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

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Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

June 7, 2002

TO: Internal File
THRU: Daron R. Haddock, Permit Supervisor *DRH*
FROM: Wayne H. Western, Sr. Reclamation Specialist/Engineering *WHW*
RE: Technical Field Visit, Shaft Sealing, Castle Gate Holding Company, Castle Gate Mine, C/007/004

Other Attendees:

Daron Haddock, Amber Fortner, Pete Hess, Stan Perks, Jeff McKenzie, Johnny Pappas, and John Borla.

Date & Time:

June 5, 2002, 10:00 AM until 11:30 AM

PURPOSE:

To discuss the permanent closure of the shafts in Crandall Canyon.

OBSERVATIONS:

The main question was should the shafts be backfilled or capped. Stan insisted that the shafts should be backfilled to prevent a methane explosion. He cited several examples where methane behind a seal mine opening has been ignited. Examples include Soldier Canyon Mine and White River.

Stan stated that the Utah coal rules require that all shafts be backfilled. A check of the R645 regulations found the following:

513.500. Each **shaft**, drift, adit, tunnel, exploratory hole, entryway or other opening to the surface from the underground will be **capped, sealed, backfilled** or otherwise properly managed **consistent with MSHA, 30 CFR 75.1771** (see R645-301-551).

TECHNICAL FIELD VISIT

513.501. Each **shaft**, drift, adit, tunnel, exploratory hole, entryway or other opening to the surface from the underground will be **capped, sealed, backfilled** or otherwise properly managed **consistent with MSHA, 30 CFR 75.1771** (see R645-301-551).

*****Please note that the citation listed in the regulations is incorrect. The proper citation is 30 CFR 75.1711.**

542.700. Final Abandonment of Mine Openings and Disposal Areas.

542.710. A description, including appropriate cross sections and maps, of the measures to be used to seal or manage mine openings, and to plug, case or manage other openings within the proposed permit area, in accordance with R645-301-529, R645-301-551, R645-301-631, R645-301-738, and R645-301-765.

*****Please note that the citation listed in the regulations is incorrect. The proper citation is 30 CFR 75.1711.**

551. Casing and Sealing of Underground Openings. When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, each **shaft**, drift, adit, tunnel, or other opening to the surface from underground will be capped, sealed and backfilled, or otherwise properly managed, as required by the Division and consistent with MSHA, 30 CFR 75.1771. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

*****Please note that the citation listed in the regulations is incorrect. The proper citation is 30 CFR 75.1711.**

Sec. 75.1711-1. Sealing of shaft openings.

Shaft openings required to be sealed under Sec. 75.1711 shall be effectively **capped or filled**. Filling shall be for the entire depth of the shaft and, for the first 50 feet from the bottom of the coalbed, the fill shall consist of incombustible material. Caps consisting of a 6-inch thick concrete cap or other equivalent means may be used for sealing. Caps shall be equipped with a vent pipe at least 2 inches in diameter extending for a distance of at least 15 feet above the surface of the shaft.

In the Utah rules, all shafts are required to be capped, sealed and backfilled. The regulations do not state if the entire shaft must be backfilled or if the cap or seal must be backfilled. The MSHA rules state that all shafts must be **either capped or filled**. Because MSHA requires either capping or filling, **I interpret the Utah coal rules to require all shafts to be capped or filled but not both.**

TECHNICAL FIELD VISIT

Stan stated, "That within MSHA there is a debate about the adequacy of the current shaft closure regulations." Stan also pointed out that several states have regulations that exceed MSHA's because of shaft closure failures. There is some evidence that suggests that MSHA closure regulations are not adequate.

The Division has either very broad powers or very limited powers depending on how the regulations are interpreted. If the term "as required by the Division" is interpreted to mean that the Division can set any standard that meets or exceeds the MSHA requirements then the Division could require the shafts to be backfilled. If the regulations are interpreted to mean that the shafts closure plan must meet MSHA requirements then the shafts are adequately sealed.

R645-301-551 states "Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters." If "prevent access" means for all time, then backfilling is the only method. However, if "prevent access" means for a reasonable time (life of structure of 200 years) then caps and backfilling are adequate.

Another consideration is cost. The BLM estimates that backfilling the shafts would cost over \$2,000,000.

The Division approved the permit on the condition that the shafts are to be plugged or best technology currently available be used to seal the shafts. The plan was approved on the assumption that the mine work be operational at the time of shaft closure. Since the mine has been closed, a major concern is methane in the shafts and the possibility of an explosion.

The Division may want to reconsider the use of plugs because of the potential danger of removing the caps and working in the shafts. The Division may also want to consider the use of backfill because it may be the best technology available based on new information about the potential dangers of capped shafts. Changing the approved shaft closure plan must be based on the recommendation of experts in shaft sealing.

RECOMMENDATIONS/CONCLUSIONS:

Whether the shafts should be capped or backfilled is a question that reasonable people will disagree on. The Division does not have personnel with expertise in developing shaft closure protocol.

In the past, the Division including AML has allowed shafts to be capped and then backfilled. Capping shafts is a method that has been approved by MSHA and the Division relies on MSHA for technical information on mine safety issues. The Division has not seen any compelling reason to change the shaft sealing protocol. Therefore, the Division should require the Permittee permanently close the shafts using plugs.