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40-4492

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Docket No. 40-4492
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MEMORANDUM FOR: Docket File NO. 40-4492

FROM: Daniel M. Gillen
Uranium Recovery Field Office
Region IV

SUBJECT: REVIEW OF SECOND HALF OF 1981 ENVIRONMENTAL
MONITORING REPORT, PURSUANT TO 10 CFR 40.65, FOR
FEDERAL-AMERICAN PARTNERS

I have reviewed the second half of 1981 environmental monitoring report for the Federal-American Partners (FAP) project, submitted by letter dated February 25, 1982, in accordance with 10 CFR 40.65. In addition, I have reviewed air sampling data that had been omitted from the first half of 1981 report and subsequently submitted by letter from FAP dated December 22, 1981.

Presently, the FAP mill is in a standby shutdown status, although the environmental monitoring program is continuing. The FAP mill license is also under timely renewal and all environmental data is being evaluated in the DES scheduled to be published at the end of 1982.

Environmental TLD

Direct gamma radiation was monitored using environmental TLD's at 19 locations. The results ranged from a low of 24.8 to a high of 97.1 mrem per month (average for last six months of 1981). The lowest reported exposure rate of 24.8 mrem per month at the Puddle Springs Ranch background location is equivalent to 34.4 μ R/hr which is about two times higher than typical background gamma exposure rates for this area of the country.

The highest reported exposure rate (97.1 mrem/month) was measured at a location immediately downwind of the tailings area. This and all the other locations (except the background) are located within the FAP restricted area boundary. The levels at all locations have not changed significantly in relation to the previous year's monitored levels. The values measured at

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locations on site are slightly elevated in comparison to results of on-site measurements at other Gas Hills mills. The high levels monitored at the Puddle Springs background location raised some questions as to the cause.

I contacted Bob Lane, the FAP Radiation Safety Officer, and inquired about a possible cause for the high Puddle Springs background levels. Upon Mr. Lane's investigation of their data, he determined that background values measured at the California laboratory doing FAP's testing had been erroneously added twice to all the measurements taken over the last 2 years. This would result in a reduction of all environmental TLD data by approximately 12 mrem/month. A review of these adjusted values shows background and on-site levels to be consistent with measurements at other Gas Hills mills.

Soil

Annual soil samples that were taken at each of the six air sampling locations were measured for radium-226, lead-210, and U-nat in accordance with the licensed program. The six locations are: 1) north end of abandoned camp, 2) upwind restricted area boundary, 3) Puddle Springs background, 4) north downwind restricted area boundary, 5) northeast downwind restricted area boundary, and 6) south end of abandoned camp. The concentrations measured at the background location were 2.2×10^{-6} $\mu\text{Ci/g}$ for radium-226, 2.1×10^{-6} $\mu\text{Ci/g}$ for lead-210, and 0.68×10^{-6} $\mu\text{Ci/g}$ for U-nat. Concentrations of the various parameters measured at the other five locations ranged from background to 15 times background. The highest levels were monitored at locations 4 and 5 downwind of the tailings. With the exception of location 4, soil concentrations of measured radionuclides have shown either no significant change or a slight decrease when compared to the previous year's data. Location 4 has shown some increase in concentrations, particularly in measured lead-210. Steps have recently been taken by FAP to improve dust reduction by using chemical stabilizers (see discussion on vegetation).

Vegetation

Three vegetation samples that were obtained from areas downwind of the tailings at two times during the growing season were measured for radium-226 and lead-210 in accordance with the licensed program. The highest results were 3.91 pCi/g wet for radium-226 and 6.50 pCi/g wet for lead-210, both measured at vegetation sampling location #1 (immediately northeast of the tailings). These values do not show any significant changes over the previous year's data. However, when compared to background vegetation concentrations, the values indicate that the vegetation downwind of Tailings Pond No. 2 is contaminated. FAP has recently instituted a program of chemical stabilization

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of the impoundment and early indications show it to be very effective in controlling blowing tailings. Future vegetation samples will be looked at closely to determine the effectiveness of these controls.

Water Quality Data

The results of quarterly sampling at 20 groundwater locations and one surface water location were reported. Six other groundwater wells were either dry or not sampled due to broken pumps. The highest reported results of the groundwater monitoring, irrespective of any particular sample, were: 4.28×10^{-6} $\mu\text{Ci/ml}$ for uranium, 5.01×10^{-8} $\mu\text{Ci/ml}$ for radium-226, 1.43×10^{-6} $\mu\text{Ci/ml}$ for lead-210, 1.72×10^{-7} $\mu\text{Ci/ml}$ for polonium-210, and 4.85×10^{-6} $\mu\text{Ci/ml}$ for thorium-230. Radium, thorium and lead have exceeded maximum permissible concentrations (MPCs) for unrestricted areas (i.e., 10 CFR 20, Appendix B, Table II values) at various locations monitored on-site. However, only lead concentrations exceeding the MPC have been measured in the wells located north of the restricted area boundary. The groundwater monitoring program and remedial measures associated with the existing contamination from Tailings Pond No. 1 will be modified and upgraded based on conclusions to be presented in the forthcoming draft environmental statement for the FAP renewal. Continued use of Tailings Pond No. 1 beyond the present shutdown status will be contingent upon successful implementation of remedial measures.

Stack Sampling

Stack sampling results were reported for three stacks which were sampled in accordance with the licensed program (yellowcake roaster stack, roaster shroud stack, and ore crusher stack). The highest reported results, irrespective of any particular sample, were: 1.36×10^{-9} $\mu\text{Ci/ml}$ for uranium, 5.64×10^{-10} $\mu\text{Ci/ml}$ for radium-226, 6.50×10^{-10} $\mu\text{Ci/ml}$ for thorium-230, and 8.30×10^{-10} $\mu\text{Ci/ml}$ for lead-210. On the whole, the greatest release is from the ore crusher stack. All of the above values are greater than the restricted area MPC values (i.e., 10 CFR 20, Appendix B, Table I values). The effect of these releases on the mill employees is minimized due to air dilution and the fact that they work indoors for the most part. The dilution of concentrations is verified by the site boundary airborne particulate sampling, which shows all values to be less than unrestricted MPC values. Stack sampling has ceased since the temporary shutdown of the mill in November, 1981. Installation of a SAG mill (wet grind process) and an improved yellowcake dryer system are planned for the expanded mill under renewal review. The modifications should greatly reduce stack effluents at the FAP site.

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Airborne Particulate Sampling

Airborne particulate data collected at the six locations described previously were submitted for the second, third and fourth quarters of 1981. The highest reported results irrespective of any particular sample were: 4.93×10^{-14} $\mu\text{Ci/ml}$ for uranium, 6.02×10^{-15} $\mu\text{Ci/ml}$ for radium-226, 6.80×10^{-15} $\mu\text{Ci/ml}$ for thorium-230, and 2.75×10^{-14} $\mu\text{Ci/ml}$ for lead-210. All of the values were less than the unrestricted area MPC values.

The 50-year dose equivalent to the lung for the Puddle Springs sampling location (new nearest residence since abandonment of the camp) would be about 6 mrem including the background dose contribution.

Radon

Radon gas sampling data collected at the six air particulate sampling locations were provided for both the second, third and fourth quarters of 1981. The highest reported result was 4.10×10^{-9} $\mu\text{Ci/ml}$. Many of the concentrations measured were less than the background concentration measured at the Puddle Springs Ranch (2.5×10^{-9} $\mu\text{Ci/ml}$). Subtracting the background concentrations from the highest measurement results in a contribution from the mill of 1.6×10^{-9} $\mu\text{Ci/ml}$ which is much less than the unrestricted area MPC values.

Recommendations

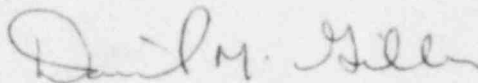
1. It is recommended that the following actions be considered with regard to the environmental TLD monitoring program:
 - a) A new TLD should be added to the program to act as a "control" TLD. This TLD shall be kept shielded except when accompanying the other TLD's in shipment to the laboratory.
 - b) The additional TLD's presently being monitored at the site of the old FAP camp may be deleted, since the camp is now abandoned and the licensed program only requires ten TLD locations.
 - c) The map showing the environmental TLD monitoring locations should be updated to include TLD designation numbers as revised by FAP, and to reflect the changes proposed in "a" and "b" above. The updated map could be submitted with the next semi-annual environmental monitoring report.

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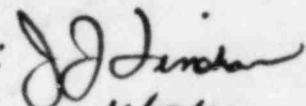
2. Neither L'D's nor percent of MPC were reported for groundwater data. The percent of MPC calculated for air-sampling locations 4 and 5 (at site boundaries) were incorrectly calculated using the MPCs for restricted areas. These errors should be corrected in the next submittal.
3. FAP personnel should take greater care to eliminate typographical errors in the submitted data; a number of these errors were found in the data review.

Resolution

The recommendations resulting from the staff's review of FAP's semi-annual environmental monitoring report for the last-half of 1981, have been conveyed by telephone conversations between myself and Mr. R. Lane (RSO) of FAP on April 28, 1982, and May 3, 1982. Mr. Lane has already taken steps to implement the staff's recommendations, and the recommendations will be followed-up by the staff as part of the license renewal and in subsequent 40.65 reviews.



Daniel M. Gillen
Uranium Recovery Field Office
Region IV

Approved: 
11/19/82

CC: R. Lane, FAP

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