

**From:** James Webb  
**To:** Chang, Richard  
**Date:** 02/21/2008 12:03:04 PM  
**Subject:** Umetco

Richard,

I completed my review of the Final Status Survey Report Gas Hills, Wyoming Site, Addendum 3, dated January 2007. This report identified two areas, the GHP-2 Repository and the C-18 Deep Burial Repository.

The average Rn-222 emission rate criteria per 10 CFR 40 for each area was 20 pCi/m<sup>2</sup>-sec. The average radon emission rates for the GHP-2 area and the C-18 area were 6.8 pCi/m<sup>2</sup>-sec and 5.2 pCi/m<sup>2</sup>-sec, respectively. This was based on 100 measurements at each area. The GHP-2 and the C-18 area meet the Rn emission rates.

The average Ra-226 license condition criteria was 15 pCi/g for the GHP area and 10 pCi/g for the C-18 area. At each area, the licensee took samples at 0-1 feet and 1-2 feet. The average Ra-226 concentration, in pCi/g at 0-1 feet and 1-2 feet for GHP and C-18 were 13.2 pCi/g and 13.5 pCi/g, and 8.95 pCi/g and 8.41 pCi/g, respectively. The results meet the criteria for average Ra-226.

The average direct gamma exposure rate license condition was 40 uR/Hr for GHP and 30 uR/Hr for C-18. The average direct gamma exposure rate for area GHP-2 was 38 uR/Hr. This meets the license condition of 40 uR/Hr.

At C-18, the licensee reported an average direct gamma exposure rate of 32 uR/Hr with a bare detector (no shielding-concern with shine from other areas) and 33 uR/Hr with a shield detector. These reported values do not meet the license condition of 30 uR/Hr. The licensee states that the results fall within the variability observed in background levels found throughout the site. In the data provided by the licensee (Figure 4.2), the confidence interval at the 95% level ranged from 27 uR/Hr to 38 uR/Hr. At the lower range, the results would be below the 30 uR/Hr criteria, however, the results at the upper range are above the 30 uR/Hr criteria. It appears that there is some variability in the measurements. The health and safety impact between the reported average values by the licensee and the license condition (30 uR/Hr) are insignificant and do not pose a health and safety issue. Therefore, the results reported by the licensee for C-18 can be considered acceptable.

Jim

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