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WM Project 41

Docket No.

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Mr. John Themelis, Project Manager
Uranium Mill Tailings Project Office
Albuquerque Operating Office
U. S. Department of Energy
P. O. Box 5400
Albuquerque, New Mexico 87115

Dear Mr. Themelis:

My staff has reviewed the document "Health, Safety and Monitoring Plan for the Vitro Tailings Remedial Action in Salt Lake City, Utah" which was submitted to us by the State of Utah. We are sending you our response to this document as previously agreed. Please disregard our comments to the contrary in my letter to Jim Morley of October 18, 1984. We will also send our responses on the Radiological Support Plan and the Quality Assurance Plan for the Salt Lake City Vitro remedial action directly to your office.

At this time we cannot give the health and safety plan the concurrence which is required by the Remedial Action Plan for the Vitro tailings site (UMTRA-DOE/AL-0141). Additional details and some modifications to the health and safety plan are needed before we can concur. Staff comments on the plan are enclosed.

The first three comments are major comments. Comment one addresses possible revisions to the health and safety program and comments two and three identify two major omissions in the health and safety plan. In addition, because of the unique conditions of this planned remedial action, a "Transportation Health and Safety Plan" should be developed as an appendix to this site health and safety plan. A transportation health and safety plan is needed because a large quantity of contaminated material will be translocated from the midst of a densely populated area, over heavily traveled routes, to a distant disposal area. Sections of this health and safety plan, as identified in the comments, could be used in the transportation health and safety plan.

In discussion with the Utah staff, my staff has learned that the health and safety plan is a general guidance document to guide contractors in development of specific health and safety procedures. Because of the general nature of the plan my staff, in order to resolve some of our comments, may need to review some contractor plans and procedures and/or make a health and safety site visit at the commencement of remedial action prior to our full concurrence.

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My staff is available to work with your staff and Utah staff toward completion of an adequate health and safety program. Please contact Mr. Dan E. Martin (301-427-4694) or Mr. Roger A. Pennifill (301-427-4160) concerning our concurrence on the health and safety plan. Questions on staff health and safety comments should be directed to Mr. Claude Flory (301-427-4554).

Sincerely,

Original signed by
Leo B. Higginbotham

Leo B. Higginbotham, Chief
Low-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management

Enclosure: Staff comments

cc: Larry Anderson - Utah (w/enclosure)
Gerald Ripley - Utah (w/enclosure)
John Arthur - DOE, Albuquerque (w/enclosure)

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Comments on the "Health, Safety and Monitoring Plan for the Vitro Tailings Remedial Action in Salt Lake City, Utah."

NOTE: Several of the comments are related to comments on deficiencies noted in DOE's UMTRA Environmental, Health, and Safety Plan. A copy of NRC's comments on the DOE's plan is attached and referred to at the end of the related comments.

1. In several places the Health, Safety and Monitoring Plan (The Plan) states that the radiological safety program could be changed based on available data. (p.1, Introduction, ¶3; p.4, External Dosimetry, ¶1; p.5, Bioassay, ¶2; p.7, Occupational Exposure to Radon; p.8, Environmental Monitoring,¶1) The Plan should explain the specific conditions which allow a procedural change and should describe the optional program procedures. Any change in the radiation safety program should be accompanied by an appropriate revision to The Plan. Any substantial revision to The Plan would need NRC review and concurrence. In many cases a plan revision would not be needed if the program options and the conditions which allow implementation of the options are adequately explained.

2. The Plan should contain a section on radiological staff organization. This section would explain the organizational structure and staff qualifications, authorities, and responsibilities which would ensure an adequate radiological safety program. (See UMTRA Plan comment 1.)

3. The Plan does not identify any inspection and audit program. (See UMTRA Plan comment 2.).

4. NRC recommends that The Plan contain an appendix which lists the types and approximate number of radiological safety equipment.

5. P.1,¶1: Is this plan also intended for use at the Central Valley Water Reclamation Facility (CVWRF)? If not, there should be a section, possibly an appendix, which describes radiological safety during remedial actions at the CVWRF.

6. P.3, Access Control: (1) This section describes measures to control access to the site at a control point. It should also require measures to prevent inadvertent or intrusive entries at other parts of the site boundary. Also, will there be more than one control point of entry and

will the same degree of access control be applied at all entry points? (2) The term "restricted area" should be defined. Is it intended to be the same as a "controlled area" as defined in the DOE plan? (See UMTRA Plan comment 3.). (3) The Plan should explain the conditions "under which personnel and equipment may enter restricted areas".

7. P.3, Training: (1) The workers should receive annual reorientation training. Safety meetings which include radiological concerns should be conducted at least monthly. (2) This section states that persons receiving safety orientation training will be asked to sign a statement. The legality of having a worker sign a statement that he understands the safety training may be questionable. NRC recommends that the worker be required to pass a test.

8. P.4, External Dosimetry: (1) Transport personnel will not be badged after initial readings verify "anticipated" exposures. The Plan should specify the exposure levels at which transport personnel would not be required to wear badges. Also, this section is not clear about the status of badges on other personnel throughout the life of the project. To remove this uncertainty the word "initially" in the third sentence should be deleted and a more positive statement about the requirement to wear badges should be added. (2) Several suggestions are offered. First, the badges should not be worn above the waist because the worker will usually be standing upon the source. A badge worn at the waist would then accurately measure the dose to the organ that probably will receive the dose of greatest significance--the gonads. Second, there will probably be a badge contamination problem. This can be combatted by wearing the badge covered and by washing the badge at the end of each shift.

9. P.4, Bioassay: (1) The Plan should specify action levels and follow-up procedures. (2) The Plan states that "the need for bioassay will be predicated on the results of air monitoring" and that the bioassay program may be revised. The conditions which would allow revisions and the proposed alternate program should be explained. A bioassay program should never be revised based on air monitoring results alone; nor should bioassay monitoring be completely eliminated. Because air monitoring does not precisely measure internal doses some level of bioassay monitoring is needed. (3) The Plan states that a seven pound intake of Vitro tailings in one year would yield the ALI for Ra-226 as specified in ICRP 30, Part 1. This is based on an oral intake; the inhalation ALI for Ra-226 would limit the intake to two pounds of Vitro tailings annually. The limit for Th-230 inhalation intake is about one ounce.

10. P.5, Protective Clothing and Change Facilities: (1) The Plan requires transport personnel to remain in their cab while loading. This requirement may be difficult to enforce; it would be more reasonable to give transport workers shoe covers and allow them to leave their cab if necessary. (2) The Plan should specify wash basins and showers for the change facilities.

11. P.6, Occupational Exposures to Radioactive Particulates in Air: The Plan states that area samples will be used to collect work area air particulate samples. "Area samples" normally are fixed environmental samples. The Plan should be more specific when requiring sampling in the work area. The primary consideration should be to obtain a sample that is as representative as reasonably achievable of the actual worker exposure condition. Airborne radionuclide concentrations can vary considerably over time and space. The Plan should address this variability by stating conditions by which the frequencies and locations of air samples are to be determined. (See UMTRA Plan Comment 5) Initial studies should be conducted to evaluate the effectiveness of the work area sampling. Studies of the breathing zone air should be conducted to determine if the area samples are adequately representative of work exposure conditions. Multiple samples during the work day could be taken to investigate variations of air quality during the day and to correlate air sample results with work and meteorological conditions. The frequency and locations of routine work area sampling could be based on the results of the initial studies. These studies could be repeated when there are significant changes in work or meteorological conditions.

12. P.7, Occupational Exposure to Radon: There is no provision in The Plan for measuring worker exposures to radon and radon daughters. The Plan calls for area monitors, not personnel dosimeters. Initial studies, such as those described in the previous comment, are needed before personnel dosimetry can be replaced by area monitors. If area radon monitors are used, based on initial studies, The Plan should explain the action levels which will be used to limit worker exposures below applicable standards.

13. P.10, Equipment Monitoring: (1) This section should be subdivided. One subsection should address vehicles and equipment being used continually for handling of tailings; the other subsection should address vehicles and equipment being released for unrestricted use. The second class of vehicles and equipment would require more stringent contamination control procedures and action levels. (2) The criteria for release of equipment or vehicles for unrestricted use are too high (See UMTRA Plan Comment 4). An isotopic characterization of the Vitro tailings may be needed to determine the appropriate decontamination criteria levels

14. Transportation health and safety: The sections entitled "Accidental Spillage" (p.2), "Transport Vehicle Hauling" (p.10), and the second bullet item under "Equipment Monitoring" (p.10) should be placed in a "Transportation Health and Safety Plan." This transportation plan should address all the hazards and health considerations in transporting the tailings from the Vitro site to Clive.

UMTRA Project Environmental, Health, and
Safety Plan (The Plan) Deficiencies

1. Lack of a clearly defined organizational structure.

Plan Contents:
Section 2.0 describes responsibilities of the UMTRA Project Office (2.1) and contractors (2.2, 2.3). Section 4.1 describes organization and staffing.

Identified Shortcomings:
The health and safety responsibilities of the Project Office, the Remedial Action Contractor (RAC), and the Technical Assistance Contractor (TAC) are listed with no explanation of the organizational structure which is needed to effectually fulfill these responsibilities. The Plan only requires that the contractor have a qualified responsible individual with adequate staff. It is recommended that the internal structure of the Project Office, RAC, and TAC be explained and diagrammed. Then the persons responsible for health and safety can be readily identified and lines of authority can be established within and between the Project Office, RAC, and TAC. Without clearly defined, independent lines of authority for health and safety personnel, the UMTRA health and safety functions can be overshadowed by seemingly more important operational concerns. This can be especially important if there are future time and budget constraints. In addition, staff qualifications should be specified in terms of education and experience.

2. Lack of an adequate inspection and audit program.

Plan Contents:
Item c in Section 2.1 and item g of Section 2.3 identify the Project Office and TAC responsibilities for the Health and Safety Survey Reports (HSSR). Section 4.7 describes the internal audit program to be conducted by the RAC.

Identified Shortcomings:
The scope and content of the health and safety survey, which appears to be an audit by the Project Office with TAC assistance, is not specified. The Plan should specify the scope and contents of the survey in order to identify to the RAC specific areas of health and safety concerns. A

procedure for corrective action should be outlined as part of this survey (audit) program.

The above comments on the Project Office survey are applicable to the RAC's audit program. The Plan should also clarify how the RAC's audit findings will be reviewed and acted upon during the Project Office surveys (audits). Other, higher order audits, such as those by DOE-Headquarters and the RAC's corporate office, should be identified.

The Plan fails to specify any on-site inspection programs. The RAC should be required to conduct daily, weekly, and monthly inspections of the work site. Inspection responsibilities and scope; should be outlined and procedures for corrective actions should be specified.

3. The allowance of up to 200 pCi/gm of Ra-226 soil contamination in uncontrolled areas.

Plan Contents:
Section 5.1 defines controlled areas. Controlled areas include any area where "significant portions of the exposed surface contamination exceeds 200 pCi/gm of Ra-226." These areas are to be controlled to prevent inadvertent exposure to contaminated materials.

Identified Shortcomings:
The Plan allows for the possibility that the general public could gain access to lands with surface contamination of up to 200 pCi/gm. Limits imposed by the plan on external gamma dose and airborne concentrations in uncontrolled areas may lessen the public health threat, but the spread of contamination is still possible. It is recommended that all of the designated processing and disposal sites be controlled to some degree. Controlled areas, as now defined in The Plan, should be restricted areas within the controlled areas. Designation of controlled areas at vicinity properties would have to be judged on a case-by-case basis.

4. The inappropriate use of ANSI N13.12 Table 2 limits for unconditional release of decontaminated equipment.

Plan Contents:
Section 5.3 specifies that equipment released for unconditional use should be decontaminated to the levels in ANSI N13.12, Table 2. It also states

that "an extensive effort shall be made to reduce contamination levels as low as reasonably achievable."

Identified Shortcomings:
The activity limits of 1000 DPM removable and 5000 DPM total, obtained from Table 2 of ANSI N13.12, are applicable for natural uranium in equilibrium with its decay products. Because the radiological hazard in tailings is predominately from Th-230 and Ra-226 more restrictive limits are needed. These more restrictive limits can be derived from the levels specified in Table 1 of the ANSI standard. Note one of Table 1 recommends that the activity limits of the radionuclides comprising the contamination be weighed to determine the appropriate overall activity limit. If the tailings are assumed to be 10% U-nat, 45% Th-230, and 45% Ra-226 the appropriate allowable activity limits would be 120 DPM removable and 500 DPM total. (Note that the 500 DPM total is the U-nat contribution. Table 1 recommends nondetectable levels of fixed Ra-226 and Th-230 where nondetectable is defined as activity less than 100 pCi per 100 cm^2.) The requirement in the plan, to reduce contamination levels as low as reasonably achievable, will probably not be followed at the UMTRA site because the ANSI N13.12, Table 2 values are listed as acceptable levels for release of equipment.

5. An inadequate radiological air monitoring program.

Plan Contents:
Section 5.6 requires representative air sampling in areas where soils average greater than 50 pci/gm of Ra-226 and in poorly ventilated areas. Section 7.1 and 7.2 describes the environmental (uncontrolled areas) air monitoring program.

Identified Shortcomings:

The environmental air monitoring program is adequate; the worker protection air monitoring program is not. The Plan should contain some specifications for the air monitoring program. Type and frequencies of monitoring, special conditions, exposure determinations, vicinity property applications, action levels, and corrective responses should be specified.

Enclosure 2

BRANCH CONCURRENCE FORM

TO: Branch Chief, WMGT
Branch Chief, WMEG

Please use this form to respond to the following question, and return to WMLU.

Question: Has your branch completed all assigned reviews with respect to the Remedial Action Plan for relocation of the Salt Lake City tailings to Clive, Utah, and concluded that no unresolved issues exist beyond those mentioned in the WMLU-proposed letter to DOE (other than issues concerning ground water at the Salt Lake City site)?

Answer: YES _____

NO* _____

Branch Chief Signature: _____

Date: _____

* If answer is no, please indicate below what other issues should be brought to DOE's attention.