SEQUOYAH FUELS AND QUIVIRA MINING COMPANY

DAMAGED YELLOWCAKE BARRELS

DISPOSAL PROCEDURES

Original: December 1986
Updates: February 1987

I. INTRODUCTION

1.1 Purpose

The primary objective of the Yellowcake Drum Disposal Guide is to establish procedures and precautionary measures for loading, transporting, unloading, and final disposal of damaged Sequoyah Fuels yellowcake drums at the Ambrosia Lake mill facility.

This guide also outlines the handling and transportation requirements as established by the Department of Transportation (DOT) and the Nuclear Regulatory Commission (NRC), as well as those established by company policies to ensure compliance with Federal and company rules and regulations.

1.2 Scope

This manual provides general guidance for Sequoyah Fuels personnel involved in the loading, packaging, and transporting of damaged yellowcake barrels and for Quivira Mining personnel involved in the unloading and the final disposal of those damaged yellowcake drums. The areas covered include the initial cleaning and crushing of damaged barrels, packaging, shipping papers, loading, transporting, unloading, storage, and final disposal within the Ambrosia Lake tailings pile.

II. DEFINITIONS

Bioassay - as used in this guide a sample of urine voided into a collection bottle and analyzed for uranium content.

Carrier - entity or organization which accepts an offer to transport lading to a specific destination.

Consignee - as used in this guide it means Quivira Mining Company and its employees.

Department of Transportation (DOT) - U.S. governmental department charged with the regulation and enforcement of transportation of goods.

Exclusive Use - means the sole use of a conveyance by a single consignor and for which all initial, intermediate, and final loading and unloading are carried out in accordance with the direction of the consignor or consignee. Specific instructions for maintenance of exclusive use shipment controls must be issued in writing and included with the shipping paper information provided to the carrier by the consignor.

Lapel Samplers - air sampling equipment worn in an individuals breathing zone to collect an air sample to be analyzed for radionuclides to determine an airborne exposure.

Nuclear Regulatory Commission (NRC) - U.S. governmental agency charged with the regulation and enforcement of rules and regulations pertaining to radioactive substances.

Radiation Safety Officer (RSO) - individual assigned responsibility and is experienced in the implementation, maintenance, and direction of health physics programs within the confines of a restricted uranium fuel cycle operation.

Respiratory Protection - wearing of a device designed to protect the wearer from inhalation of harmful atmospheres.

Shipper - entity or organization which offers lading to be transported to a specific destination.

III. DAMAGED BARREL DETERMINATION

3.1 Responsibility

The responsibility of selecting which yellowcake barrels are to be disposed of at the Ambrosia Lake facility shall be determined by the appropriate Area Manager or his/her designee. Judgement on the selection of damaged barrels should be based on the integrity of the barrel, the possibility of radiological release, and remaining useful life.

IV. DRUM HANDLING AND PACKAGING

4.1 Cleaning

Those drums selected for final disposal will be vacuum cleaned emptying the drum of yellowcake to the extent practical. Once cleaned, visible external contamination will be removed by wet wash. The appropriate precautions to avoid radiological exposure will be initiated and placed under the direction of the facility RSO.

4.2 Compaction

Once an appropriate quantity of drums exists, they will be compacted by a No. 400 Alcan Baler or equivalent. The resultant bale size will be up to 24" by 32" by 72" in dimension.

4.3 Packaging

The bales of crushed drums will be encased in 1/2 or 3/4 inch plywood for transport and final burial with bottom supports for fork lift handling. The exterior of the package will be stenciled or otherwise marked "Radioactive-LSA".

V. LOADING and SHIPMENT PAPERS

5.1 Loading

The package is to be in unimpaired condition and securely closed so that there will be no leakage of radiological material under conditions normally encountered in transportation. Loading will be performed by the consignor only. In accordance with a condition contained within Sequoyah Fuels mill license, the

package will not have removable surface contamination in excess of 1,000 dpm/100 cm^2 when determined by smearing with a dry filter or soft absorbent paper. Additionally, the package will also comply with DOT requirements as outlined in 49 CFR 173.441 that the external radiation levels will not exceed 200 milli rem/hour on the surface of the package, 10 milli rem/hour at any point 2 meters from the vertical planes on the outside of the transport vehicle, and 2 milli rem/hour in any normally occupied position within the transport vehicle. Once loaded, the shipment must be adequately braced so as to prevent the shifting of lading under normal conditions of transportation.

5.2 Shipping Papers

Shipping papers are to be completed in accordance with DOT regulations as outlined in 49 CFR 172.200, 201, 202, 203, 204, and NRC regulations 10 CFR 71,5. Forms to be completed include DOE/NRC Form 741 and Notice of Shipment (KM-1596). Examples are shown in Figure 1 and 2.

Additionally, two copies of Quivira Mining Company's "Transportation Accident Response Guide on Uranium Concentrate for Shippers & Transporters" will be provided by the shipper. This provides specific instructions for maintenance and spill clean up for exclusive use shipments. The driver should familiarize his/herself with this guide.

VI. TRANSPORTATION

6.1 Transportation

The transportation of damaged yellowcake drums is to be performed on an exclusive use basis. The lading is to be transported with seals intact from Sequoyah Fuels located in Gore, Oklahoma to Quivira Mining Company located in Ambrosia Lake, New Mexico normally via U.S. Interstate 40. The appropriate radioactive placards in accordance with 49 CFR 172, Subpart F shall be in place.

In the unlikely event a motor vehicle accident should occur, the driver should follow the instructions contained within the "Transportation Accident Response Guide on Uranium Concentrate for Shippers & Transporters" guide including the prompt notification of local law enforcement officials, the carrier, and the shipper.

VII. DELIVERY OF BARRELS

7.1 Unloading

Unloading of the packages will be performed by the consignee only. The packages will be unloaded with the appropriate equipment and stored within the designated storage areas within the fenced boundary of the warehouse. The boundary fence is 6 foot chain link fence with three stands of barb wire topping. Access into the designated storage area is controlled by Burns Security guards on duty 24 hours a day. All individuals seeking entrance into the storage area must have prior approval from the General Manager of the Ambrosia Lake operations. Keys to the storage area to those who have approval will be check out through Burns Security guards. The storage area is shown in Plate 1.

A member of the Ambrosia Lake health physics staff will survey the transport vehicle for radioactive contamination prior to it's release from Quivira Mining Company's property.

If the vehicle is being refitted with loaded yellowcake drums to be sent back to Sequoyah Fuels, the vehicle shall not be released or returned to service until the external dose rate at the accessible surfaces of the vehicle are below 0.5 milli rem/hour with removable radioactive surface contamination below 2,200 dpm/100 cm^2 as per DOT regulation 49 CFR 173.443.

However, if the carrier has completed the contractual obligations as an exclusive use carrier and is being release for other unconditional use, contamination limits as specified in Regulatory Guide 8.30 shall apply.

If decontamination procedures are needed to reduce levels below the acceptable levels, the decontamination will be performed on site by personnel designated by the facility RSO. Appropriate protective measures including the issuance of radiological respirators, protective clothing, lapel samplers, and bioassays shall be determined by the RSO based on the nature and severity of contamination.

The appropriate documents will be stored on site for future reference.

VIII. SITE DISPOSAL

8.1 Transportation to Burial Site

The time table for transportation and disposal of barrel packages from the storage area to the approved burial site on Pond 2 shall

be at the discretion of the Mill Superintendent. The packages containing the damaged drums will be moved from the storage area to the approved final disposal area using appropriate equipment as described. The barrel packages will be loaded from the storage area using fork lifts onto flat bed trucks. The packages will then be transported to the disposal trench via the flat bed truck. In the event the equipment described above is not available, substitute equipment may be used providing that the integrity of the barrel packages and employee safety is not compromised.

The current final disposal area is located on the east side of Tailings Pond #2. The area is indicated on Plate 2.

The supervisor in charge of disposal will notify the health physics department immediately should the exterior of the plywood package be damaged so as to release or possibly release radioactive contaminates. In the event this should occur, the procedures for clean up if necessary, shall be determined by the RSO or designee.

8.2 Burial Site Preparation

Burial site preparation shall only take place within the final disposal area as shown on Plate 2. The disposal trench shall be constructed prior to transporting the barrels within the area. The disposal trench shall be constructed using dozers or other suitable equipment for earth removal. The disposal trench should be approximately 14 to 16 feet wide and 40 to 80 feet long. The depth of the disposal trench should be approximately 9 feet. However, at the discretion of the supervisor in charge of burial site preparation, these dimensions may be changed to avoid burial in unconsolidated material such as slime fractions within Pond 2.

8.3 Burial

Burial of the damaged barrels shall be within the disposal trenches. The packages may be placed within the disposal trench for final burial using either a winch or fork lift depending on the ground conditions. The method of placing the package into the disposal trench will be at the discretion of the supervisor in charge of disposal. The entire crate including the plywood shall be buried in one piece. The plywood crates containing the crushed barrels should be placed within the trenches side by side and in such a manner as not to damage the packages causing release of radioactive materials.

The burial site will be covered at the discretion of the Mill Superintendent by means of physical burial or through placement of process material from the normal disposition of sand and slime on Pond #2. However, in the event the package is damaged during the transportation or subsequent placement within the disposal trench with the possibility of radionuclide release, immediate physical burial shall take place. A minimum topping of one foot of material shall be used to cover the trench.

When final disposal of the crates is through physical burial, a minimum of one foot of cover will be placed atop the crates. The cover material will be spread such that drainage of liquid is not impeded and will not cause ponding of liquid material.

When using the normal disposition of process material to cover the crates, the disposition method shall not erode or otherwise move material surrounding the crates so as to create unstable tailing conditions.