

**TECHNICAL ANALYSIS** Last rev - March 7, 1995

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March 6, 1995

TO: Daron Haddock, Permit Supervisor

FROM: Wayne H. Western, Reclamation Engineer *WHW*

RE: Midterm Review, Utah Fuel Co., Skyline Mine,  
ACT/007/005, Folder #5, Carbon County, Utah

**BONDING AND INSURANCE REQUIREMENTS**

Regulatory Reference: R645-301-800 (30 CFR Sec. 800)

**Analysis:**

As part of the midterm review the Division has examined the reclamation cost estimates for the Skyline Mine. The Division noticed that some demolition costs and unit cost estimates were not included in the bond estimate.

In Section 1 A, demolition and removal of equipment, the Operator lists the unit cost of equipment removal as \$140 per ton. There is no reference in the bond calculation to those unit costs. The activities associated with the equipment disposal cost such as transportation and disposal costs must be mentioned.

In Section 1 B, demolition and removal of structures, the Operator did not include the disposal fees or the transportation fees from the mine site to the disposal facility. The wording on the building demolition in pre-1995 editions of Means was "including disposal." Many people thought disposal meant transportation to a disposal facility and dump fees, but those assumptions were incorrect. The 1995 edition of Means clarifies what is meant with the wording "including 20 mile haul, not including dump fees."

The 20 mile haul means the distance one way to the disposal area. Since the nearest State-approved landfill is more than 20 miles from the mine, the trucking costs must be included in the bond calculation.

Usually the dump fees are more than the demolition costs. The addition of the dump fees could increase the bond by more than \$1,000,000. There are things that the Operator can do to decrease the dump fees such as disposing of steel at a reclaim facility and on-site disposal of inert materials. However, such changes would require a permit modification.

In Section 1 C, concrete/pavement removal, the costs for demolishing some foundations such as the shop/warehouse are listed. However, there is no mention of the foundation removal for the administration building, the water tanks, or the water treatment building. The cost for all the foundations demolition must be included.

The Operator lists the 1990 edition of Means as the reference for concrete demolition which lists the unit cost for concrete demolition as \$0.26 per cubic foot. The task associated with that unit cost is for building demolition, not foundation demolition. The unit cost for these types of demolition differ significantly. On a cubic yard basis the demolition costs for solid concrete range from \$65.40 to \$292 per cubic yard depending on thickness and reinforcement. Correcting the unit costs for concrete and pavement removal will significantly increase the bond amount.

The Operator only lists the volume of concrete and pavement and does not state what type of reinforcement the structures have. In order for the Division to determine if the unit costs are correct, the thickness and type of reinforcement must be stated.

#### **Findings:**

During the midterm review, the Division discovered some errors in the bond calculations at the Skyline Mine. These errors involved not including transportation and disposal fees for building debris, not including the removal of some foundations, and improper unit costs for concrete demolition. A list of the bond calculation errors is given under recommendations.

#### **Recommendations:**

1. Transportation cost from the mine to a State-approved landfill must be included in the cost estimates. The Operator must identify the closest landfill that will accept building debris.

**TECHNICAL ANALYSIS** Last rev - March 7, 1995

---

2. Landfill disposal fees must be included in the bond costs.
3. Demolition costs for all foundations must be included (i.e. administration building, the water tanks, and the water treatment building.)
4. The correct unit costs for concrete demolition must be used.
5. The thickness and type of reinforcement for each solid concrete structure must be given.

## **APPROXIMATE ORIGINAL CONTOUR RESTORATION**

Regulatory Reference: UCA R645-301-412, 512.200, 537.200, 553.100, 553.600, 553.700, and 553.800 (30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133)

### **Analysis:**

The Operator states in the MRP:

"It is not intended that all of the disturbed areas are returned to their original contours or configurations. These areas, as addressed in Section 4.6 - TOPSOIL AND SUBSOIL HANDLING PLAN and Section 4.7 - REVEGETATION PLAN, are currently being stabilized and revegetated and consist primarily of those steep slopes where return to original configuration is impractical."  
(Section 4.1 page 4-1)

"Side hill cuts range between 1h:1v and 1h:2v. Most of these cuts will remain upon abandonment. Any physical support systems used to control these cuts along with any small terraces used for stability control will also remain." (Section 4.12.1, page 4-76)

"Final cut slopes in [the No. 1 mine portals] area will be contoured to a one horizontal to two vertical slope(1h:2v) with 8-foot wide benches provided at 30-foot height intervals. The area around Mine No. 3 portals is overlain by thin ( 1 to 2 feet thickness) sandstones, shales and siltstones. Final cut slopes in this area will be contoured to a one horizontal to one

vertical slope (1h:1v) with 8-foot-wide benches provided at 30-foot height intervals. The described specifications have been determined to be stable and safe by analysis of the geotechnical core drilling. Stability and designated postmining land use will be achieved without extensive backfilling and therefore the mine site will not be returned to the original contours." (Section 4.4.2 page 4-28)

Regarding reclaiming the conveyor bench the Operator says:

"The final reclamation is to leave the conveyor bench intact." (Section 4.7.3 page 45)

Section R645-301-537.230. of the Utah Coal Mining Rules states:

"Stability of the spoil or underground development waste will be demonstrated through standard geotechnical analysis to be consistent with backfilling and grading requirements for material on the solid bench (1.3 static safety factor) or excess spoil requirements for material not placed on a solid bench (1.5 static safety factor)."

The Operator claims that some of the benches are to be excluded from the approximate original contour requirement because they meet the stable and revegetated exclusion. The Operator has not demonstrated that such benches meet the static safety requirement. Reference is made to an analysis of core samples taken near the portal areas, but the laboratory reports and geotechnical analysis are not included in the plan. Nor are there any certified designs for the variances from approximate original contours as prescribed by R645-301-512.260.

There is not enough technical information for an analysis to determine if the slopes proposed for exclusion from the approximate original contours requirement would be stable. A general rule for stability as a function of slope angle is that slopes with angles gentler than 1h:2v are stable. Slopes with angles of 1h:1v are usually considered unstable. Based on this general rule, it would appear that the slopes proposed by the Operator for exclusion are not stable.

**TECHNICAL ANALYSIS** Last rev - March 7, 1995

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**Findings:**

The Operator has failed to demonstrate that a variance from the approximate original contour is justified. The slopes proposed to be left in place because they meet the stable and revegetated requirements have not been shown to meet the minimum safety factor requirement. There are no designs certified by a registered professional engineer for any slopes proposed for a variance from the approximate original contours.

**Recommendation:**

1. The Operator must either obtain a variance from the approximate original contours or modify the reclamation plan so that approximate original contour requirements are met.