

0011



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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)

Michael O. Leavitt
Governor

Lowell P. Braxton
Division Director

April 30, 1999

To: File

Thru: Joe Helfrich, Permit Supervisor-Compliance *JH*

From: Peter Hess, Reclamation Specialist III *PH*

RE: Blasting Plan, Barn Canyon Ventilation Facility, Cyprus Plateau Mining Corporation, Willow Creek Mine, ACT/007/038-98B, Folder #2, Carbon County, Utah

SUMMARY:

The applicant has made two previous submittals in the attempt to permit an exhausting air shaft in Barn Canyon. The last technical analysis generated by this individual was dated August 12, 1998; one of the deficiencies addressed was relative to the lack of a blasting design for the excavation rounds during shaft development.

TECHNICAL ANALYSIS

OPERATION PLAN

USE OF EXPLOSIVES

Regulatory Reference: R645-301-524.

Analysis:

Blasting and Explosives

In the April 2, 1998 deficiency response to the Barn Canyon submittal, the applicant committed on page 4.5-28, paragraph one to address the initial round of the shaft excavation as a surface blast as mandated by R645-301-524.

Exhibit 22, page 1, paragraph 1 of VENTILATION SHAFT CONSTRUCTION indicates that, based on bore hole data from MC-018, up to forty-five feet of soil and loose rock will have to be excavated to expose the initial bedrock layers. At least two 10 foot rounds will need to be shot and mucked such that an in hole concrete foundation can be poured to initiate the shaft lining. At that point, it is not known if the top forty feet of the shaft will be poured up and backfilled to the original surface elevation, or if the remaining shaft lining will be excavated and poured down to the "D" seam. Then, the top forty feet of coping can be poured and the surface restored.

Based on the fact that 45 feet of earth will be excavated prior to the initial excavation rounds, the rounds are no longer under the jurisdiction of R645 surface blasting requirements. All rounds will be under the jurisdiction of 30 CFR 77, Subpart N.

Regulatory Reference: R645-301-524.200.
R645-301-524.210.

Analysis:

**Anticipated Blast Design in Permit Application
Anticipated Blast Design**

Based on Figure 2, page 4 of Exhibit 22, the depth of this air shaft will be approximately 493 feet from surface to top of the "D" coal seam. Based on the regulatory requirements of R645-301-524.212, Blasting Operations within 500 feet of an Active Underground Coal Mine, the applicant has submitted Figure 1, Typical Shot Pattern for Ventilation Shaft. Figure 1 addresses drill hole or shot pattern, delay periods, depth of round, and drill hole diameters. Underground entries have, as of the date of this analysis, not been developed in the area of the "D" coal seam where the Barn Canyon air shaft will be constructed.

Using the indicated hole diameters of 1-3/8" to 1-1/2", and the ten foot hole depth, it can be calculated that approximately 108 pounds of dynamite (240, 1-1/4" x 8" sticks) will be used per explosive round. This calculation does not include the loading of the perimeter or trim holes which are always loaded at a lighter rate to prevent excessive over fracturing of the shaft walls.

Although Figure 1 is not to scale, and there is no indication of hole spacing, it must be realized that this is merely an anticipated blast design. It will be up to the discretion and experience of the certified blaster on site to change design parameters as necessary to meet the fragmentation requirements necessary to expedite the mucking process. Once the finalized blast design has been determined by the certified blaster and approved by MSHA, it should be forwarded to the Division. This will meet the requirements of R645-301-524.220.

Blasting Plan
ACT/007/038-98B
April 30, 1999
Page 3

Blast design requirements which require methods to protect the public from air blast, fly rock and ground vibration have not been discussed within the submitted anticipated design. The initial delays in the submitted design will send fractured material vertically; the secondary and tertiary delays will send fractured material toward the center of the excavation. There may be a few pieces of machinery within the immediate area of the shaft coping which will need protection from fly rock on the initial rounds. As shaft depth increases, almost all flyrock will be contained within the hole. As only a few hundred pounds of dynamite will be used per round, air blast and ground vibration will be negligent in the surrounding area. There are no residents within a half mile radius of the Barn Canyon shaft construction site.

Regulatory Reference: R645-301-524.300-350.

Analysis:

Pre-blast Surveys

There are no residents or occupiable dwellings within one-half mile of the Barn Canyon shaft construction site. The closest structure is a storage building located across from the preparation plant substation (permittee owned); horizontal distance from the building to the shaft construction site is .43 miles.

Findings:

This regulation is not applicable to this project.

RECOMMENDATIONS AND CONCLUSIONS

Although Figure 1, page 3 of Exhibit 22 lacks detailed information with regard to the requirements of R645-301-524.230, sufficient information can be determined through utilization of a Blasters Handbook to meet the aforementioned.

The excavation rounds for this air shaft are considered to be under full jurisdiction of the U. S. Department of Labor, Mine Safety and Health Administration through 30 CFR 77, Subpart N.

In conclusion, the blasting design requirements of the R645 rules relative to underground coal mining and reclamation activities as they pertain to the initial blast rounds in shaft construction have been adequately addressed. The anticipated blast design which has been submitted should be approved.