



**State of Utah**  
 DEPARTMENT OF NATURAL RESOURCES  
 DIVISION OF OIL, GAS AND MINING

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May 9, 1995

TO: Daron Haddock, Permit Supervisor

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

RE: IBC Remote Fan Installation, Andalex Resources, Inc., *Centennial Mine,* Smoky Hollow Mine,  
PRO/025/002, Folder #2, Kane County, Utah

*ACT/007/019-946*

*add Permit Binders*

**ROAD SYSTEMS**

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151, 512.250 817.151, 521.170 784.24

***Minimum Regulatory Requirements:***

***Each primary road embankment shall have a minimum static factor of 1.3. The Division may establish engineering design standards for primary roads through the State program approval process, in lieu of engineering tests, to establish compliance with the minimum static safety factor of 1.3 for all embankments;***

***Operator's Proposal:***

Two previous slope stability analyses have been conducted at the mine site. Since each of those areas is located in the same soil types as the proposed fan area and roads the geotechnical information on the soils was taken from those studies.

The stability analysis was performed using the Hoek Method (Hoek, E., and J.W. Bray, 1981, Rock Slope Engineering, Revised Third Edition, IMM, London). The soil properties used in the stability analysis were based on conservative estimates from previous studies at the mine site. The parameters used in the analysis were as follows: internal friction angle of 32°, cohesion strength of 200 psf and density of 102 pcf.

Typical cuts and fills and the pad slopes were analyzed. Studies were conducted for both dry and saturated soils. The safety factor for all slopes under both dry and saturated conditions was at least 1.3.

**Analysis:**

The slope stability study was conducted using generally accepted engineering practices. The soil properties were based on previous soil tests at the mine site that involved similar soils. Since soil properties are not uniform it is common to use conservative values based upon measurements of similar soils.

Travel on the access road and visits to the fan portal will be minimum. If the road or pad failed the risk to human safety and the environment would be minimal. Since the amount of risk involved with the road and fan pad is minimal the Division is satisfied with the level of stability analysis.

**Findings:**

The Division has determined that the road slopes are stable and meet all regulatory requirements.

**RECOMMENDATION**

Approve the proposal.

AND94G.WHW