previously reported data. The highest concentration was  $2.51 \times 10^{-3}$  uCi/Kg which represents a 31.6% increase over what was reported in November 1982. Concentrations of Ra-226 were 2.4 to 2.8% higher than the November 1982 data and does not represent a significant change. In view of other data discrepancies noted in this review, the Pb-210 data should be evaluated by the licensee to ascertain if the reported increases are real or are due to analytical and/or sampling problems.

Soil Sampling

Annual soil samples were collected in February 1983 at the five air particulate monitoring stations (BLV-1 through BLV-5) and were analyzed for natural uranium and Ra-226. Reported concentrations indicate significant changes from those reported a year ago. Station BLV-2 (nearest residence) showed a 67.3% increase in uranium and a 27.6% increase in Ra-226. Station BLV-3, which represents background at the site, showed a 39.1% increase in uranium but an 82.6% decrease in Ra-226. Station BLV-5 (SE tailings area) showed a 69.5% increase in Ra-226 and a 35.2% decrease in uranium. The Licensee was informed by telephone in October 1983 of these particular data discrepancies. The Licensee has subsequently collected new soil samples and submitted duplicate samples to two separate laboratories for analysis. A report of their findings will be submitted to URFO for review.

Conclusions

Several items of concern were identified during the review:

- ° Uranium values reported for Monitor Wells No. 1, 2, 3, 4, 12 and 13 show significant changes from one reporting period to the other (less than 1 mg/l to as high as 37 mg/l and back to less than 1 mg/l). Since the wells were not completed in a mineralized zone, the data indicates either a tailings seepage or a quality assurance problem.
- ° Pb-210 analysis of grass samples collected during the reporting

FC :	:	:	:	:	:	:
AME :	:	:	:	:	:	:
ATE :83/12/30	:	:	:	:	:	:

DEC 30 1983

period indicate a 20% to 30% increase over previously reported data. No correlation could be made by comparing the data with air particulate data.

- ° Review of uranium and Ra-226 data for soil samples collected during the reporting period from BLV-2, 3, and 5 indicate significant changes from previously reported data. Data from BLV-2 sample (nearest residence) showed a 67.3% increase in uranium and a 27.6% increase in Ra-226. Station BLV-3 (background) showed a 39.1% increase in uranium and an 82.6% decrease in Ra-226. Station BLV-5 (SE tailings area) showed a 69.5% increase in Ra-226 and a 35.2% decrease in uranium. Again, no correlation could be made by comparing the data with air particulate data.

The data discrepancies noted in the review may not present a contamination or standards problem, but more probably indicate the need for the licensee to thoroughly review and evaluate analytical data to assure quality control. The licensee was notified by telephone in October 1983 concerning the discrepancies in the soils data and will be notified by a letter concerning the other data discrepancies described in the review.

No other problems or significant data trends were identified during the review.

/S/

Paul R. Hildenbrand, Project Manager  
Licensing Branch 1  
Uranium Recovery Field Office  
Region IV

/S/

Approved by:

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

Case Closed: 04008681441E

FC	:URFO	:URFO	:	:	:	:	:
AME	:PHildenbrand	:EHawkins	:	:	:	:	:
ATE	:83/12/30	:	:	:	:	:	: