PDR 40-8698

plateau resources LIMITED

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January 16, 1981

CERTIFIED MAIL RETURN RECEIPT REQUESTED

U. S. Nuclear Regulatory Commission
Attn: Ross A. Scarano
Chief, Uranium Recovery Licensing Board
Mail Stop 483SS
Washington, D. C. 20555

RE: SUA - 1371, DOCKET NUMBER 40-8698 PREOPERATIONAL RADIOLOGICAL MONITORING PROGRAM - REVISED PAGES

Dear Mr. Scarano:

Enclosed are ten sets of replacement pages for the Shootering Canyon Preoperational Radiological Monitoring Program Report. The report was originally submitted to your attention under a cover letter dated December 18, 1981.

If you have any questions, please contact me. Thank you.

Sincerely,

Karen Jackson

Karen Jackson
Licensing Coordinator

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Enclosures

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AIR SAMPLES

2.1 AIR PARTICULATES

General Description

Air particulates were sampled during two quarters of 1979 and two quarters of 1980. Sampling was accomplished at four stations on the project site (see Figure 2-1) and at Bullfrog Basin Marina and the Ticaboo town site. Continuous electric power was not available at all six locations until the fourth quarter of 1979; therefore, limited monitoring was completed prior to that time. The results of the air particulates monitoring program are shown in Table 2-1.

Sample Collection

Locations. The four locations in the project area are positioned approximately northwest, northeast, east and southwest from the center of the project site, at distances of about one-fourth mile. All are on or near the site boundary (fenceline). One remote station is at the planned Ticaboo town site. This location represents the only known point of residence within 10 kilometers of the site. Bullfrog Basin Marina, the second remote station is currently the nearest area of permanent residency. The prevailing wind directions at the project site are south and south-southwest and, to a lesser extent, north and north-northeast. Local topography exerts a dominant influence, creating a strong diurnal pattern in the northerly and southerly directions. Average wind speed is about six knots.

Sample Collection

Locations. Radon monitoring locations were selected to coincide with the six air sampling locations, as recommended by R.G. 4.14.

Equipment. The Track Etch detector cups were provided by Terradex Corporation of Walnut Creek, California. Each plastic cup was 9.5 centimeters high and 6.8 centimeters in diameter at the mouth. The bottom of the cup was 5.4 centimeters in diameter and was fitted with a 0.8 x 2.5 centimeter Track Etch detector. The open mouth of each cup was covered with a semi-permeable plastic membrane. The membrane was used to prevent Rn-222 daughter products, Rn-220, dust, and moisture from entering the cup. Two cups were mounted three feet above ground level on a wooden stake at each monitoring location. Shields were installed in the field to protect the cups from solar radiation.

The EMI composite radon samplers consisted of a sampling hose, particulate filter, pulse pump, tedlar bag, and battery pack within an enclosed barrel. The 15-liter tedlar bags were relatively impermeable to Rn-222. A 25mm Gelman AE glass filter was utilized to prevent particulate Rn-222 decay products from entering the bags. Radon samples in tedlar bags were pumped through zinc sulfide internally-lined scintillation cells. Both 0.5 and 1.4 liter cells were used. Scintillation cells were counted on an Eberline SAC-R5 alpha scintillation detector connected to an Eberline PS-2 scaler. The scaler from the Eberline RGM-1 continuous radon monitor was also utilized in the counting of some samples.

Procedure. At each of the radon cup stations, one cup was replaced each month and the other each quarter, thus providing an indication of the time-integrated average radon level at each station.

days) to derive the calibration factor for that run. The mean calibration factor for all exposure runs was calculated by weighting the factor for each run by the number of replicates exposed in the run. For all of the membrane cup samples tested, the weighted mean calibration factor was 0.0223 tracks/mm^2 per (pCi/l)-day. The weighted standard deviation was 0.0050, and the relative standard deviation (RSD) was 22 percent. The membrane cup configuration calibration data are summarized in Table 2-4. During 1980, 25 additional calibration runs were made, extending the exposures down to one (pCi/l)-month. Data from these runs are in close agreement with data reported from previous runs.

Concentration Calculations. Average monthly Rn-222 concentrations in μCi/ml were obtained by substitution of background-corrected track densities into the following relation:

$$C = (1.495E\text{-}9)D$$

where: C = average monthly Rn-222 concentration in Ci/ml,
D = net track density in tracks/mm^2 per month (normalized to a 30-day exposure period),
1.495 = (pCi/l)-month per tracks/mm^2.*

The scintillation cells and SAC-R5 unit used to measure tedlar bag Rn-222 concentrations are periodically calibrated by the Eberline Instrument Corporation. Cell calibration factors in cpm per pCi/l are obtained by Eberline via counting a known Rn-222 concentration on the SAC-R5 unit that will be used with the cells for field Rn-222 measurements.

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*1.495 (pCi/l)-month per tracks/mm^2 =

$$\frac{1}{(0.0223 \text{ tracks/mm}^2 \text{ per (pCi/l)-day})\ (30 \text{ days/month})}$$