

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

March 4, 2005

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor, Permit Supervisor

FROM: Peter H. Hess, Environmental Scientist III/Engineer, Team Lead

RE: Pace Canyon Fan Portal, Canyon Fuel Company, LLC., Dugout Canyon Mine, C/007/0039, Task ID #2104

SUMMARY:

The permittee submitted a revised application (first submittal received January 5, 2005) to the Division on February 8, 2005 (date of receipt in Price Field Office) to permit two breakout entries in Pace Canyon from the Gilson coal seam. One entry will serve as an intake air portal, also providing machinery access from the mine to the surface disturbance. The other opening will be a vertical airshaft, which will connect the underground workings with a ventilation fan located on the surface. This disturbance is necessary to compliment the ventilation requirements of the Mine. It will also serve as an emergency escape route for the underground workers.

The U.S. Department of the Interior, Office of Surface Mining made a determination on January 24, 2005 that this application for a permit revision did not constitute a mining plan modification. The U.S. Forest Service notified the OSM on January 20, 2005 that it had no comments or concerns with the Pace Canyon Fan Portal revision. The Bureau of Land Management concurred on January 24, 2005 that the application did not constitute a mining plan action requiring Secretarial approval.

This technical memo will address the R645 requirements relative to the engineering discipline.

TECHNICAL ANALYSIS:

OPERATION PLAN

TECHNICAL MEMO

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

The requirements of R645-301-231 are relative to soils and will not be addressed here.

The requirements of R645-301-526 and 528 are addressed within the approved mining and reclamation plan. R645-301-526 is specifically addressed in Volume 1, Chapter 5, pages 5-34 through 5-38. The addition of the disturbance relative to the Pace Canyon fan portal is necessary to enhance the underground ventilation system and the requirements mandated by 30 CFR Part 75. The Pace Canyon facility will include a mine ventilation fan with associated ducting, two diesel generators with electrical transformers (to provide emergency / backup power for the fan), an 8,000 gallon diesel fuel storage tank with containment, a ground support system for the portal entry, two topsoil piles, and a sediment trap. There will not be any refuse disposal facilities within this disturbed area, (See Page 5-49 of the application).

Sediment control at the Pace Canyon fan portal facility will be provided by the sediment trap located in the SW corner of the disturbance, as well as alternate sediment control treatments. These treatments will include roughening, seeding and mulching, containment by berms, and the use of gravel or riprap where needed.

Findings:

The minimum regulatory requirements of this section have been met.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

The Pace Canyon fan portal facility will be constructed on the NW side of Pace Creek. There is an old mine located on the SE side of the Creek (the Snow Mine). A wooden tibble structure existed here, but has long been dilapidated. The Pace Canyon fan will be constructed within the facilities area of the Snow Mine. In October of 2003, Senco-Phoenix conducted a historic property/cultural resource inventory of the Snow Mine facilities area. The determination made during that evaluation was that the site is of little or no value relative to NRHP criteria.

TECHNICAL MEMO

The survey is on file with the BLM and/or in the Confidential Binder of the Dugout Canyon MRP (See Chapter 4, page 4-2 of the application).

The BLM permitted a seven-hole exploration drilling project in the area of the Pace Canyon fan portal in 2003. The purpose of that project was to determine where coal burn existed. Of the six holes that were developed, two were retained for ground water monitoring wells. These monitoring wells will be plugged prior to the development of the Pace Canyon fan portal facility (Personal communication with V.S. Miller, CFC, 1/12/2005).

Findings:

The application meets the minimum regulatory requirements of this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

The Pace Canyon Road is noted in the 1980 Carbon County Road Maintenance Agreement with the BLM. The Pace Canyon road is considered a “public” road until it enters the NE1/4SE1/4 of section 25, T13S R12E. At this point, the road crosses a corner of land owned by the heirs of Milton and Ardith Thayn. A private gate, owned / maintained by the Thayn Trust, and located on Thayn land, bars access to the BLM / Thayn surface in the area.

The Pace Canyon fan portal facility will be constructed on surface owned and managed by the Bureau of Land Management. The road that crosses through the proposed disturbed area in Pace Canyon is a BLM road. The BLM has not classified this road, due to its length of pre-existence. The road provides access to the upper elevations of the Roan Cliffs. Thus, this section of the Pace Canyon road is not classified as a “public” road. The requirements of this section are not applicable.

Findings:

The requirements of this section are not applicable.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

TECHNICAL MEMO

Analysis:

Appendix 7-12 of the application describes the various treatment methods that will be used in order to control sediment (or fugitive dust) from reporting off the Pace Canyon disturbed area. The Dugout Canyon Mine MRP contains the approved information relative to the requirements of R645-301-244 and 301-420 in Volume 1, Chapter 4, section 420, page 4-9. There will be no coal brought out of the Mine at the Pace Canyon location. The only material that might cause air pollution would be fugitive dust from the area. As noted above, this will be addressed by the alternate sediment control treatments that will be utilized.

Findings:

The minimum regulatory requirements of this section have been met.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

Coal lease UTU-07064, Stipulation #11 states the following; “in order to avoid surface disturbance on steep canyon slopes and to satisfy the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specifically approved locations”. The application received on February 7, 2005 addresses the fact that the airshaft will be driven from the surface in a vertical fashion until the Gilson coal seam is intercepted. It is the Division’s understanding, based on information received from the BLM that the intake portal will also be driven from the surface such that it will intercept the Mine’s underground workings. This fact was not addressed in the application.

There is no R2P2 modification application submitted to the DOI / BLM / SLO at this time.

The current submittal to OGM (TASK ID #2104) does not contain a description of how the intake portal will be developed, (i.e., does the permittee intend to develop the tunnel with conventional methods (using explosives), or will continuous mining methods be used to drive the adit?). This description is necessary in order to determine whether or not the following issues need to be addressed:

- a) Does the permittee need to develop / submit a blasting plan for portal development in coal?

TECHNICAL MEMO

- b) How will the mined coal be handled? What volume of coal will be generated? Will this coal be disposed of as mine development waste? Disposal location?
- c) PLATE PC5-2 depicts an entry width of approximately thirty feet for the intake portal entry for a distance of approximately 210 feet (Figure PC-2). It is suggested that the permittee obtain a variance to the Roof and Rib Control Plan from MSHA prior to the initiation of development of this length of portal.

The requirements of this section have not been addressed.

Findings:

The minimum regulatory requirements of this section have not been met. In accordance with the permittee must:

- R645-301-522**, 1) Submit a complete description of the measures to be used to develop the Pace Canyon intake portal from the surface to the Gilson seam mine workings.
2) Apply to the DOI / BLM / SLO for a modification to the current R2P2 such that a determination can be made that the development of the intake portal from the outside-in is justifiable, based upon the need to address the requirement of Coal lease UTU-07064, Stipulation 11.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Subsidence Control Plan

The current subsidence control plan for the Dugout Canyon Mine, as it exists in the MRP, will not be affected, nor will changes to it be required by the development of the underground entries in the Gilson seam to the coal outcrop in Pace Canyon. The purpose of the Pace Canyon fan portal is to enhance the underground ventilation system of the Mine, reducing toxic and combustible gas levels to limits acceptable to the U.S. Department of Labor, Mine Safety and Health Administration. The underground entries that are developed to access the portal breakout location will be left in place until the secondary extraction of the last longwall panel in that area is completed. The permittee will then cease operation of the Pace Canyon fan and retreat from the area. It is highly unlikely that the secondary extraction of the pillars developed to access Pace Canyon will occur.

TECHNICAL MEMO

Findings:

The minimum regulatory requirements of this section have been met, based upon a previous determination and approval of the approved subsidence control plan.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

The requirements of this section are addressed within the approved Dugout Canyon Mine MRP, (See Volume 1, Chapter 5, section 515 REPORTING AND EMERGENCY PROCEDURES, page 5-9).

Findings:

The minimum regulatory requirements of this section have been previously met.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and Enhancement Plan

The permittee has a spill prevention control and countermeasure (SPCC) plan in place that meets the requirements of 40 CFR Part 112.3. The plan received its most recent P.E. certification on 11/26/2003.

The TASK ID #2104 application contains information relative to the installation of an 8,000-gallon diesel fuel tank to provide fuel for the two standby diesel generators. This tank is not included in the current SPCC plan's list of bulk fluid storage containers. The Division recommends that the SPCC plan be amended to include the 8,000 gallon tank and recertified by a P.E. to meet the requirements of 40 CFR 112.5.

The TASK ID #2104 application indicates that there will be two ways in which water may be discharged from the Pace Canyon fan portal disturbed area. The first is via a discharge from the proposed sediment trap located in the southern end of the disturbance. The second will

TECHNICAL MEMO

be a mine water discharge point which will provide a secondary outfall to discharge mine water intercepted underground. Please refer to the discussion in Chapter 7, page 7-55, section 733.100 Hydrologic-Balance Protection of the application.

The application mentions that outfalls will only occur in accordance with an approved UPDES permit issued by the Utah Division of Environmental Quality / Division of Water Quality. Thus, it is necessary for the permittee to amend the current UPDES permit and apply for two additional outfall locations in the Pace Canyon area.

In order to attempt to fulfill the requirements of R645-301-751, Water Quality Standards and Effluent Limitations, the Division requests that the permittee place a copy of the application cover letter to the DEQ / DWQ requesting the amendment to permit the two new Pace Canyon outfalls into the deficiency response. This will initiate the UPDES permitting process, and hopefully expedite the construction of the Pace Canyon facilities.

Findings:

The application is deficient. In accordance with the following, the permittee must provide:

R645-301-333; The Division recommends that the SPCC plan be amended to include the 8,000 gallon tank and recertified by a P.E. to meet the requirements of 40 CFR 112.5. Verification of this update must be submitted to the Division in the next application.

R645-301-751; the Division requires that the permittee place a copy of the application cover letter to the DEQ / DWQ requesting an amendment to the current UPDES plan to permit the two new Pace Canyon outfalls in the next application.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Classification System

The road that provides surface access to the Pace Canyon area is on Bureau of Land Management surface. It is the permittee's intent to relocate this road approximately 30 to 50 feet to the SE for a length of approximately 550 feet, in order to construct a pad large enough to accommodate the facilities associated with the Pace Canyon fan portal.

TECHNICAL MEMO

The 550-foot roadway length will be inside of the disturbed area being permitted for underground coal mining and reclamation purposes. For ease of permitting, the 550-foot length of road will be classified as a “primary” road, as it will be retained (although relocated) to provide access for the approved post-mining land use of the area.

During the operational phase of the Pace Canyon facility, most of the access to the disturbed area will occur from inside the Dugout Canyon Mine. The road may see minimal use for mining activities during this phase. Machinery access for the construction phase and the demolition / reclamation phase of this facility will be conducted via this BLM road. Upon completion of these activities, the only traffic on the road will be for access to the Roan Cliffs, or occasional Mine related business.

Plans and Drawings

The application contains Plates PC5-2, Surface Facilities (plan view and cross sections) and PC5-5, Pace Canyon fan Reclamation Topography (and cross sections). Plate PC5-2 shows the original location and the proposed (re-located) location of the Pace Canyon road. Plate PC5-5 shows the road location after the reclamation of the fan portal pad area has been completed.

The permittee has completed a cross section for the 550-foot length of road that is to be constructed. This section, FIGURE PC-1, is contained in Appendix 5-10 of the application. The cross section depicts a level fifteen-foot travel way width, with surfacing material being native soils, or gravel. Gravel will only be utilized if it is needed to create a drivable surface.

Relative to the drainage of precipitation intercepting the road surface, a berm is depicted on the side of the road that parallels the east side of the disturbed area. A boulder retaining wall is depicted on the Pace Creek side of the relocated road, and this wall will extend from the North gate to the location of the discharge culvert from the sediment trap. These devices give the impression that the road surface will act as a “channel”, routing all runoff intercepted by the road surface through a 420 foot length of the relocated road.

Appendix 7-12, section 742.400 Road Drainage, page 7-12-14 contains a commitment by the permittee to maintain the re-aligned road segment as well as the remainder of the road located above and below the Pace Canyon fan portal disturbance. This is essentially the same commitment required by R645-301-527.240, and is contained within the approved MRP, (Volume 1, Chapter 5, Road Maintenance, page 5-45). Although the Division appreciates this commitment and its intent, a cure is not as effective as prevention (erosion of the road surface).

TECHNICAL MEMO

The intercepted flow volumes would erode the road surface in a short time, rendering it impassable, particularly through any fresh fill material that had not been effectively compacted. Even with the aforementioned commitment to maintain, an effective drainage system is needed.

The permittee must develop a method to effectively drain the 550-foot roadway length such that erosion is minimized and the road surface is maintained to the extent possible, (See R645-301-512.250, 742.423.1 and 423.2 and 423.3). The drainage specifications must be described in the application.

Performance Standards

Plate PC5-5 shows that the Pace Canyon road will once again be relocated for the reclamation phase of the fan portal facilities. As depicted, the reclaimed / relocated road will run in more of a straight line. Relocating the road will also move the road further to the west, away from Pace Creek, and provide greater stability of the roadway surface. This may minimize the tendency for Pace Creek to undercut the east bank and eventually the road surface.

Primary Road Certification

The Pace Canyon road is a pre-SMCRA road that will be retained post-mining in order to provide access to the Roan cliffs such that the approved post-mining land use can be implemented. The use of this road for mining purposes during the coal extraction process (coal or refuse will not be hauled on this road) will be minimal. The road has been classified as a “primary” road. Figure PC-1 contains a P.E. certification by a Utah registered professional engineer.

Other Transportation Facilities

The minimum regulatory requirements of this section have been previously addressed within this document, or they have been addressed elsewhere within the approved mining and reclamation plan.

Findings:

The application is deficient; prior to receiving a recommendation for approval the permittee must, in accordance with:

R645-301-527.210, R645-301-742.420 et al., the permittee must develop a drainage plan to effectively drain the 550-foot roadway length such that runoff is controlled, and erosion of the road surface is minimized.

TECHNICAL MEMO

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

The requirements of this section have been previously addressed by the Dugout Canyon Mine MRP, (See Volume 1, Chapter 5, section 528.300, page 5-48).

Coal Mine Waste

As previously noted, two breakouts will be developed in the outcrop of the Gilson seam to install the Pace Canyon Fan portal. This will generate mine development waste material in the form of oxidized / burnt coal, burnt material above the coal seam, sandstone material, etc. Chapter 5, page 5-49, Underground Development Waste (TASK ID #2104 application) contains the following commitment; “material such as subsoil and rock generated during construction of the shaft and portal at the Pace Canyon Fan site will be used to construct the site. The layout for the shaft and portal has been designed to avoid oxidized or burnt coal, however, should it be encountered during construction these materials will either be hauled to a waste rock facility for permanent disposal or stored underground, upon approval by MSHA.”

Refuse Piles

There will be no disposal of mine development waste within the Pace Canyon fan portal surface disturbance.

Findings:

The minimum regulatory requirements of this section have been met.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

TECHNICAL MEMO

Analysis:

The purpose of the proposed Pace Canyon fan portal facility is to enhance the ventilation system of the underground workings of the Dugout Canyon Mine. The permittee has determined that it is necessary to do this in order to enhance safety and meet ventilation requirements mandated by 30 CFR Part 75. Thus the Pace Canyon facility is a support facility for the underground coal extraction process.

The application received on February 8, 2005 describes how the utility requirements of the proposed fan installation will be met. Primary electrical power for the fan installation will be provided by a high voltage electrical cable routed from the main mine facilities area (located in Dugout Canyon) through the underground workings to the Pace Canyon breakout. Auxiliary power will come from one of two diesel generators, as depicted on Plate PC5-2. The generators are described as trailer-mounted units located inside a concrete containment. Fuel for the diesel engines will be stored in an 8,000-gallon tank, which will also be contained within a concrete structure of adequate retention capacity. The containments for the dual generators and the diesel fuel will be housed within a concrete building structure, (See Pace Canyon Fan portal application, Chapter 5, page 5-35, section 526.200, Utility Installation and Support Facilities).

The application indicates that an airshaft having a seventy-foot depth will be constructed to connect the Gilson seam mine workings with the ventilation fan ducting. The application indicates that this shaft will be lined with either concrete or steel plate.

Chapter 5, page 5-50, section **529 Management of Mine Openings** indicates the following; "a fence will be installed to surround the Pace Canyon fan facilities to assist in managing the mine openings, refer to Figure PC-3 in Appendix 5-10 for the approximate location of the fence." Figure PC-3 depicts the location of the proposed fence; the figure is P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

The method of construction for the proposed fence about the Pace Canyon fan portal facilities is not described anywhere in the application. This must be addressed as part of the description required by R645-301-526.220.

Findings:

The application is deficient. In accordance with:

R645-301-526.220, the permittee must include a description of the fence, including type of construction, height, length, and other information deemed pertinent to this component of the description required.

TECHNICAL MEMO

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The requirements of this section are addressed within the approved mining and reclamation plan for the site. The permittee is fully aware of the requirements of this section as they relate to permittee identification, disturbed area perimeter markers, stream buffer zones, etc.

Findings:

The minimum regulatory requirements of this section are adequately addressed by the commitment made within the approved mining and reclamation plan.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

General Requirements

The permittee indicates in Chapter 5, section 524, Blasting and Explosives, page 5-28 of the application that it may be necessary to use explosives during the construction phase of the Pace Canyon facilities. As noted previously, an air shaft approximately seventy feet in depth and twenty feet in diameter will be developed to connect the underground Mine workings with the ventilation fan ducting located on the surface. This will be developed using explosives.

Page 5-28, Blasting and Explosives of the application indicate that the mining and reclamation plan contains two blasting plans. These are located in Appendixes 5-8 and 5-9 of the MRP. Neither of the plans is for airshaft development.

R645-301-524 indicates that “for the purposes of underground coal mining activities, R645-301-524.100 through 524.700 apply to surface blasting activities incident to underground coal mining, including, but not limited to, initial rounds of slopes and shafts.” The Pace Canyon Air Shaft will be developed in native sandstone of the Blackhawk formation. The total depth of the shaft will be approximately seventy feet; the hole will be developed by drilling and blasting. The top twelve feet of material to be removed (initial rounds) is under the jurisdiction of the Division, specifically R645-301-524.

TECHNICAL MEMO

R645-301-524 also mandates that blasting operations conducted within 500 feet of active underground mines require approval of MSHA. The Dugout Canyon Mine is an active underground coal mining operation. The extent of development of the underground workings in the vicinity of the proposed Pace Canyon airshaft is not known at this time. Based on discussions with the permittee's representative prior to the development of this technical analysis, the permittee is aware that the shaft development site is within 500 feet of the Dugout Mine, and that an MSHA approval is required prior to the initiation of blasting operations.

The Pace Canyon fan portal application contains Appendix 5-9, which is the submitted blasting plan for the development of the airshaft.

Preblasting Survey

Page 1, paragraph two of the submitted blasting plan states "there are no structures within ½ mile of the blast site which would require protection. There are no dwellings, public buildings, schools, churches, or community or institutional buildings within 1,000 feet of the blast area. Therefore, there is no need to notify residents or owners of dwellings in writing relative as to how to request a pre-blast survey. The Division concurs with this; this regulation is not relative to this blasting operation.

General Performance Standards

Page 2 of Appendix 5-9 of the application contains the "anticipated" blast design to develop the twenty-foot diameter hole for the eighteen-foot diameter airshaft. Figure 1 depicts a typical shot pattern that is used to develop circular shafts. Paragraph two, page two of Appendix 5-9 begins the description of the blast round. "Each blast round will break approximately six feet of material ... an inverted cone of rock will be outlined using eight holes having a diameter of one and five-eighths inch. Each of the eight holes will be started approximately five feet from center (i.e., the center of the shaft) and will be drilled on a twenty-seven degree angle toward center for a total depth of 6 ¾ feet. The hole bottom will be no closer than eighteen inches to any other hole bottom, meeting the requirement of 30 CFR 75.1315, paragraph (c). The inverted cone can also be referred to as a 'pyramid cut'".

Continuing the blast round description, "approximately 17 inches from the top of the pyramid cut holes, eight "first relievers" will be developed angled slightly towards the center of the shaft. Seventeen inches from the circle outlined by the first relievers, a circle of sixteen holes will be drilled to a six-foot depth, in a vertical fashion. These are the "secondary relievers".

Seventeen inches from the "secondary relievers" are the "trim holes", which will be nine inches from the outside arc of the cut. There will be 28 trim holes, each having a six-foot depth.

TECHNICAL MEMO

These holes will be angled out at the bottom, at about seven degrees from vertical, such that the bottom of the hole is at the outside radius of the cut.” Figure 1 depicts this text in a plan view drawing.

Due to the shallow nature of the round, no decking is necessary. Although delay periods are not depicted, the round will be initiated at the pyramid cut, with each relief row (circular pattern of primary and secondary relievers) following in sequence until the trim holes are initiated.

Page 2 of Appendix 5-9 also indicates that the type of explosive to be used will be an MSHA approved “permissible explosive” having a standard cartridge size of 1 1/4 inches by eight inches in length, and approved for this specific type of blasting.

“There should be no flyrock generated ... because all boreholes will be stemmed with noncombustible material”. Also, the amount of explosives used per cubic yard of broken material will be kept to a minimum due to the shallow depth of the boreholes.

There should not be any flyrock or ground vibration generated due to the small amount of explosives being used for the submitted “anticipated” blast design.

It must be noted that the design included as Appendix 5-9 is an “anticipated” blast design that has been submitted to meet the permitting requirement of 524.210 and 212. Should the Utah certified coal mine surface blaster conducting the blasting activities for the Pace Canyon shaft work have a desire to change any of the blast design parameters, that is within his right.

However, the blast design must still meet the requirements mandated by R645-301-524.100 through 524.700.

The TASK ID #2104 application does not contain an anticipated blast design that would be used to develop the Pace Canyon fan portal intake entry. That design must meet the requirements of R645-301-524.210, et al., based upon R645-301-524, Initial Rounds of Slopes and Shafts.

Blasting Signs, Warnings, And Access Control

As noted above, the eighteen-foot diameter airshaft will be developed using explosives. The permittee must include within the submitted blasting plan a means to control access up-Canyon of the Pace Canyon facility, down-Canyon of the facility, and In-Mine of the shaft location, **if mine workings are within 500 feet of the shaft construction location.**

TECHNICAL MEMO

Appendix 5-9, page 1, paragraph four of the submitted application makes the commitment to place traffic control personnel one half mile above and below the Pace Canyon blast area. Relative to access control within the Dugout Canyon Mine, access control personnel will maintain a “no access” distance a minimum of 1,000 feet from the shaft location (blast site). The access control personnel will stop livestock, unauthorized personnel and mine personnel from venturing into the blast area. This commitment meets the requirement of R645-301-524.530.

R645-301-524.510, 511, 512, and 520 require the use of blasting signs and warning signals to protect the public as well as other individuals in the blast area. These are described in the permit application meeting the requirement of R645-301-524.500. Following the detonation of each round, the Utah certified coal mine surface blaster will examine the blast area for hazards. Similarly, an examination of the underground area within 1,000 feet of the blast site will be made by a Utah certified mine foreman / fireboss to ensure the safety of any personnel finding it necessary to enter same. This meets the requirement of R645-301-524.530 through 524.532.

Also, prior to the initiation of blasting, “the permittee will notify the adjacent landowners (Trustee of the Milton and Ardith Thayn Trust) and the Carbon County Sheriff’s Office (local governments) via a written notification indicating the proposed times for blasting. Following initiation of the blasting process, these same (agencies / PHH) will be notified at least 24 hours prior to blasting via telephone communication. A record of that telephone notification will be maintained for inclusion in the blasting record”. This meets the requirement of R645-301-524.430.

Control of Adverse Effects

“There should be no flyrock generated ... because all boreholes will be stemmed with noncombustible material”. Also, the amount of explosives used per cubic yard of broken material will be kept to a minimum due to the shallow depth of the boreholes.

There should not be any flyrock or ground vibration generated due to the small amount of explosives being used for the submitted “anticipated” blast design.

Based on the numbers of boreholes and their depth described in the submitted “anticipated” blast design, it is estimated that each six foot round will require approximately 158 pounds of standard 1 1/4 inch by eight inch cartridge type dynamite. Fifty-seven cubic yards of material will be broken (assuming an 18 foot shaft diameter). A powder factor of 2.8 has been determined from these figures. This powder factor fits the curve depicted for 1 and 1/4 inch diameter explosives, Figure 11.3, Relationship of powder factor versus heading area, page 210,

TECHNICAL MEMO

SME Mining Reference Handbook, Chapter 11, ISBN 0-87335-175-4, and is not excessive for this type of construction work.

A minimum of two feet of noncombustible stemming material will be used in each blast hole to meet the requirement of 30 CFR 75.1322 (d).

The amount of explosives to be used per round is minimal; there are no structures within 1,000 feet of the blast site requiring protection.

The requirements of R645-301-524.600, -524.610, -524.620, -524.640 have been met.

Records of Blasting Operations

The Dugout Canyon Mine MRP, Volume 1, Chapter 5, page 5-25, section 524 Blasting and Explosives, paragraph one contains the commitment by the permittee to maintain all blasting records on file at the Mine for the required period of time (3 years).

The Pace Canyon fan portal application contains in Appendix 5-9, page 3 a blank form to be used by the blaster in charge at the site per round. This form will be completed in order to report the type of explosive, size of hole, depth of hole, the burden, the stemming and the sequence for each blast round. Each will be signed by the certified blaster in charge meeting the requirement of R645-301-524.240.

Page 4 of Appendix 5-9 contains a blank form to be completed by the certified surface blaster for the purpose of completing the blasting record requirement.

Findings:

The minimum regulatory requirements of this section have not been met.

The minimum regulatory requirements of R645-301-524.100 through 524.700 have been addressed for the development of the airshaft.

R645-301-524, INITIAL ROUNDS OF SLOPES AND SHAFTS

If the permittee determines that the Pace Canyon fan portal intake entry will be developed through the use of conventional methods, the permittee must submit an anticipated blast design meeting the requirements of R645-301-524.100 through 524.700.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

The application contains Plate PC5-2, Pace Canyon Fan Surface Facilities and Cross Section Locations. The plate gives a plan view of the surface facilities depicting the acreage to be included within the disturbance. This is the affected area.

Mining Facilities Maps

The application contains Plate PC5-2, Pace Canyon Fan Surface Facilities and Cross Section Locations. The plate gives a plan view of the surface facilities depicting the proposed location of the topsoil storage pile, air shaft/fan location, generator location, mine portal, sediment containment, and realigned road surface.

Mine Workings Maps

The application contains Figure PC-2, GILSON SEAM MINE WORKINGS, which depicts how the **yet to be developed** entries in the Gilson seam will be developed such that they intercept the Pace Canyon air shaft and portal entry.

Figure PC-2 is “not to scale”, (NTS), as shown in the legend of the Figure. Although Figure PC-2 appears to be the same scale as PLATE PC5-2, (60 feet / inch), this needs to be made clear.

Figure PC-2, and the text of the submittal have not addressed whether the fan has an evase and / or uses a technology to reduce the decibel level reporting to the adjacent surroundings. Because the fan is close to the Pace Canyon road, the Division questions if a method for decibel reduction has been addressed or is being considered by the applicant. The Division recommends an elevation view of the construction, including specifications for the diesel tank and the diesel tank containment. A detailed drawing showing the electrical requirements and layout of the transformers, switch gears, and capacitors is needed. Although the application states that primary electrical power will be delivered via a high voltage cable coming from Dugout Canyon through the underground workings, there are no utility drawings or text describing how the electrical lines or diesel fuel lines will be routed (i.e., buried lines, or suspended lines on the surface).

TECHNICAL MEMO

Certification Requirements

Plate PC5-2 is certified by Mr. Layne Jensen, a Utah registered professional engineer.

Figure PC-2 (Appendix 5-10) is not P.E. certified. R645-301-512.110 requires “mine workings to the extent known” must be certified. However, Figure PC-2 depicts the “proposed mine workings”; therefore P.E. certification is not required at this time.

Findings:

The minimum regulatory requirements of this section have not been met. In accordance with R645-301-526.222, the permittee must submit drawings, text, etc., to meet the description requirement.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The general requirements mandated by R645-301-761 stipulate that “before abandoning a permit area or seeking bond release, the operator will ensure that all temporary structures are removed and reclaimed, and that all ... and treatment facilities ... meet the requirements of the approved reclamation plan”.

The Pace Canyon fan portal facility will utilize a sediment trap, and alternate sediment control treatments to minimize “to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area”. Plate PC7-5A depicts the extensive use of gravel on the flat areas of the Pace Canyon fan portal facility. The permittee needs to make a commitment in the application “to strip the gravel associated with the sediment control method within the disturbed area prior to topsoil replacement for final reclamation. The gravel disposal should be in the permittee’s approved waste rock disposal site”.

Findings:

The application is deficient. In accordance with:

R645-301-761, the permittee must commit to removing and properly disposing of the gravel associated with the sediment control method utilized within the disturbed area prior to placement of topsoil for final reclamation.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

Chapter 5, page 5-75, section **553.100 Disturbed Area Backfilling and Grading**, Approximate Original Contour, indicates that due to extensive pre-SMCRA development of the Pace Canyon area for road development, logging and coal mining activities, there are no maps depicting pre-development surface topography. Plate PC5-2 depicts the surface topography of the area as it exists today, including the road, and the current configuration of the Pace Creek drainage. The application indicates, “the reclamation plan has been prepared to achieve the assumed approximate original contour and eliminate any highwalls and cutslopes.”

Plate PC5-5 depicts one lateral cross section, B-B’, and two longitudinal cross sections. Longitudinal cross-section A-A’ runs parallel through the center of the Pace Canyon fan portal intake entry on an approximate bearing of N 6 degrees 30 minutes E. Cross section C-C’ similarly runs in a NE direction, and nearly parallels the configuration of the relocated, reclaimed BLM road. The approximate bearing of C-C’ is N 20 degrees E.

Section A-A’ (PC5-5) depicts both the operational surface contour (red line) and the reclamation surface contour (the blue line). With the exception of the fill that will be necessary to backfill the portal, the final reclamation surface contour will nearly parallel the operational surface. A shallow cut approximately 135 feet in length at the southern end of A-A’ will provide most of the fill for the portal area. The portal fill will taper from zero depth to about sixteen feet (maximum depth) at the face-up (location of coal outcrop/surface interface). A very shallow cut approximately seventy feet in length (above the backfilled portal) will provide the remaining fill for this cross-section. The reclamation cross section depicted very nearly parallels the pre-SMCRA / post mining configuration which existed in this area prior to the Pace Canyon fan portal development.

TECHNICAL MEMO

Section B-B' is the lateral cross section which bisects the fan portal pad. Its location is depicted 105 feet SSW of the airshaft location. B-B' depicts one cut and one fill to reclaim the operational pad. At B-B', the cut will relocate the road approximately thirty feet to the west. The final surface configuration of the cut will be at a 2.4H / 1V slope. The fill which is required to reclaim the cut bank in the section will be reclaimed at a 3.47 H / 1V grade. The crest of this fill is about forty feet east of the disturbed area perimeter. The undisturbed slope between the crest of the fill and the disturbed area boundary rises at a 1.34 H / 1V slope. Although the grades which will be established in the reclaim area are much more gentle than the slope of the undisturbed area, the transition depicted by cross-section B-B' is aesthetically pleasing, and appears to be capable of exceeding the required minimum long-term static safety factor of 1.3.

Section C-C' is, as noted above, a longitudinal cross section which nearly parallels the relocated / reclaimed Pace Canyon road (section of BLM road through the disturbed area). As depicted on Plate PC5-5, two small cuts, and two small fills will be utilized in the reclamation of the fan portal pad through this section. The overall slope of the pad through section C-C' between the disturbed area perimeter markers is 12.8 H / 1V. The two cuts that will be made are shallow (7 foot maximum depth). The larger of the two fill areas will have a maximum depth of ten feet, over a 140-foot length.

All cuts and fills will conform with the existing shape of the area, and will be aesthetically pleasing. All fills are on a gentle slope. As noted in Appendix 2-9, Topsoil Calculations, General, "the angle of repose for soils in this area are in excess of 50 degrees", (or these soils will remain static on slopes steeper than 1H / 1V (45 degrees)). As noted above, the meeting of the angle of repose / long-term static safety factor of 1.3 requirement is likely.

Findings:

The minimum requirements of this section have been adequately addressed.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

Chapter 5, section 553.100 Disturbed Area Backfilling and Grading, page 5-75, paragraph five discusses the general backfilling and grading criteria that will be implemented in the reclamation of the Pace Canyon fan portal area. "In Pace Canyon reclaimed slopes will be at

TECHNICAL MEMO

a 2H: 1V slope or less over most of the site. However, there will be some small areas where the slope may be up to 1.6H: 1V. This will only occur in areas where the reclaimed surface ties into an undisturbed area with a slope greater than 2H: 1V.”

Analysis of PLATE PC5-5, (See Appendix 5-10), sections A-A’, B-B’, and C-C’ reveals that only small amounts of fill material will be utilized to return the Pace Canyon fan portal area disturbance to approximate original contour. Coal mining activities were initiated in both Dugout Canyon and Pace Canyon long before the passage of SMCRA. Hence, there are no pre-mining surface contour maps of these areas. As noted within the application, the Snow Mine was known to report coal extraction as early as 1906. The Pace Canyon fan portal facility is inside the area of pre-law disturbance created by the Snow Mine. Chapter 5, page 5-3 states that “the pre-mining (post SMCRA) topography for the Pace Canyon Fan Portal site can be seen on Plate PC5-4 in Appendix 5-10”.

The application does not contain mass balance calculations for the reclamation cuts and fills. This information is necessary for determining an accurate reclamation bond for the proposed disturbance.

Please refer to the analysis in the previous section, **APPROXIMATE ORIGINAL CONTOUR RESTORATION**. These comments are also applicable to this section, and assist in meeting the minimum regulatory requirements for backfilling and grading.

Findings:

The minimum regulatory requirements of this section have not been adequately addressed. In accordance with:

R645-301-830.140, the permittee must supply earthwork calculations to support the backfilling and grading maps submitted with the application, such that an accurate reclamation bond amount can be determined.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The Pace Canyon fan portal application specifically addresses how the two openings will be sealed and backfilled in Chapter 5, page 5-49. “Material such as subsoil and rock generated during construction of the shaft and portal at the Pace Canyon Fan Portal site will be used to

TECHNICAL MEMO

construct the site. This material will be used to backfill the portal and shaft during reclamation.” However, if the mine development waste is to be re-used for backfilling purposes, the permittee must provide a method to identify this material by either storing it in a specific location (which is identifiable by some means) in the field, or by segregating it.

Seal construction for all underground openings associated with the Dugout Canyon Mine is discussed in the Mine’s MRP, Volume 1, Chapter 5, page 5-72, section **542.700 Final Abandonment of Mine Openings and Disposal Areas**. As the Gilson seam dips away from the Pace Canyon portal, it appears unlikely that a hydrostatic seal would ever be necessary here. However, concerns aired by the BLM indicate that a Mine map showing the final piezometric water level is necessary in order to support whether or not a hydrostatic seal is necessary here.

The last paragraph contained on page 5-72 discusses the approved alternative to the solid concrete block seal; “alternatively, a cast-in-place MSHA approved seal will be installed with a minimum thickness of 3 feet and with a minimum compressive strength of 200 psi”. This seal construction description is approved by the Division for implementation. As a final note, prior to any portal sealing, MSHA approval of the seal construction method must be approved prior to any activity by the permittee.

Findings:

The application meets the minimum regulatory requirements for sealing the two underground openings.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Retention

As previously described, the Pace Canyon road existed for many years prior to the development of the Dugout Canyon Mine, providing access to the Roan Cliffs for cattle herding, timbering and coal mining. Although the disturbed area that will be created by for the Pace Canyon fan portal is located on BLM surface, the road provides access to private lands owned by the heirs of Milton and Ardith Thayn. Therefore, the road will be retained for use of the private landowners and the BLM long after completion of the mining activities.

Findings:

The minimum regulatory requirements of this section have been met.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

Plate PC5-5, **Pace Canyon Fan Reclamation Topography and Cross Sections** depicts the plan or aerial view reclamation topography of the Pace Canyon fan portal area, with the designated disturbed area. The disturbed area is the affected area.

Bonded Area Map

Plate PC5-5, **Pace Canyon Fan Reclamation Topography and Cross Sections** depicts the plan or aerial view reclamation topography of the Pace Canyon fan portal area, with the designated disturbed area. The disturbed area and its associated reclamation will be bonded for in the final reclamation costs.

Reclamation Backfilling And Grading Maps

Plate PC5-5, **Pace Canyon Fan Reclamation Topography and Cross Sections** depicts the plan or aerial view reclamation topography of the Pace Canyon fan portal area, with three cross sections (which have been previously discussed). The plate is P.E. certified by Mr. Layne Jensen, a Utah registered professional engineer.

Final Surface Configuration Maps

Plate PC5-5, **Pace Canyon Fan Reclamation Topography and Cross Sections** depicts the plan or aerial view topography; this is the “proposed” final surface configuration.

“As-builts” of the final surface configuration will be required following reclamation of the site.

TECHNICAL MEMO

Certification Requirements

Plate PC5-5 is P.E. certified by a Utah registered professional engineer.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Determination of Bond Amount

The Division reviewed the reclamation cost estimate for the Pace Canyon portal facility. The Division found that some of the reclamation items were missing. Those items include the following:

- Shaft closure costs.
- Fan removal, in addition to removing the fan building.
- Removal of the emergency generators / electrical transformers, (salvage value cannot be assumed).
- Removal of the fuel storage tank.
- Productivity calculations for earthwork.

Findings:

The information in the amendment is not considered adequate to meet the requirements of this section. Before approval, the Permittee must provide the following in accordance with:

R645-301-830.140, The Permittee must give the Division a complete reclamation costs for the Pace Canyon facilities. Items that were missing include: 1) Shaft closure costs, 2) Fan removal, in addition to removing the fan building, 3) Transformer /switchgear / capacitor removal, 4) Removal of the emergency generators, (salvage value cannot be assumed), 5) Removal of the fuel storage tank, and 6) Productivity calculations for earthwork.