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United States Department of the Interior 3480

BUREAU OF LAND MANAGEMENT

Moab District  
P. O. Box 970  
Moab, Utah 84532

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(U-065)

DIVISION NOV 15 1989  
OIL, GAS & MINING

*(fax rec 11-15)*

Mr. Lowell Braxton  
State of Utah Department of Natural Resources  
Division of Oil, Gas, and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Dear Mr. Braxton:

As part of the Skyline Mine Five Year Permit Renewal, Utah Fuel Company has proposed a change in the existing theoretical angle of draw used for protecting surface facilities and resources from subsidence resulting from underground coal mining. This letter serves as BLM's evaluation of the proposal to change the angle of draw from 30 to 22 degrees.

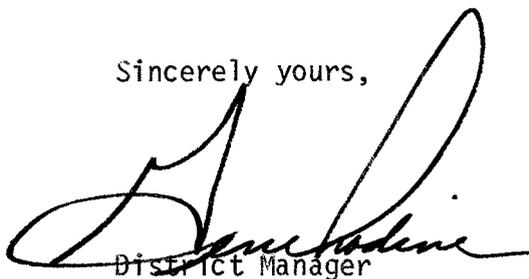
The original 30 degree angle of draw was a conservative estimate utilized in the initial mine planning. However, since mining has commenced Skyline has conducted a subsidence monitoring program. Site specific empirical data from this monitoring has indicated that the actual angle of draw ranges from 15 to 21 degrees but generally averages from 15 to 17 degrees. In determining an appropriate theoretical angle of draw, it is necessary to weigh site specific data very heavily. This is because prediction of mining-induced subsidence in one area based on observed subsidence in another area is not absolute due to rock properties that are variable.

An angle of draw smaller than 22 degrees is comparable with the experience of other mines utilizing deep longwall mining methods in the District. A study (USGS Professional Paper 969) by Dunrud on underground coal mines in Utah and Colorado indicates a typical angle of draw of 20 degrees in mines with weak to moderately strong strata at depths from 650 to 900 feet. This angle tended to steepen to 15 degrees at depths of 900 feet to 1,000 feet.

It is our conclusion that an angle of draw of 22 degrees should adequately protect surface facilities and resources and will maximize the recovery of coal. Also, we feel it will allow a margin of safety for unknown factors such as the local geology, seam depth, faults, and overburden properties which affect the angle of draw. Therefore, the BLM recommends approval for changing the angle of draw from 30 to 22 degrees. This recommendation is contingent upon continued close subsidence monitoring in critical areas such as the Mountain Fuel Company gas pipeline. If monitoring indicates any preliminary movement in these areas, then we should consider increasing the angle of draw.

If you have any questions, please contact Jeff Cundick at 637-4584 or Brent Northrup at 259-6111.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Brent Northrup", written over the typed name "Brent Northrup". The signature is fluid and cursive, with a large loop at the end.

Brent Northrup  
District Manager

cc:  
U-066  
U-921  
USFS, Manti La Sal  
Utah Fuel Company