

AUG 13 1990

Quivira Mining Company

1

URFO:PJG  
Docket No. 40-8905  
04008905470E

MEMORANDUM FOR: Docket File No. 40-8905  
FROM: Pete J. Garcia, Project Manager  
SUBJECT: AMENDMENT NO. 17 TO SOURCE MATERIAL LICENSE SUA-1473

By letter dated May 15, 1990, Quivira Mining Company requested an amendment to Source Material License SUA-1473 for the Ambrosia Lake Mill to authorize the use of an alkaline leach process for processing alternate feed materials from Sequoyah Fuels Corporation's Gore, Oklahoma uranium conversion facility. The use of an acid leach process to extract uranium from the alternate feed materials was previously approved by the NRC in License Condition No. 31. The processing of the raffinate material was authorized by Amendment No. 3 dated July 30, 1987, while the processing of the calcium fluoride material was authorized by Amendment No. 5 dated September 21, 1987.

The alternate feed material consists of raffinate from a solvent extraction process and calcium fluoride material from a lime neutralization step at the Gore facility. The uranium content of the raffinate and calcium fluoride materials average 0.61 and 0.18 percent, respectively. Quivira requests the authority to use either the acid or alkaline leach processes to allow flexibility to achieve the most cost-effective recovery of uranium possible. The process method to be used will be determined based on recovery efficiencies.

Impacts to the tailings management system at the Ambrosia Lake Mill will be insignificant, as discussed in a memoranda which accompanied the previous licensing actions. The amount of material is insignificant when compared to the volume of tailings at the site, and the alternate feed materials are very comparable in chemical and physical characteristics to the tailings.

The current authorization allows the discharge of the solid waste material from the extraction process into Tailings Pond No. 2, which is an unlined

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D: URFO: RIV  
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AUG 13 1990

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2

impoundment. In their May 15, 1990, submittal, Quivira proposes to construct a lined containment area within the boundary on Pond No. 2. Bill Ferdinand of Quivira indicated via telecon on July 26, 1990, that Quivira anticipates using a double liner, with hypalon being used as the upper liner. The use of a lined containment area will result in a reduction in potential impacts to ground water when compared to the currently authorized procedure of discharging into the unlined pond.

Quivira states that additional thickeners as well as additional sections of the solvent extraction and leach areas will be for processing. Quivira also stated that additional air sampling locations will be added to the current program to allow characterization of airborne concentrations and determination of employee exposures.

The Quivira application stated that the yellowcake slurry would be dried or maintained in slurry form for shipment. Quivira's current license does not authorize the drying of yellowcake, and significant modifications to the existing radiation safety program would be necessary before drying could be authorized due to the increased potential for airborne radioactive material. This issue was discussed with Mr. Ferdinand during the July 26 telecon. Mr. Ferdinand stated that an application requesting authorization to dry yellowcake was being prepared, and that drying would not be performed until the request was approved by the NRC. The licensing action will therefore include a prohibition against drying the yellowcake product.

Based on the above, the staff recommends that Source Material License SUA-1473 be amended to authorize alkaline leach processing of the alternate feed materials by revising License Condition No. 31 to read as follows:

31. The licensee is authorized to process alternate feed materials (raffinate and calcium fluoride sludges) from Sequoyah Fuels Corporation's Gore, Oklahoma facility in accordance with the submittals dated March 31, July 15, and August 6, 1987, and May 15, 1990, with the exception that the yellowcake product shall be maintained in slurry form.

The issuance of this amendment was discussed via telecon with Mr. Bill Ferdinand of Quivira on August 8, 1990.

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Pete J. Garcia  
Project Manager

Case Close: 04008905470E



AUG 13 1990

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3

bcc:

Docket File No. 40-8905  
LFMB  
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