

APPENDIX C

On-Site Construction Review Report

Facility Name: Falls City
UMTRA Project Site
Falls City, Texas

Review Conducted: December 9, 1992

NRC Personnel: Daniel Rom (Geotechnical Engineer)
Michael Layton (Hydrogeologist)

Review Summary:

Area Reviewed: In the morning, the tailings embankment, including piles 1, 2, and 7 (Parcel A) were reviewed. Next, pile 5 and the naturally-occurring radioactive soils were seen, and the waste water retention basin was viewed. The road crossing and right-of-way to Parcel B, and Pile number 3 were observed in the afternoon.

Details:

1. Persons Contacted:

Paul Mann (DOE)
Woody Woodworth (DOE)
Wei Lin (MK-ES)
Leroy Fields (MK-F)
Terry Stanford (MK-F)
Rick Sima (MK-F)
David Franco (MK-F)
Steve McQuarry (MK-F)
Bob Staub (MK-F)
Bob Tews (MK-F)
Larry Parker (Chem-Nuclear)
Peter Waggitt (visitor)

2. Equipment Operating:

2-245 Trackhoes
1-D7 Dozer
1-D7 Widetrack

3-D9 Dozers
1-16g Grader
1-14 grader
3-Case Tractors w/disc
1-825 Roller
1-Cat smooth roller
1-8000 Water Truck
2-657 Scrapers

3. Site Review:

The following discussion correlates to the scope of the review, as presented in the attached On-site Construction Review Plan (OCRCP):

Pre-Meeting (OCRCP Items 1 and 2)

The NRC representatives arrived at the site office at 9:15 am. Introductions were made shortly afterwards when the DOE staff arrived. Mr. Peter Waggitt of the Office of the Supervising Scientist for the Alligator Rivers Region, Northern Territories, Australia, also attended as a visitor. Mr. Waggitt was traveling with Mr. Woodworth, and we were advised that he would join us on the review as an observer.

A safety presentation was given to Messrs. D. Rom, M. Layton, and P. Waggitt by S. McQuarry, R. Sima, D. Franco, and R. Staub. The safety introduction included verbal, written, and video presentations. Following the safety presentation, MK-F provided yellow fabric coveralls, hard hats, and heavy-duty rubber overboots to all review team members for their use while on site. We were further advised to stay with our escort at all times.

Since the group was to take a walking tour of the site, a formal status report was not given at the office. Instead, the group was advised of job progress as we walked to the disposal cell from the office.

Material Placement and Testing (OCRCP Item 3)

Routine placement of tailings was not underway at the time of the review. However, the reviewers were able to observe unique fill placement operations on the northeast side slopes of the cell. This area consisted of unstable wet slimes which were exposed upon cutting the pile back from the road. The non-routine stabilization methods were being prescribed by MK-ES to handle the difficult fill placement conditions created by the wet materials. The wet slimes were being covered first with a geotextile. A one-foot lift of drier contaminated soil was placed above the geotextile. Four passes of heavy equipment were reportedly conducted

prior to checking density. Additional discussion and conclusions on the operations in the wet slimes area are presented in the following section.

The reviewers observed in-place density testing on the northeast edge of the stabilized embankment. After clearing a test area with a loader, the technician used a sand-cone to check soil density. The sand-cone density test we observed was generally performed with care; however, the base plate did not appear to be level as per ASTM requirements. Instead, the plate was more nearly parallel to the sideslope. NRC staff notes that performance of the sand-cone density test with the base plate on a sloping surface can result in the sand not properly filling the test hole. MK personnel were advised to review the appropriate paragraphs of ASTM D-1556 testing procedure for details on sand-cone density testing on a sloping surface.

Wet Slimes Area (OCR Item 4)

In conjunction with the material placement and testing described above, the reviewers observed shaping operations on the edge of the cell near pile number 2. Concurrently we viewed exposed seeping tailings on the edge of the cell. The seepage condition was recorded on video. The review team was informed that construction stabilization of the seepage zone was by geotextile and bridging as previously described. The stabilization operations were observed, and it appeared that the prescribed combination of geotextile application and bridging effectively stabilized the face of the slope such that equipment could operate thereon.

On the far (southwest) face of the embankment, additional tailings seepage zones were observed and recorded. No construction was occurring in this seepage zone; however, NRC staff indicated that stabilization might be more difficult on this face due to the severity of the observed seepage and sloughing.

NRC staff has two concerns regarding the seepage areas described above. First, DOE should examine the impacts on slope stability due to the placement of a geotextile and bridge lifts of tailings. If a potential shear plane is being incorporated, then slope stability factors of safety may be less than those presented in the RAP. Special construction methods being used in these areas are also not found in the RAP. Secondly, the long-term effects of seepage need to be addressed. If a seepage situation similar to that at Durango is expected to occur, then consideration of post-construction control should be provided. DOE needs to address these two concerns in a PID.

Naturally-Occurring Radioactive Materials (OCR Item 5)

The reviewers subsequently viewed pile number 5 and the naturally- occurring radioactive soils. Although these materials are not mill tailings, their measured activity exceeds the standards for land cleanup of residual radioactive materials. Mr. Larry Parker provided insight regarding the nature, occurrence, and disposition

of the naturally-occurring in-situ radioactive soils. DOE initially excavated materials which were not mill tailings for cell placement. When it became apparent that the radioactive soils were not tailings, characterization was performed to better establish their nature and extent. Based on this characterization, DOE plans to leave in-place non-tailings radioactive soils provided that post-construction radon emissions can be maintained within accepted levels.

Dust Control (OCR Item 6)

Due to rainy weather the previous day, construction equipment was not operating on the morning of the review. Dust suppression was not in progress due to the wet subgrade conditions and lack of vehicular activity. DOE indicated that they had not received any complaints from local residents regarding dust control.

Settlement Behavior (OCR Item 7)

Following the fill placement and testing observations, the review team crossed the main embankment and viewed materials which were previously placed. A line of four settlement monitoring points was observed from the surface. It was reported that the monitors were all operable and that no construction disturbance incidents had occurred. Wei Lin provided the most recent settlement data to the NRC reviewers. To date, settlement has been less than projected amounts. The shapes of the measured settlement curves were generally parallel to those of the projected curves. We understand that DOE will continue to review the embankment settlement behavior and to refine the settlement model used in the RAP.

The NRC staff is concerned that recorded settlement may not be indicative of the worst case, contrary to what was assumed in selecting the test area presented in the RAP. The exposed slimes at the edges of the cell are saturated to the point that excess moisture is being squeezed from the pores. DOE needs to address the slimes consolidation issue to see if the measured settlement within the cell is representative of that which is likely to occur within the saturated slimes at the edges of the cell.

Additional Observations in Parcel A

While atop the northwestern corner of the tailings pile, the review team observed the topography and land use of the area between the disposal cell and property belonging to Mr. Jerry Dzuik, located north of the site. During the PEIS Scoping Meeting at Falls City on the previous day, Mr. Dzuik described a potential soil and groundwater contamination incident that allegedly occurred on his property in the 1970's when the mill was still operating. Additional information regarding this reported incident will be requested from DOE at a later date.

Before returning to the Project Office, the review team observed operations at the waste water retention basin. The basin was essentially empty, and crews were physically removing small amounts of water which apparently accumulated during yesterday's rain. Water removal was necessary since the crews were still completing inspection of seams and repairs in the synthetic liner.

At about 1:30 pm soil conditions were sufficiently dry that earthmoving equipment was able to operate. In conjunction with the startup, dust suppression activities were begun. The walking tour of Parcel A was completed, and the team adjourned for lunch. On exit from the controlled zone it was detected that the NRC video camera needed to be left on site for decontamination. For this reason, the reviewers were unable to take a video record of the Parcel B tour in the afternoon.

Parcel B/Pile 3 Observations (OCR Item 8)

In the afternoon the reviewers conducted a driving tour of Parcel B. At the controlled road crossing, a thick tarpaulin was placed across the pavement to collect contaminated soil from the vehicle. We were informed that the right-of-way to Parcel B was also the alignment for the slurry line from the days of mill operation. We were also informed that the slurry line had on occasion broken, and that the area was contaminated by wind-blown material. The right-of-way was fenced off, and the Contractor had provided a drinking water system for livestock on the adjacent parcels. No construction activity of consequence was occurring at Parcel B. Brush had been cleared and the haul road right-of-way was being surveyed. MK and DOE representatives discussed the proposed work for pile 3. Concerns expressed by adjacent landowners, regarding the crossing of a public road, livestock on adjoining parcels, and groundwater were being addressed through DOE's public relations efforts.

4. Records Review:

After the tours of Parcels A and B, NRC staff reviewed field and laboratory records pertaining to soil placement. In addition to the test records, equipment calibrations and personnel records were well-maintained. The review of density test, gradations, and calibrations yielded no discrepancies with the RAP, and test frequency was in accordance with the requirements of the RAIP. It was noted that Mr. Fields appeared to maintain complete, legible, and up-to-date records as required.

It was determined that the earthwork specifications (Section 02200) being used on the site were Revision 4. The most recent set of specifications submitted to our office was Revision 2. DOE needs to verify that specification changes from revision 2 to revision 4 are not changes of significance which have yet to be reviewed and concurred in by NRC in accordance with the NRC/DOE Memorandum of Understanding.

5. Exit Interview:

An exit interview was held and the review items were summarized. Concern was noted regarding the slime zones exposed on the slope. Current construction practice appears to be adequate with respect to short-term stabilization; however, additional zones may be encountered and these might require more attention to control.

Four items requiring DOE's response are noted:

- a. Slope stability behavior due to current geotextile and bridge lift placement operations needs to be addressed.
- b. Measured settlement versus potential settlement in saturated slime zones requires attention.
- c. A comparison of revisions 2 and 4 to the earthwork specifications needs to be made to see if any significant differences not previously brought to NRC's attention are applicable.
- d. Sand cone testing procedures on sloped fill should be reviewed.