

PHL/J.DENHAM/10/27

- 1 -

OCT 30 1984

Mr. James Denham
Teledyne Wah Chang
Post Office Box 460
Albany, OR 97321

Dear Mr. Denham:

I have enclosed, as discussed during our telephone conversation, copies of several letters dealing with the subject of processing and disposal of non-byproduct materials in tailings impoundments.

If you have any questions, please contact me at (301) 492-3345 or Ramond Hall at (303) 236-2805.

Sincerely,

Paul H. Lohaus, Chief
Operations Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

Enclosure: As stated

Distribution:

Central File #

RBangart, LLWM

PLohaus, LLOB

JGreeves, LLWM

MBell, LLRB

NMSS r/f

JSurmeier, LLTB

JJones, LLOB r/f

PDR YES

PDR NO Category: Proprietary or CF Only

ACNW YES NO

SUBJECT ABSTRACT: USE OF URANIUM RECOVERY GUIDANCE DEVELOPMENT

DFC	:LLOB	:LLOB	:LLOB	:LLWM	:LLWM	:NMSS	:NMSS
NAME:	PLohaus/jj:	:	:	:	:	:	:
Date:	10/27/84	:	:	:	:	:	:

OFFICIAL RECORD COPY

8911140334 891030
PDR WASTE FDC
WM-3

WM-3
NL14
409.38



CHAIRMAN

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20540

July 1, 1988

The Honorable Alan K. Simpson
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510-6175

Dear Senator Simpson:

In your May 13, 1988 letter, you requested information on the status of the American Nuclear Corporation (ANC) amendment request to permit ANC to receive third-party radium-contaminated soils and debris for disposal in its Tailings Pond No. 1.

We have considered this request and the complex regulatory issues involved in authorizing disposal of this type of material at a mill tailings site. We have recently reached the decision that the major regulatory issues noted below would have to be favorably resolved before the U.S. Nuclear Regulatory Commission (NRC) could consider approving the disposal of these radium wastes in ANC's tailings pond under current statutory authority. The statutory authority is unlikely to change in the near future. Therefore, we cannot approve the ANC request. This decision is being conveyed to ANC.

A primary issue stems from the fact that this waste material contains radium and is classified as naturally-occurring and accelerator-produced radioactive materials (NARM). At issue is whether the inclusion of NARM wastes in a mill tailings disposal site is consistent with U.S. Government ownership (or State ownership) and other authorities under Section 83 of the Atomic Energy Act (the Act). Since the U.S. Department of Energy (DOE) is currently designated to take title to the mill tailings sites, NRC requested DOE's view on this question. DOE's response stated that DOE has doubts about its authority to take title to the mill tailings disposal sites if NRC has allowed the commingling of NARM (non-byproduct) materials in the impoundments (a copy of the DOE response is attached).

It is important to note that NRC does not have authority to regulate NARM. Thus, the amendment, if issued, would result in a commingling of regulated and unregulated materials in the same disposal unit. This would create duplicative jurisdiction between NRC and other Federal or State agencies with respect to the commingled radioactive materials. Moreover, if NARM waste constituents were to violate the current standards (e.g., migrate into ground water), the Commission's authority under Section 84c. of the Act to approve alternatives to requirements for disposal or reclamation would be seriously impaired.

8808110111/ (2)

Additionally, the wastes may be subject to presently applicable Resource Conservation and Recovery Act (RCRA) regulations or other U.S. Environmental Protection Agency (EPA) rules for hazardous constituents or NARM, as well as to applicable State requirements. If the waste results from a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) clean-up action, the EPA requirements to be met would also need to be considered by the licensee to ensure that there is no issue regarding suitability of the site for disposal of the CERCLA wastes. The appropriate regulatory authorities would have to address these requirements.

Finally, since there is currently a NARM disposal site licensed by the State of Utah and a license application under review in the State of Colorado, there appears to be no compelling need at this time to dispose of NARM material in uranium mill tailings impoundments.

I hope this information is useful to you and, I appreciate your continued interest in our programs.

Sincerely,

Lando W. Zech Jr.
Lando W. Zech, Jr.

Enclosure:

DOE letter dated June 10, 1988

cc: The Honorable John Breau
The Honorable John S. Herrington, Secretary
U.S. Department of Energy



Department of Energy
Washington, DC 20548

JUN 10 1988

Mr. Richard L. Bangart, Acting Director
Division of Low-Level Waste Management
and Decommissioning
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Bangart:

This is in response to M. R. Knapp's letter of April 14, 1988, to the Department of Energy regarding the Department's acceptance of transfer of ownership of licensed uranium mill tailings impoundments if non-byproduct materials were also disposed there.

While the Department supports the Nuclear Regulatory Commission's efforts to find permanent disposal sites for these materials, it is not clear that the Department would have the authority under Section 82 of the Atomic Energy Act to accept custody of non-byproduct materials. Congressional action may be needed to provide an unambiguous resolution on this issue.

Assuming some means of resolving the authority question was achieved, the prior satisfaction of all Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, requirements would be essential. Appropriate financial arrangement would have to be provided so that the Department would bear no additional cost associated with the acquisition of this material.

Your letter indicated that there are three pending applications before the Commission for the disposal of non-byproduct material at licensed uranium mill tailings sites. We also understand there may be different materials in question; some ("NARM") clearly outside of NRC jurisdiction and some ("secondary" recovery waste) within NRC jurisdiction. We would be willing to discuss this in more detail, if you desire, with respect to specific material at specific sites.

Sincerely,

John E. Baublitz
Acting Director
Office of Remedial Action
and Waste Technology
Office of Nuclear Energy

8808020122²

638/2

10/5/84

Mr. John E. Baublitz, Acting Director
Office of Remedial Action
and Waste Technology
Office of Nuclear Energy
U. S. Department of Energy
Washington, D.C. 20545

Dear Mr. Baublitz:

I am writing to you because of a number of requests made to NRC regarding the disposal of select wastes in uranium mill tailings piles. The requests vary in terms of quantity, radioactivity, and presence of other nonradiological constituents.

Aside from technical, environmental and engineering considerations, one of the most significant considerations in whether to permit such disposal is the eventual transfer of the title and custody from the commercial licensee/owner to the State or Federal government. It has been suggested that the disposal of such wastes in a uranium or thorium tailings pile may compromise the authority for transfer of title and custody to the United States under Section 83 of the Atomic Energy Act (AEA) of 1954, as amended.

Presently, the Department of Energy (DOE) is identified as the Federal agency to accept, on behalf of the Federal government, title and to conduct long-term monitoring and surveillance in perpetuity. This role is similar to DOE's responsibility in the UMTRA Project under Title I of the Uranium Mill Tailings Radiation Control Act (UMTRCA), specifically Section 104(f).

In our April 14, 1988 letter to you, the NRC requested a determination on whether DOE would accept custody of tailings sites, if Naturally Occurring and Accelerator Produced Radioactive Material (NARM) had been disposed therein. Your June 10, 1988 response raised doubts about DOE's authority to accept title to and custody of such sites.

In order to improve the currently inefficient approach of reviewing each request for tailings pile disposal of nonbyproduct material on a case-by-case basis, additional DOE clarification is needed to remove the uncertainty that now exists. A more definitive DOE position would allow NRC to provide clarifying guidance to licensees, eliminate requests for disposal that would result in DOE being prohibited from accepting title and custody, and allow NRC to more expeditiously review requests that are consistent with DOE criteria for eventual title and custody acceptance. Your timely response to this request will significantly assist all parties involved. I request clarification regarding the following:

8910060331 (3)

1. Are there any quantities or concentrations of NARM that could be disposed of in the tailings piles without compromising DOE's ability to eventually accept title to and custody of the reclaimed tailings site? If so, please identify these quantity or concentration limits.
2. Likewise, are there any such quantity or concentration limits on accepting title and custody transfer of sites wherein matter with a source material content may be disposed of? Specifically, if such source material were to be placed in tailings piles without having processed it for the source material content, would DOE have reservations depending on quantities or concentrations? For example, the Teledyne Wah Chang zirconium tailings or filtercake residue from mine water cleanup are two examples where such material has been suggested for direct disposal into existing, licensed uranium mill tailings piles.
3. Formerly Utilized Sites Remedial Action Program (FUSRAP) material has been proposed for disposal into uranium mill tailings piles, without any processing. In some cases, this material qualifies as 11.e(2) byproduct material, but in others there are quantities of this material containing constituents specifically covered under the Resource Conservation and Recovery Act (RCRA) or the Toxic Substances Control Act (TSCA). Can such material, or limited quantities or concentrations of this material, be placed directly into a uranium mill tailings pile without compromising the transferability of the title and custody to DOE upon reclamation?
4. Mine wastes and mine water, which cannot be released into waterways or on open ground, is usually treated to remove those contaminants in order to comply with National Pollutants Discharge Elimination System (NPDES) limits for such releases. As a result, the residues from the treatment process must be disposed of properly. If such water or residues are then processed for their source material content, either at the uranium mill or off site, can the resultant material be disposed of in the tailings piles without compromising DOE's authority or willingness to take title to and custody of the reclaimed tailings pile?
5. Some materials, which have been processed for extraction of certain economically valuable minerals, have been additionally processed for source material as well. These "secondary wastes" have been referred to as NARM, source material, select wastes and so on. Frequently, these wastes are almost indistinguishable from uranium mill tailings. They are not byproduct material simply because some mineral, such as vanadium or copper, has been extracted prior to being processed for uranium or thorium, usually in another facility other than a uranium

mill. FUSRAP, NARM and the phosphate tailings in Florida and Louisiana may fall under this category. Are there any conditions, under which such material could be disposed of into tailings, which would not compromise DOE's ability to take title and custody upon reclamation?

Should your staff have any questions regarding this letter, contacts are Paul Lohaus (FTS 492-0553) or Giorgio Gnugnoli (FTS 492-0578).

Sincerely,

(SIGNED) RICHARD L. BANGART

Richard L. Bangart, Director
Division of Low-Level Waste Management
and Decommissioning, NMSS

cc: S. Mann, DOE/NE-22
M. Matthews, DOE/AL

JUL 27 1988

MARTIN DS 6/16

- 1 -

MEMORANDUM FOR: Robert D. Martin, Regional Administrator
Region IV

FROM: Hugh L. Thompson, Jr., Director
Office of Nuclear Material Safety
and Safeguards

SUBJECT: DISPOSAL OF NON-BYPRODUCT MATERIALS IN TAILINGS
IMPOUNDMENTS

In your February 23, 1988 memorandum, you requested a policy decision on the disposal of non-byproduct waste materials (NARM and other wastes) in mill tailings impoundments. To facilitate our review, we used the two categories of wastes discussed in your memorandum. These categories are: (1) NARM wastes, those generated by operations not regulated under the Atomic Energy Act (the Act) and (2) other wastes, those generated by operations regulated under the Act. Neither of these waste categories is included in the legislative definition of byproduct material.

The major regulatory issues discussed in your memorandum and noted below would have to be favorably resolved before the NRC could consider approving the disposal of the NARM category of waste in mill tailings impoundments under current statutory authority. The statutory authority is unlikely to change in the near future. Therefore, we agree with your recommendation that NRC not approve a policy of disposal of material in the NARM category of waste in mill tailings impoundments.

The primary issue is whether the inclusion of NARM wastes in a mill tailings disposal site is consistent with U.S. Government ownership (or State ownership) and other authorities under Section 83 of the Act. Since the Department of Energy (DOE) is currently designated to take title to the mill tailings sites, NRC requested DOE's view on this question. DOE's response stated that DOE has doubts about its authority to take title to the mill tailings disposal sites if NRC has allowed the commingling of NARM (non-byproduct) materials in the impoundments (a copy of the DOE response is attached).

As noted in your request, NRC does not have authority to regulate NARM. Therefore, disposal of NARM in tailings impoundments would result in a commingling of regulated and unregulated materials in the same disposal unit. This could create duplicative jurisdiction between NRC and other Federal or State agencies with respect to the commingled radioactive materials. Moreover, if NARM waste constituents were to violate the current standards (e.g. migrate into ground water), the Commission's authority under Section 84c of the Act to approve alternatives to requirements for disposal or reclamation would be seriously impaired.

Additionally, the wastes may be subject to presently applicable Resource Conservation and Recovery Act (RCRA) regulations or other U.S. Environmental Protection Agency (EPA) rules for hazardous constituents or NARM, as well as to applicable State requirements. If the waste results from a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) clean-up

880802016 (2)

action, the EPA requirements required to be met would also need to be considered by the licensee to ensure that there is no issue regarding suitability of the site for disposal of the CERCLA wastes. The appropriate regulatory authorities would have to address these requirements.

Finally, since there is currently a NARM disposal site licensed by the State of Utah and a license application under review in the State of Colorado, there appears to be no compelling need at this time to dispose of NARM material in uranium mill tailings impoundments.

The other waste category includes waste materials generated from several different types of licensee activities regulated under the Act. Although these wastes do not meet the legislative definition of "byproduct material," we agree from a policy and technical standpoint with your proposal that their disposal in tailings impoundments should be considered on a case-by-case basis, provided the volume of material is not large when compared to the existing tailings in the impoundment. With respect to the land transfer issue, the DOE in its letter of June 10, 1988 stated that it would be willing to discuss this in more detail on a site-specific basis. Additionally, for the other waste category, the other issues appear to be more amenable to resolution on a case-by-case basis. Therefore, if NRC can make a finding that (1) there is no significant environmental impact, (2) the reclamation of the impoundment will not be impacted, (3) there are no RCRA or CERCLA problems, and (4) the DOE agrees to take title to the site upon completion of the reclamation, then NRC could authorize such a disposal.

In our view, it is the applicant's responsibility to demonstrate that these four points have been met. This demonstration should include reaching the appropriate agreements with EPA, DOE, and the State. The NRC should not take on this responsibility for the applicant.

(Signed) Robert M. Bernero



Hugh L. Thompson, Jr., Director
Office of Nuclear Material Safety
and Safeguards

Enclosure:
DOE letter dated June 10, 1988



Department of Energy
Washington, DC 20545

JUN 10 1988

Mr. Richard L. Bangart, Acting Director
Division of Low-Level Waste Management
and Decommissioning
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Bangart:

This is in response to M. R. Knapp's letter of April 14, 1988, to the Department of Energy regarding the Department's acceptance of transfer of ownership of licensed uranium mill tailings impoundments if non-byproduct materials were also disposed there.

While the Department supports the Nuclear Regulatory Commission's efforts to find permanent disposal sites for these materials, it is not clear that the Department would have the authority under Section 83 of the Atomic Energy Act to accept custody of non-byproduct materials. Congressional action may be needed to provide an unambiguous resolution on this issue.

Assuming some means of resolving the authority question was achieved, the prior satisfaction of all Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, requirements would be essential. Appropriate financial arrangement would have to be provided so that the Department would bear no additional cost associated with the acquisition of this material.

Your letter indicated that there are three pending applications before the Commission for the disposal of non-byproduct material at licensed uranium mill tailings sites. We also understand there may be different materials in question; some ("NARM") clearly outside of NRC jurisdiction and some ("secondary" recovery waste) within NRC jurisdiction. We would be willing to discuss this in more detail, if you desire, with respect to specific material at specific sites.

Sincerely,

John E. Baublitz
Acting Director
Office of Remedial Action
and Waste Technology
Office of Nuclear Energy

638/2

①

8808030122

40-8905/PJG/87/07/15/0

- 1 -

JUL 30 1987

Docket File 40-8905
LFMR/PDR/DCS
DBangirt, RIV
PGarcia
MShopenn
MBrown, RCPD, NM
LLW Branch, WMLU
URFO r/f

URFO: PJG
Docket No. 40-8905
SUA-1473, Amendment No. 3
04008905180E

MEMORANDUM FOR: Docket File No. 40-8905
FROM: Pete J. Garcia, Project Manager
Licensing Branch 2
Uranium Recovery Field Office, Region IV
SUBJECT: AMENDMENT NO. 3 TO SOURCE MATERIAL LICENSE SUA-1473
FOR THE AMBROSIA LAKE MILL

Introduction

By letter dated March 31, 1987, Quivira Mining Company (Quivira) requested amendment of Source Material License SUA-1473 for the Ambrosia Lake Mill to authorize processing of alternate feed material. This material, which averages 0.61 percent uranium, is a residue generated during a yellowcake purification process at Sequoyah Fuels Corporation's UF₆ Conversion Plant at Gore, Oklahoma. Quivira provided additional information by letters dated July 15, 1987, to NRC, and June 9, 1987, to the New Mexico Environmental Improvement Division with a copy to NRC.

The proposed action is to authorize Quivira to process the alternate feed material from the Gore facility. A more complete description of the licensee's proposal and a summary of the staff's review is provided below.

Licensee Proposal

The licensee states that the alternate feed material in slurry form will be transported to the mill in DOT-approved tanker trucks. The slurry will be unloaded at a covered receiving station which will be constructed near the thickener circuit. The slurry will be pumped from the tanker trucks into thickener tanks. The location of the receiving station and

8708130208⁽⁴⁾

the thickener tanks is shown on Figure 1 of the licensee's March 31 submittal.

A flow diagram of the process to be utilized to recover the uranium is shown on Figure 2 of the July 15 submittal. The slurry will be washed in the thickeners. The thickened slurry will then be fed into leach tanks for addition of sulfuric acid. This step will be identical to the normal mill process step with the exception that an oxidant will not be required due to the ferric iron content of the slurry. The remaining major process steps consist of solvent extraction and precipitation. The text of the licensee submittal indicates that the precipitated yellowcake may be kept in slurry form or dried. However, Figure 2 of the July 15 submittal indicates that the yellowcake will be left in slurry form. The wash solution, along with barren raffinate solution from the solvent extraction process step, will be pumped directly to synthetically-lined evaporation ponds. Tailings will be discharged into Tailings Impoundment 2.

Quivira estimates that approximately 16,000 tons of residue will be shipped to the Ambrosia Lake Mill for processing. The results of chemical and radiological analyses of the alternate feed material and the wash water are shown on Tables 1, 2, and 3 of the licensee's March 31 submittal. A table showing the composition of the raffinate solution and the solution in the evaporation ponds is provided in the June 9 submittal.

Finally, Quivira proposed no changes to their existing in-plant radiation safety program. Quivira states that the existing programs are adequate to evaluate radiological impacts and states that existing operating procedures will be followed for all aspects of the radiation safety program.

Staff Evaluation

The staff reviewed the licensee's proposal to determine whether it would result in a significant impact to the environment or the current tailings management, environmental monitoring, and radiation safety programs.

As stated previously, Quivira estimates that approximately 16,000 tons of residue will be processed at the mill. This amount constitutes only 3 days of milling at the mill's rated capacity of 6,500 tons per day. Further, the tailings impoundment system at the Ambrosia Lake Mill currently contains more than 33 million tons of tailings. The additional

JUL 30 1987

material will therefore constitute a miniscule percentage of the final volume of tailings resulting from operations at the Ambrosia Lake sites and will not have a significant impact on the capacity or final reclamation of the tailings disposal system.

Quivira states that the residue wash water and the barren raffinate solution will be pumped to lined evaporation ponds. The solid residue resulting from the uranium extraction process, which will be repulped using mine water or solutions resulting from processing regular ores for pumping to the unlined tailings pond, will contain only the insoluble component of the constituents comprising the residue. The effect on seepage from tailings pond 2 should therefore be minimal. A comparison of the evaporation pond solution with the wash and raffinate solutions shows that the solutions are very similar. The only constituent which is present in significantly higher concentrations in the alternate feed process solutions is nitrate (NO_3). A review of the ground-water monitoring program currently in effect for the evaporation ponds indicates that NO_3 is included in the list of parameters for sample analysis. In addition, no evidence of seepage has been detected to date from any of the lined ponds to be used for evaporation. The staff concludes that the processing of the alternate feed material will not impact the ground-water programs currently in effect for the Ambrosia Lake Mill.

The licensee has not proposed changes to the radiation safety program already in effect at the Ambrosia Lake Mill. Since the feed material will be handled exclusively in a wet form, no increase in airborne radioactivity is expected. The staff concludes that the mill's existing radiological monitoring program and operating procedures will be adequate to determine and minimize worker exposures resulting from the proposed activity.

Conclusions

Section 40.4(a-1) defines byproduct materials as "the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." Section 40.4 does not provide a definition for the singular term "ore." It does, however, provide a definition for "unrefined and unprocessed ore," which means "ore in its natural form prior to any processing." The "feed material" (itself source material) that Quivira proposes to reprocess is very similar to conventional ore. However, it does not constitute an "unrefined and unprocessed ore." Thus, it is logical and

JUL 30 1987

consistent with the public health, safety and welfare purposes of the Uranium Mill Tailings Radiation Control Act of 1978, as well as the Commission's implementing regulations, to conversely treat such material as refined and processed ore. Such ore will be reprocessed for its more refined source material content and the resulting tailings or wastes will therefore be byproduct material which is subject to Commission regulation. To hold differently would be to hold to an interpretation that would leave the resultant tailings from the reprocessed feed material as unregulated material. Such an interpretation would be contrary to the clear intent of the Mill Tailings Act.

The staff therefore recommends that Source Material License SUA-1473 be amended to authorize processing of the alternate feed material from the Gore facility by adding License Condition No. 31 to read as follows:

31. The licensee is authorized to process alternate feed material from Sequoyah Fuels Corporation's Gore, Oklahoma facility in accordance with the submittals dated March 31 and July 15, 1987.

15/
Pete J. Garcia, Project Manager
Licensing Branch 2
Uranium Recovery Field Office
Region IV

Approved by

15/
Harry J. Pettengill, Chief
Licensing Branch 2
Uranium Recovery Field Office, Region IV

Case Closed: 04008905180E

