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40-8681

Umetco Minerals CorporationWHITE MESA MILL • P.O. BOX 669 • BLANDING, UTAH 84511
☐ (801) 678-2221

May 10, 1985

Candice C. Jierree, Project Manager
Nuclear Regulatory Commission
Licensing Branch 2
Uranium Recovery Field Office, Region IX
Box 25325
Denver, CO 80225

Dear Ms. Jierree:

Enclosed is the corrected copy of the ore activity for the
radiological assessment.

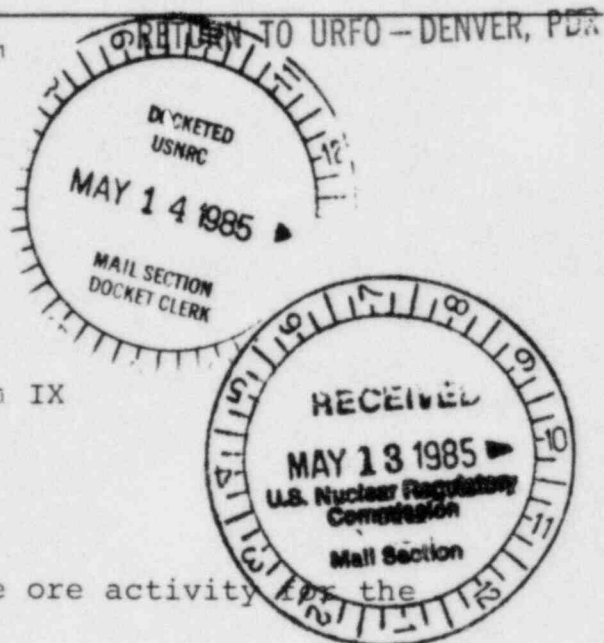
We are sorry for any inconvenience this may have caused you.

Sincerely,

Scott L. Schierman
Scott L. Schierman,
Radiation Safety Officer

SLS/gp

Enclosure



DESIGNATED ORIGINAL

Certified By Mary C. Hood8506060605 850510
PDR ADOCK 04008681
C PDR

FEE EXEMPT

Add Info
00599

Date: 5-10-85

Project: White Mesa Radiological Assessment

By: L. L. L. L.

Subject: Ore Activity

Ore Grade - 0.43% U_3O_8 U_{nat} in U_3O_8 - 84.8 %

From 10 CFR 20 Appendix B

Specific Activity, U_{nat} (U^{238} , U^{234} & U^{235}) - 6.77×10^{-7} Ci/gSpecific Activity for U_{nat} enriched in U^{235} - $(0.4 + 0.38E + 0.0034E^2) \times 10^{-6}$ Ci/g
where E = percentage by weight of U^{235} Ore Activity, U^{238} , U^{234} , Th^{230} , Ra^{226} & Pb^{210} Assume equilibrium, i.e. activity U^{238} = activity U^{234} = activity Th^{230}
(secular) = activity Ra^{226} = activity Pb^{210} Specific activity of $U^{238} + U^{234}$ is specific activity of U_{nat} without the U^{235} , i.e. $E = 0$

$$\text{Specific activity} = (0.4 + 0.38(0) + 0.0034(0)^2) = 0.4 \times 10^{-6} \text{ Ci/g} \\ = 4 \times 10^{-7} \text{ Ci/g}$$

For equilibrium, $U^{238} + U^{234}$ would be $2/5$ of the total activity of all five isotopes.

$$1 \text{ g Ore} \times 0.0043 \frac{\text{g } U_3O_8}{\text{g Ore}} \times 0.848 \frac{\text{g } U_{nat}}{\text{g } U_3O_8} \times 4 \times 10^{-7} \frac{\text{Ci}^*}{\text{g } U_{nat}} \\ \times \frac{5 \text{ Ci (all 5 isotopes)}}{2 \text{ Ci (2 uranium isotopes)}} \times 10^{12} \frac{\text{pCi}}{\text{Ci}} = \underline{\underline{3646 \text{ pCi/g}}}$$

* U^{238} & U^{234} activity in U_{nat} , does not include U^{235} activity