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URFO:DLJ
Docket No. 40-8914
SUA-1482
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MEMORANDUM FOR: William Brown, Regional Counsel
Region IV

THRU: A. Bill Beach, Director
Division of Radiation Safety and Safeguards
Region IV

FROM: Ramon E. Hall, Director
Uranium Recovery Field Office
Division of Radiation Safety and Safeguards
Region IV

SUBJECT: TERMINATION OF THE SOURCE MATERIAL LICENSE ISSUED TO
HECLA MINING COMPANY FOR THE JOHNNY M MINE, SAN MATEO, NEW
MEXICO

BACKGROUND

The Johnny M Mine located near San Mateo, New Mexico, was operated by Ranchers Exploration and Development (predecessor to Hecla) from early 1972 to late 1982. The mining sequence at the mine included backfilling of the mined-out areas with mill tailings returned to the site from the mill which processed the ore. To accomplish this, two surface injection locations were used for storage of the uranium tailings prior to disposal in the mine stopes. According to New Mexico records, these two areas covered approximately one acre at the north and one acre at the south injection site. The tailings were slurried and then pumped into the mine to prevent caving and "reduce the vulnerability of possible breaks in the integrity of the Dakota aquifer located above the mine." An estimated 286,000 tons of tailings were injected into the mine. Disposal depths ranged from 1134 feet to 1148 feet and from 1162 feet to 1183 feet below the surface (using the shaft for datum) or about 1100 to 1300 feet underground, depending on the terrain.

Reclamation of the mine property began in early 1982. The mine shaft was sealed with a four foot thick water ring reinforced concrete plug set between the Dakota and the Westwater members of the formation. The portal was sealed

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with a 12-inch thick reinforced concrete plug, and a 20-inch diameter capped steel pipe was set in the concrete. The surface was then covered with earthen materials during site recontouring. The location of the shaft is not presently obvious due to the revegetated surface.

DISCUSSION

By letter dated September 28, 1988, Hecla requested an amendment to their licence to incorporate their proposed reclamation plan. The reclamation for the site consists of cleanup of the remaining surface contamination to appropriate standards, and leaves the underground tailings undisturbed. The contaminated material will be transported to and disposed of at the Quivira Mining Company's Pond 2 disposal area. After several revisions to the proposed plan, NRC was in agreement with the proposed cleanup plan submitted May 4, 1990, and an amendment was issued on October 12, 1990.

By letter dated October 18, 1990, Hecla requested that NRC terminate their license after the cleanup (reclamation) of the surface is complete. We are requesting that you review the situation and indicate if NRC will be able to terminate the license upon successful completion of the surface cleanup.

Issues to Consider

1. The siting criteria discussed in 10 CFR 40, Appendix A, Criterion 1 is met by underground disposal. Criterion 3 sets the "prime option" for disposal of tailings below grade in mines.
2. The Appendix A Criteria 4 and 6 controlling the attenuation of radon releases and the erosion protection design would not be applicable at the site after cleanup is completed as there would be no tailings remaining on the surface to protect.
3. The risk to workers would clearly be greater than the benefit to the public health and safety if cleanup of the buried tailings were required. The exception to this could possibly be the issue of ground water. The milling process produces fine grain tailings which have a greater surface area than the former ore. This allows trace metals, residual radionuclides, as well as anions and cations to easily go into solution. If necessary, NRC may want to consider application of supplement standards similar to those applied at Title I sites. Hecla has indicated that no shallow ground water has been identified at the site. Piezometric depth to the primary aquifer is reportedly 800 feet. The distance between the tailings filled stopes and the overlying Dakota aquifer is reportedly 130 to 150 feet. The mine reportedly is separated from the aquifer by a confining bed of "bentonitic clays."
4. The land owner is reportedly reluctant to sell the land. Therefore, Hecla does not propose to turn the land over to the government. Criterion 11 may provide for this situation by including an exclusion to title: "In some rare cases, such as may occur with deep burial where no ongoing site