T E C H N I C A L M E M O R A N D U M

Utah Coal Regulatory Program

June 21, 2006

TO: Internal File

THRU: Wayne Hedberg, Permit Supervisor, Task Manager

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

RE: Degasification Wells G-13 thru and G-17, Canyon Fuel Company, LLC, Dugout Canyon Mine, C/007/039, Task ID #2456

SUMMARY:

The Permittee submitted the application to permit degasification wells G-13 through G-17 to the Division on March 17, 2006. The Division has assigned Task ID #2456 to this review for purposes of tracking. This technical memo will address the adequacy of the application as it relates to the R645 Engineering requirements.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

The Identification of Interest information is in the Mining and Reclamation Plan, Chapter 1, page 1-2. This information was revised in January of 2000. The information has not changed.

The corporate officers have not changed.

All proposed wells are located on surface owned by the heirs of the Milton and Ardith Thayn Trust (See Plate 1-1 of the approved Dugout Mine MRP).

The following discussion of the proposed well locations all refer to sections located in T13S R13E.

A review of Plate 1-2, COAL OWNERSHIP, as contained in the approved mining and reclamation plan for the Dugout Canyon Mine, indicates that the coal ownership in Sections 17 where well bores G-14 C and G-14E are being proposed is by the State of Utah, School and Institutional Trust Lands Administration (State lease ML-48435-OBA). Well bore G-14C is associated with long wall panel GIL-7, (SITLA coal). Well bore G-14E is associated with long wall panel GIL-8, (SITLA coal).

Coal ownership in Section 18 is managed by both the SITLA and BLM. Well bores G-16A and G-16B will both provide additional venting capability for long wall panel GIL-7, which lies in Federal coal.

Section 18 will also contain well bores G-17A and G-17B, and will vent gases from the GIL-8 long wall panel gob area. G-17A will intercept the Mine workings in SITLA coal. G-17B will intercept the Mine workings in Federal coal.

Section 19 will contain well bores G-13A and G-13B. G-13A will intercept the Mine workings in SITLA coal; G-13B will intercept the Mine workings in Federal coal. Both well bores are associated with the GIL-5 long wall panel.

All wells are located within the currently approved mine permit area.

The U.S. Department of Labor, Mine Safety and Health Administration has issued three identification numbers relative to the Dugout Canyon Mine; these are:

1) MSHA No. 42-01890 for the Gilson seam on the west side of the Canyon,
2) MSHA No. 42-01888 for the Gilson seam on the west side of the Canyon, and
3) MSHA No. 1211-UT-09-01890-01 Dugout Canyon Mine Refuse Pile.

All are contained in Chapter 1, page 1-19, Section 112.700 MSHA Numbers of the approved mining and reclamation plan.

Chapter 1, page 1-5, section 112.800 Interest in Contiguous Lands of the methane well submittal indicates that Canyon Fuel Company, LLC has no interest in contiguous lands other than those currently owned as shown on Plate 1-1 of the approved MRP.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Table 1-2, located in the General Chapter 1 binder of the Dugout Canyon Mine mining and reclamation plan, contains violation information for the ARCH Coal / Utah operations, as well as all SMCRA compliance actions taken at ARCH operations throughout the United States.

This information was reviewed and approved by the Utah DOGM for incorporation into the CFC Company mining operations MRP's on February 8, 2005, (Task ID #2070).

The Division initiated a mid-term review of the Dugout Canyon Mine permit on October 13, 2005. Therefore the current permit was issued on or about April 13, 2003. The ARCH Coal violation information was therefore updated just prior to the issuance of the new permit.

Findings:

The DOGM approved information meets the minimum regulatory requirements for this section of the R645 Coal Mining Rules.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

Chapter 1, page 1-5, section **114, Right-of-Entry Information** of the December 29, 2005 submittal refers one to Chapter 1, page 1-5, section **114, Right-of-Entry** information in the approved MRP. **APPENDIX 1-1,** Coal Lease documents of Chapter 1, Volume 1 of the MRP contains the legal description of the State of Utah, School and Institutional Trust Lands Administration coal mining lease and agreement which includes the following information relative to Sections 17, 18 and 19, T13S, R13E. The State of Utah owns coal in the following sections as noted:

Section 17…….SW1/4, SW1/4SE1/4
Section 19…….NE1/4SE1/4, S1/2SE1/4.

All of Section 18, T13S, R13E coal ownership is under Federal management. Only the S1/2 is included in lease # U-07064-027821. This lease grants Canyon Fuel Company the right to enter and conduct underground mining operations in section 18.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

TABLE 1-1. Degas Well Locations, Pine Canyon, Utah Quadrangle, Salt Lake Meridian as depicted on Page 1-3 of the submittal provides the legal descriptions for methane degasifications wells G-13 through G-17. FIGURE 1-1, METHANE DEGAS BORE HOLE LOCATIONS, (included with the submittal) depicts the five proposed well locations as they relate to the permit boundary for the Dugout Canyon Mine. FIGURE 1-1 is certified by a professional engineer registered in the State of Utah. Therefore, the need for the applicant to address that the permit area is within an area designated as unsuitable for mining is unnecessary. The well locations exist within the area that has been permitted for coal extraction.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The current State of Utah mining permit issued by the Division of Oil, Gas and Mining was renewed on March 3, 2003. Same remains in affect until March 16, 2008. The proposal to drill methane degasification wells G-13 through G-17 has been received during the current permit term.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

The proposal to permit and drill the five methane degasification wells (G-13 through G-17) at the Dugout Mine will occur on private surface land managed by the heirs of the Milton and Ardith Thayn Trust. The Permittee has previously provided a copy of the surface lease agreement (See **Appendix 4-2, SURFACE LANDOWNER AGREEMENT**, Task ID #1642) between the Thayn Trust and Canyon Fuel Company. There is no need for a public notice and comment period.

Findings:

The requirements of this rule are not relative to this application.

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

The proposal to drill the five methane de-gasification wells is not a new permit application, but is an amendment to the currently approved mining and reclamation plan for the Dugout Canyon Mine.

Findings:

This requirement is not relative to this permit amendment.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

This proposal is an amendment or modification to the currently approved mining and reclamation plan, which is an integral part of the permit. The determination that the permit application consisted of the proper format and adequately addressed the requirements of the disciplines relative to completeness was made prior to the receipt of this application.

Findings:

A determination that the permit application was administratively complete was made prior to receipt of this amendment. This requirement is not relative.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

All maps and plans that have been submitted with the application that are relative to well location, pad design, hydrology, or engineering design are certified by a Utah registered professional engineer.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

The Permittee's initial application to permit five additional degasification wells for the Dugout Mine secondary mining system was received on March 17, 2006. The provided information is felt to be complete and adequate.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

The purpose of the proposed methane de-gasification wells is to enhance the venting/dilution capability of the mine's ventilation system, such that dangerous levels of methane gas are not allowed to accumulate within the gob area (area where the coal seam has been extracted and the roof has been allowed to cave) and/or the bleeder entries. It is the Permittee's intent to have the wells permitted, and then drill them. As previously noted, the application to permit wells G-13 through G-17 is the sixth submittal relative to degasification wells. Therefore, it is the Permittee's opinion that the additional venting / diluting provided by the degasification wells more than justifies the expense of installation / reclamation. Coal productivity and safety have been enhanced by the implementation of the previously installed wells.

As depicted on FIGURE 5-16, TYPICAL WELL DESIGN (See Task ID #1642), the wells will be drilled to depths such that the hole bottom will stop twenty-five feet above the roof elevation of the Gilson coal seam. Depending on the amount of overburden at the specific well site, the well depths could vary from 1250 to 2050 feet.

Chapter 6, Geology, page 6-2, section **625**, (Task ID #1642) states, "it is not anticipated that any additional geologic data will need to be collected at the well sites". Section **624.300** also states "no test boring(s) or drill cores are planned at the site". Therefore, none of the coal seam will be extracted for analysis. The wells will be permitted as a mining related activity under the R645 coal rules.

None of the methane wells will be plugged post drilling, as their purpose is to bleed off the combustible gases within the mine, improving safety conditions and mining productivity. The anticipated life/usage of the degasification hole(s) is unknown at this time. Task ID # 2455, Degasification wells G-11 and G-12 approval, allowed the Permittee to leave one well bore open per long wall panel to vent gas pressures within sealed gob areas. This is the better alternative to allowing the gas pressures to vent to the Mine workings, which would increase combustible gas levels in bleeders and/or return entries.

Findings:

The application meets the minimum regulatory requirements of this section of the R645 Coal Mining Rules.

EXISTING STRUCTURES

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

Analysis:

The proposal to construct the methane degasification wells will occur in an area well outside of the disturbance created by the Mine's facilities. There are no known dwellings, public buildings, schools, churches, or community buildings within 1,000 feet of the pre-determined well locations. There is no indication that blasting will be done during the construction/ reclamation process of the well sites. This regulation is not applicable.

Findings:

There are no known structures in the area of the methane well development sites. This rule is not applicable.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

Analysis:

There are no public parks in the area where the five wells are being proposed. A Class III intensive walkover survey was conducted of well sites G-9 through G-13 and G-14 in June of 2005 by Senco-Phoenix. Per this survey, "no other cultural resources were located and the potential for undetected remains is remote. A finding of no effect is appropriate and archeological clearance without stipulations is recommended" by Senco-Phoenix to SHPO for the G-8 thru G-14 degas well sites. "Site 42CB1595 located adjacent to degas well site G-12 was recommended for archeological clearance without stipulations by Senco-Phoenix to SHPO" (See chapter 4, page 4-3, Section **411.140 Cultural and Historic Resources Information** of the application).

Bureau of Land Management Environmental Assessment No. UT-070-2001-83 describes information which was gathered at the location of degasification well site G-16(E). This site was previously used as a coal exploration site. No "areas of critical environmental concern" or "native American religious concerns" were identified for this site in the environmental assessment. An archeological inventory of the area was conducted by Senco-Phoenix Archeological Consulting Services in June 20, 2001 (SPUT-387, Confidential Binder) and no cultural or historic properties were listed by NRHP.

BLM Environmental Assessment No. UT-070-2004-49 describes information gathered at the proposed locations of degasification well sites G-15 (DUG0204) and G-17 (DUG0304). These sites were also previously used for coal exploration holes. An archeological inventory of the area was conducted by Senco-Phoenix Archeological consulting Services in 2002 (SPUT-457, Confidential Binder) and no historical or cultural resources were identified for listing by NRHPSHPO (See pages 4-3 and 4-4 of the Task ID #2456 application).

There are no cemeteries, or units of the National System of Trails or the Wild and Scenic Rivers System located within the wells site boundaries, (See report included as Attachment 4-1, **Cultural Resource Survey and Inventory, Task ID #1642**).

The Permittee has agreed to notify the Utah State Historic Preservation Office of previously unidentified cultural resources discovered during the course of operations of the wells.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

RELOCATION OR USE OF PUBLIC ROADS

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

Analysis:

All access roads within the surface lease agreement area are owned by the surface landowners, the heirs of the Milton and Ardith Thayn Trust. There are no public roads involved in the submittal.

Findings:

This rule is not applicable to this submittal.

AIR POLLUTION CONTROL PLAN

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

Analysis:

The Permittee's submittal commits to watering of operational areas, (See Chapter 4, page 4-5, section **424, Fugitive Dust Control Plan**). "The application of water will be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition unless it is below freezing".

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

COAL RECOVERY

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

Analysis:

As stated previously, the methane wells will be drilled to depths varying from 1250 to 2050 feet, depending on the amount of overburden at the well location. All boreholes will be stopped at a depth that correlates to twenty-five feet above the roofline elevation of the Gilson coal seam. No coal will be recovered from the seams that are being mined within the Dugout Mine permit area. No test borings or drill cores are planned at the well sites.

On September 20, 2005, Division management informed the technical/permitting staff that a USDOI / BLM R2P2 approval is necessary to ensure that the Permittee will commit to meeting the requirements of Federal Regulations 43 CFR Chapter 11, Subpart 3484, (3). Although the Permittee had committed to this within the initial application, the Division instructed the Permittee to address this requirement by modifying the R2P2 that is reviewed by the BLM for SITLA.

The Permittee response submitted on March 17, 2006 (Task ID # 2455) addresses the deficiency aired within the Division document addressing the Task ID #2408 application. Chapter 5, page 5-7, section **522 Coal Recovery** states the following; "The operator has been contacted by the BLM, in reference to changes to the Operator's R2P2 associated with Federal Regulation 43 CFR Chapter 11, Subpart 3484", which are relative to Federal well plugging requirements prior to abandonment. Degasification well sites G-11 and G-12 will exist in coals

owned and managed by SITLA, and therefore are not on a Federal coal lease. The BLM has told the Permittee that changes to the SITLA R2P2 are therefore not necessary.

SITLA has determined that the approval of degasification wells within their coal leases require a review to determine if the wells will affect the Plan of Operation for the SITLA / Dugout lease. The USDOI / BLM reviews the application for the degasification well submittals and makes recommendations to SITLA relative to the potential of the wells for affecting the SITLA Plan of Operation. Based upon the BLM recommendations, SITLA either revises the Plan of Operation, or leaves it in the original form. Either way, SITLA must approve the degasification wells that will intercept mine workings within their lease.

The degasification wells which will intercept the Mine workings where SITLA coal is being mined include (as far as the Task ID #2456 application is concerned) the following; G-13, G-14, and G-17. Holes G-15 and G-16 are in Federal coal.

SITLA notified the DOGM on May 15, 2006 that it consents to the degasification drill holes proposed (G-13, G-14, and G-17) which will intercept the Gilson seam mine workings in the SITLA Dugout coal tract ML 48435, provided that the Permittee meet three stipulations, which are as follows:

1) The Permittee must provide a surveyed location to the BLM for each degasification drill hole.
2) The plugging requirements for each degasification drill hole are no less stringent than BLM plugging requirements for such drill holes. The Permittee has addressed this by committing to the plugging requirements established by 43 CFR 3484.1, (3), (See Chapter 5, Attachment 5-2 of the Task ID #2456 application).
3) The Permittee must have the consent of the surface landowner or the surface management agency.

Findings:

The submitted information meets the minimum regulatory requirements for this section of the R645 Coal Mining Rules. However, a SITLA approval is necessary relative to the affect of the aforementioned wells on the SITLA Plan of Operation. The DOGM cannot make a recommendation for approval until the SITLA approval is received.

SUBSIDENCE CONTROL PLAN

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

Analysis:

Renewable Resources Survey

A discussion relative to **Structures and Renewable Resource Lands** is included as part of Chapter 5, page 5-27 of the Dugout Canyon Mine mining and reclamation plan. Same indicates that there are no major electrical transmission lines, pipelines, or agricultural drainage tile fields within the area to be extracted using long wall mining methods. All roads in Sections 17, 18 and 19 that are associated with the degasification wells are the private property of the heirs of the Milton and Ardith Thayn Trust. As previously mentioned, the Permittee has been granted use of these roads via the surface lease agreement between Canyon Fuel Company and the heirs of the Milton and Ardith Thayn Trust.

Subsidence Control Plan

Chapter 5, page 5-7, section **525 Subsidence** (Task ID #1943) of the application indicates "no subsidence will occur at the well sites, as a result of drilling and development of the degasification well sites. Subsidence could occur at the well site because of underground mining...". The application references Section 525 of the approved mining and reclamation plan.

The Division initiated a mid-term review of the Dugout Canyon Mine MRP in October of 2005. The Division determined that the currently approved plan did not address all of the requirements of R645-301-525, Subsidence Control Plan. The Permittee must address specific areas of R645-301-525 as it relates to the surface affects associated with the secondary extraction in longwall panels. These areas are not relative to this application, as subsidence will not occur from the development of the five proposed degasification wells.

As the long wall panel(s) are extracted from the Gilson seam, the roof will cave behind the shields as the face is mined and the shields are advanced. Although the broken material will swell to a certain extent as it breaks and falls, some settling of material will propagate to the surface, and the elevation of all surface over the extracted panel will be diminished.

Subsidence Monitoring is discussed on pages 5-28 through 5-31 of the approved mining and reclamation plan. The commitment made by the Permittee on page 5-30 is to install one monitoring point per panel.

Performance Standards For Subsidence Control

The Permittee has an approved subsidence control plan in place, as evidenced via review of the approved mining and reclamation plan. This approved plan has been determined as being deficient relative to the requirements of R645-301-525.420, 430, 440 and 450. The Permittee

will address the deficiencies aired by the Division's mid-term permit review in early 2006. These deficiencies are not affected, nor do they affect the permitting of degasification wells G-13 through G-17.

Notification

Chapter 5, page 5-34, section **525.300 Public Notice of Proposed Mining**, indicates that "each owner of property or resident within the area above an underground mining block and adjacent area that may be affected by subsidence will be notified by mail at least six months prior to mining or within that period if approved by the Division". That notification will include 1) the identification of specific areas in which mining will take place, 2) dates the specific areas will be undermined, and 3) the location or locations where the Dugout Canyon Mine subsidence control plan may be examined.

One of the deficiencies aired within the Division's midterm permit review (initiated in November of 2005) was relative to **525.300, Public Notice of Proposed Mining**. That deficiency stated that the Permittee should submit a revised Plate 5-7, which will depict the proposed mine sequence and planned subsidence boundary, as well as the in-place coal leases, and surface ownership delineations. The Division believes that this map is necessary to ensure that all surface owners receive the required six-month notice in advance of mining as required under R645-301-525.700. However, this deficiency is not relative to the permitting process for degasification wells G-13 through G-17.

Findings:

The submitted information meets the regulatory requirements for this section of the R645 Coal Mining Rules.

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 privately owned, pre-drilling access roads will remain in place after the venting phase of each of the wells is completed. In order to develop some of the wells, some new road development will be required.

Well G-13 will be constructed adjacent to a road that must be relocated for a distance of 350 feet. Disturbed area acreage amounts to 2.75 acres.

G-14 will be constructed at the end of a road terminus. The only disturbance will be that developed for the well site pad. The disturbed acreage, according to **TABLE 1-2,** page 1-6, Chapter 1 of the Task ID #2456 application, amounts to 2 acres.

Degas well G-15 will require forty-five feet of new road development to access the pad location. The amount of disturbance is 2.5 acres.

Degas well G-16 will require a new road 500 feet in length to access the selected well site. The amount of disturbance equates to 2 acres.

The pad for degasification well G-17 will be constructed at the junction of three existing roads. 1.25 acres will be disturbed.

Approximately 1500 feet of road will need to be either built or re-aligned to construct the five proposed wells.

"The roads which existed prior to the drilling program will be retained after reclamation, (**with the exception of the 350 feet of road which was realigned to develop degasification well G-13. The re-aligned road will be allowed to remain in its re-aligned location, and thus will not be restored to its original location.")** All pre-existing roads will remain after reclamation of the well sites. The access roads established during the drilling program will be reclaimed after methane extraction has been completed."

Plans and Drawings

The application contains FIGURE(s) 1 for each well G-13, G-14, G-15, G-16 and G-17. FIGURE(s) 2, for each CONTOUR MAP(s) for well G-13, G-14, G-15, G-16 and G-17 and FIGURE(s) 3, APPROXIMATE DRILLING LAYOUT(s) for G-13 through G-17. The drawings depict the undisturbed surface contours of the area to be developed, the surface contours of the developed pad, cross-sections showing locations and amounts of cut and fill, layout(s) of the drilling apparatus, surface drainage, surface runoff treatments, etc. The drawings are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

Primary Road Certification

All access roads developed to construct degasification well pads G-13, G-15 and G-16 are classified as primary roads that will be maintained by the Permittee.

Findings:

The application is deficient. The permittee must submit information in accordance with:

R645-301-542.600, the Permittee must clarify whether the 350 feet of road which was re-aligned to develop well site G-13 will remain in its re-aligned location, or if the re-aligned road will be reclaimed and the road restored to its original location.

R645-301-527.200, the Permittee must include a detailed description of each road to be constructed within the permit area. This must include specifications for road width, road gradient and road surfacing material for each road that must be constructed, (relocated road associated with G-13, 45 feet of road to access G-15, and 500 feet of road to access G-16). Methods of construction must be included. Methods of topsoil recovery and salvage must be included. Drainage controls must be discussed.

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:

Coal Mine Waste

Chapter 5, page 5-3, section **513.300 Underground Development Waste, Coal Processing Waste, and Excess Spoil** addresses this requirement. None of these types of material will exist at the well sites.

Refuse Piles

No refuse piles will exist at the well sites, (Chapter 5, page 5-3, Section **513.400, Refuse Piles** of the application).

Impounding Structures

"No permanent impoundments will exist at the well sites, " (See **Chapter 7**, page 7-**9**, section **733.200, Temporary and Permanent Impoundments** of the submittal).

Burning And Burned Waste Utilization

This section of the rules is not applicable to this submittal.

Return of Coal Processing Waste to Abandoned Underground Workings

No coal processing waste or spoil will be generated within the well sites, (Chapter 5, page 5-15, section **553.200 Spoil and Waste**).

Excess Spoil:

This section of the rules is not applicable to this submittal.

Findings:

The Permittee has addressed those sections that are relevant to the proposed drilling of two methane vent wells. The submitted information meets the regulatory requirements for this section of the rules.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

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

Analysis:

The proposed methane vent wells are intended to enhance the mine ventilation system, allowing additional venting and dilution capability for the combustible mine gases that are inherent in the coal seam, as well as the adjacent strata. Thus, they are a support facility.

Chapter 5, page 5-8, section **526.200 Utility Installation and Support Facilities** of the submittal addresses this requirement. According to that information, no utilities will be installed at the well sites. A portable methane-exhausting unit will be installed, and the operation of that machine will be initiated with portable propane bottles. Upon start up, the device will be switched over to operate from the methane concentrations venting from the well (levels must be more than 30% in order to operate the pump, (See page 5-8, Section **526.200**)), and will thus be self-sufficient.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

SIGNS AND MARKERS

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

Analysis:

Chapter 5, page 5-6, section **521.100, Signs and Markers** addresses this requirement of the R645 coal rules. The application commits the Permittee to install a mine and permit identification sign at each well site that is developed. The identification sign will contain the following information: mine name, company name, company address, and telephone number, MSHA identification number, and the permanent program identification number.

The application commits the Permittee to install disturbed area perimeter markers to identify all acreage to be affected before beginning mining activities.

Stream buffer zone signs will be placed at well site G-15 (See page 5-7, Chapter 5, of the Task ID #2456 application).

Topsoil storage signs will be placed on all topsoil stockpiles.

Hazard signs will be placed at the degasification well sites indicating the hazards associated with methane gas and necessary safety precautions, i.e., “No Smoking”, etc.

All signs and markers will be maintained until no longer needed, (until all Phase III bond release requirements have been met).

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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:

Mining Facilities Maps

The methane well submittal includes three maps/drawings for each of the two wells that are being proposed; these include:

1) A contour map, which depicts the undisturbed surface contour, the disturbed surface contours, and the relationship of the well pad. These are identified as G-13 FIGURE 1, Contour Map for G-13, G-14A FIGURE 1, Contour Map for G-14A, and so on.
2) A typical cross section for each well pad, depicting the pre-disturbed and the operational surface configuration. These are identified as G-13 FIGURE 2, Typical Cross Sections for G-13, etc., through G-17, FIGURE 2, typical cross sections for G-17.
3) FIGURE(s) 3 are plan views of the "approximate" drilling layout for each of the proposed well sites showing the drill hole location and the mud pit. The plan view shows the various methods to control and treat intercepted precipitation, including sloping the pad(s), and the installation of berms and silt fences. Similarly, the drawings depicting the approximate drilling layout for wells G-13 through G-17 are identified as G-13 FIGURE 3, Layout Map for G-13, and so on through G-17.

All three figures for each of the proposed wells are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer. A certification date of March 15, 2006 is provided for these drawings.

Mine Workings Maps

Task ID #2456 contains a map of the underground Mine workings that shows where the proposed wells will intercept the active workings. The following information can be determined:

1) The longwall panel(s) which G-13, G-14A, G-15, G-16 and G-17 are associated with relative to venting are identified.
2) The surface locations of each of the wells relative to the longwall face / panel is identified.

Locations for proposed wells are determined primarily from ease of surface access (they will be located on or immediately adjacent to a road that is in place on surface owned by the heirs of the Thayn Trust. Well bores G-13A and G-13B will vent methane gas from the gob area of longwall panel #5 (GIL-5 Panel). The surface location of G-13 A and B are above the GIL-5 panel. In order to effectively vent methane from the gob area, the bores which are drilled for G-13A and G-13B will be angle drilled to intercept the roof strata at the center of the face, and about 300 feet north of the head gate entry; the bottom of the hole will be stopped twenty-five feet above the roof horizon of the Gilson coal seam. It appears that the well bores will be well inside the tension / compression zone associated with the abutment formed by the chain pillars supporting the head gate entries.

Well G-14C will vent gases from the gob area associated with the GIL-7 longwall panel. Well bore G-14E will vent from the GIL-8 gob area. Both well bores will intercept the active workings about 450 feet outby the start up face.

Well bores G-15A and G-15B will vent gases from the GIL-6 panel; both well bores will intercept the gob about mid-face.

Well bores G-16A and G-16B will vent from the GIL-7 longwall panel. Both bores will intercept the workings about 200 feet from the head gate entries.

Well bores G-17A and G-17B will also vent gases from the GIL-8 gob area, as will G-14E mentioned above. Both of the G-17 bores will intercept the Mine workings about 100 to 250 feet from the head gate entries.

Figure 1-1 shows the surface locations of the proposed well sites. As discussed on page 5-10 of the Task ID #2456 submittal proposed well sites are selected on the following criteria:

1) topography;
2) proximity to the mining area;
3) existing access versus new access;
4) slope of the proposed site;
5) the potential for meeting reclamation requirements;
6) required drilling method.

Figure 1-1 is P.E. certified by Mr. Layne Jensen, Utah registered professional engineer (3/15/2006 certification date).

The map of the Dugout Canyon Mine Gilson seam workings is P.E. certified by Mr. Dave Spillman, Manager of Technical Services for the Permittee (3/13/2006 certification date).

Monitoring and Sampling Location Maps

All maps relative to this requirement are incorporated into the approved mining and reclamation plan for the Dugout Canyon Mine.

Certification Requirements

As noted above, all plans, drawings, and maps that are relative to this submittal have been certified by a Utah registered professional engineer.

Findings:

The submitted information is adequate, and meets the requirements of the R645 Coal Mining Rules.

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:

Upon completion of the drilling activities, the areas not required for the exhaust blower / venting activities will be regraded to approximate original contour. Mud pits will be backfilled and compacted, (See Chapter 5, page 5-11, section **537.200, Regrading of Settled and Revegetated Fills).** In order to efficiently vent the gob areas, an exhaust blower will be set up to create a low pressure area across the well head, allowing the combustible mine gases to vent to the atmosphere. This will remain at the site until the Permittee decides that the exhaust blower is needed at another location.

The Permittee has previously permitted leaving one valved well bore open per long wall panel in order to relieve built up gas pressures within sealed gob areas. The Division has determined that relieving gas pressures to the atmosphere via these valved well casings is a safer practice than allowing these same pressures to relieve themselves by venting to the underground bleeder and return entries through the mines seals. Allowing additional concentrations of methane to vent to the underground entries from these gob areas is a negative affect on the safety of the employees.

The Task ID #2456 submittal received on March 17, 2006 states in Chapter 5, page 5-14, section **542.700, Final Abandonment of Mine Openings and Disposal Areas** that "degas drill holes G-9 through G-17 will be sealed in accordance with Federal Regulations 43 CFR Ch. 11, Subpart 3484, (3) per a decision by the BLM and UDOGM."

"A copy of 43 CFR Ch.11, Subpart 3484, (3) and a discussion of how methane is removed from mines is contained in Attachment 5-2."

Once the Permittee has determined that venting activities are complete, all machinery will be removed. The only equipment remaining at each well site will be the disturbed area perimeter fence, and the Permittee identification sign, which will remain until authorization is granted by the Division to remove same. The Task ID #2456 application contains a copy of the requirements of 43 CFR Chapter 11, Subpart 3484, (3) as part of Attachment 5-2.

The Permittee has committed to meeting the well plugging requirements established in 43 CFR Ch. 11, Subpart 3484.1, (3). The Division agrees with the Permittee's request to leave one degasification well casing open per panel in order to vent pressurized gob gases to the surface. The Division also feels that the Permittee must plug the well if said casing is in taking air to the sealed area.

Findings:

The submitted information meets the minimum regulatory requirements for this section of the R645 Coal Mining Rules.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

Chapter 5, page 5-15, section **553.100 Disturbed Area Backfilling and Grading, Post-Mining Land Use** indicates, "the disturbed area will be reclaimed in a manner that supports the approved post-mining land use. Refer to Sections 411 and 412 for additional detail."

Chapter 4, page 4-1, section **411.100 Pre-mining Land Use** of the submittal (Task ID #1642) indicates, "the area is utilized for the landowners private use and as open range for livestock and wildlife." The area is also zoned by Carbon County for "mining and grazing, (MG-1)", (See section **411.130 Land Use Description**, Chapter 4, page 4-2 of the submittal, Task ID #2456). "There are no industrial or municipal facilities located on or immediately adjacent to the well sites."

Chapter 4, page 4-4, section **412.100 Post Mining Land Use Plan** indicates that the Permittee will conduct all activities in the area such that "all uses of the land prior to the wells construction/operation and the capacity of the land to support prior alternate uses will remain available throughout the life of the sites. Dugout Canyon intends (for) the post mining land use to be livestock and wildlife grazing. Final reclamation activities will be completed in a manner to provide the lands able to parallel the pre-mining land use." Thus, the Permittee intends to

conduct all mining operations in a manner such that the post-mining land use and the pre-mining land use are identical.

Findings:

The submitted information meets the regulatory requirements for this section of the R645 Coal Mining Rules.

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:

The Task ID #2456 submittal contains a commitment as follows, "the well sites will be returned to their approximate original contour after reclamation is completed" (See page 5-15 Chapter 5, section **553.100 Disturbed Area Backfilling and Grading**, of the Task ID #2456 application).

Upon completion of the venting phase of the well(s), the disturbance(s) will be reclaimed by backfilling the mud pits and regrading the area. The pad area will be roughened. "Sediment controls will consist of gouging the surface to create depressions and mounds which store and impede the movement of water. As vegetation becomes established on the reclaimed surface, erosion potential will be further minimized", (See **553.100**).

The disturbed area perimeter fence and the associated Permittee identification signs will remain in place until the Division has made a determination that all reclamation standards (Phase III requirements) have been adequately addressed.

Findings:

The submitted information meets the regulatory requirements for this section of the R645 Coal Mining Rules.

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

The requirements for **APPROXIMATE ORIGINAL CONTOUR RESTORATION** will be applied in the reclamation of well pads G-13 through G-17**.**

Previously Mined Areas

The area has not been previously mined, but minor coal exploration activities did take place at well locations G-15 (DUG 0204), G-16 (DUG 0303) and G-17 (DUG 0304). All previous activity at these sites has been reclaimed, except where disturbance occurred on the existing access roads.

Backfilling and Grading On Steep Slopes

Chapter 4, page 4-1, section **411.120 Land Capability (**Task ID #2455**),** indicates, "the well site areas are located on the flatter mesa tops and rolling terrain". A review of G-13 through G-17, FIGURE(s) 2, Cross Sections, (Task ID #2456) which are cross section maps for each of the respective well sites, reveals that, based on the determination of the vertical angle, that none of the well site's surfaces increase in elevation at an angle steeper than 7 degrees. By definition, steep slopes are slopes that increase in height when the vertical angle is twenty degrees or more. Therefore, none of the well sites are being proposed in what would be considered a steep slope area.

Special Provisions for Steep Slope Mining

This requirement of the rules is not applicable to this submittal.

Findings:

The submitted information meets the regulatory requirements for this section of the R645 Coal Mining Rules.

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:

Reclamation of the methane vent wells is addressed in Chapter 5; section **540 RECLAMATION PLAN**, section **550, RECLAMATION DESIGN CRITERIA AND PLANS**, and section **560, PERFORMANCE STANDARDS**.

Section **541.100, Commitment** indicates, "Upon permanent cessation of methane venting, Dugout Canyon Mine will seal the wells and permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan."

FIGURE 5-26, Reclamation Schedule, (Chapter 5, page 5-18 of the Task ID #2456 submittal) depicts the reclamation activities that will be conducted during weeks one, two, and three. Footnotes attached to the schedule indicate that the schedule is only applicable if weather conditions are conducive. The Permittee's schedule also indicates that the schedule may be extended if necessary.

The Division has a concern with the terms stated relative to the point of initiation of reclamation activities. As noted elsewhere within this document, this is the sixth submittal made relative to the permitting of degasification wells for the Dugout Canyon Mine permit area. As of the date of this review, (May 8, 2006) twelve degasification wells have been permitted thru the Division. Only two wells (G-3 and G-4) have been plugged and reclaimed. G-6 has been partially plugged. Wells G-13 through G-17 will increase that total to 17 permitted wells. Wells G-1 and G-8 have never been drilled.

Chapter 5, page 5-11, section **541.100 Commitment,** states the following; "upon permanent cessation of methane venting, Dugout Canyon Mine will seal the wells and permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan".

The BLM and DOGM have determined that it will be the Permittee's call, to determine when a degasification well is no longer needed, for the purpose of determining when reclamation / plugging activities are to be initiated. The Permittee cannot predict when a well will reach the point when it is no longer needed for venting.

Degasification wells are considered by the Division to be part of the mine's bleeder system, which is in turn part of the ventilation system under the jurisdiction of the U.S. Department of Labor, Mine Safety and Health Administration. 30 CFR Part 75.364 (2) states that at least every seven days, a certified person shall evaluate the effectiveness of bleeder systems required by 30 CFR 75.334. If a well is venting, the Permittee must determine the volume of gas venting and the concentration of the combustible gases every seven days. If the well head is closed, this requirement does not exist. If the well is pulling oxygen into the mine, a condition supporting spontaneous combustion within the mine workings may exist.

In order to establish more effective criteria for the initiation of reclamation activities associated with each degasification well, the Division required the following in the Task ID #2408 deficiency response:

The Permittee must notify the Utah agency when reclamation activities are to be initiated for each degasification well site. The Permittee has committed to notifying the Division when it is determined that the well is no longer needed for methane venting.

The Division realizes that the scheduling of a drill rig to place the casing plug may be difficult, based upon rig availability, adverse weather conditions, or other circumstances beyond the Permittee's control.

The sealing of wells involves meeting the minimum regulatory requirements associated with R645-301-765. Page 7-13, **Chapter 7, HYDROLOGY**, section **748, Casing and Sealing Wells,** refers one to **Chapter 5, ENGINEERING**, section **542.700**, **Final Abandonment of Mine Openings and Disposal Areas.** Page 5-13 states, "Degas drill holes G-9 thru G-17 will be sealed in accordance with Federal Regulations 43 CFR Chapter 11, Subpart 3484, (3) per a decision by the BLM and UDOGM.

The Division recommends that the Permittee utilize Type 5 sulfate resistant cement to seal the annulus as well as the well bore during final reclamation activities for a height of at least 50 feet above the plug. The remaining height in the well bore can be plugged with regular cement, to within five feet of the surface.

Chapter 2, page 2-14, section **242.100 Soil Redistribution Practices,** paragraph three states the following; "reclamation will be delayed at well sites G-2 and G-5, and G-7, (See Task ID # 2456 application, received March 17, 2006) to allow additional time for venting of the gob behind the sealed panels".

The Task ID #2455 application received on March 17, 2006 indicates that the Permittee feels that it is necessary to leave one degasification well bore open after that section of the Mine is sealed to be able to vent pressurized methane gas from the sealed area. If this well bore is not allowed to remain open, excessive combustible gas pressures may cause in the Mine seals to exhale, allow increased percentages of methane gas to further raise the combustible gas content of the ventilating currents in the Mine. This increases the hazard potential for the underground workers. The Division agrees that one degasification well bore shall be left open, in order to reduce the levels of pressurized methane gas which may build within a gob area. The Division also feels that if a well bore begins to pull air into the casing and the sealed mine area that action should be taken to plug the well bore as quickly as conditions permit.

Methane degasification wells are unique in that they are drilled to a depth that is approximately twenty-five feet above the roofline of the coal seam that is being extracted. As the longwall face retreats and extracts the coal from the area beneath the borehole, the roof caves as the longwall shields are advanced. Hopefully, the roof caves up to the bottom of the degasification well, completing the circuit, and allowing atmosphere containing mine gases to be vented to the surface. An exhaust blower will sit on the surface creating a low pressure across the wellhead, venting the mine gases from the underground gob area.

It is generally accepted that more than 90% of the subsidence associated with coal extraction via longwall mining methods will occur within the first year after completion of the extraction process. The casing of the methane vent well may be subjected to crushing or shearing anywhere along its length, due to the shifting, bending and/or breaking of the strata adjacent to the well. Thus, the venting of combustible gases from the gob areas of the mine may be short lived. The plugging of these casings may only be effective in preventing adverse environmental or health and safety effects to a certain extent. The prevention of cross contamination of aquifers may not be possible in consideration of the fact that the plugging of the hole may not be possible for its entire depth.

The Task ID # 2456 submittal received on March 17, 2006 contains a map of the Mine workings located in the Gilson seam. The map also depicts the locations of wells that have been permitted and those that have yet to be permitted. The GIL-5 panel, as depicted will have five surface locations (wells G-9, G-10, G-11, G-12 and G-13. G-9A, G-10, G-11, G-12, and G-13A and G-13B will intercept the strata above the GIL-5 panel. Hence, panel GIL-5 will have SIX well bores which have the potential to be used for venting of pressurized gas from the sealed gob area of GIL-5.

FIGURE 5-26, Reclamation Schedule for Wells G-3, G-4 and G-6 through G-17 (page 5-18) allows a three-week time frame to plug and reclaim these wells.

Findings:

The application meets the minimum regulatory requirements of this section of the R645 Coal Mining Rules.

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:

Reclamation

Chapter 5, page 5-13, section **542.600 Roads** of the methane well submittal addresses this requirement. Section **-542.600** states the following; "the roads which existed prior to the drilling program will be retained after reclamation. The well pads for G-14, G-15 and G-17 are proposed immediately adjacent to existing dirt roads. The only reclamation that will occur in these areas will be that which is necessary to restore the area that was widened to provide an area large enough to allow drilling.

As previously noted, the well pad for G-13 will require that approximately 630 feet of existing road be relocated in order that the drill pad can be located. No discussion is provided as to whether or not this road will be re-established in its original location following the completion of methane venting activities and the reclamation of the drill pad.

Well G-16 will require that a 500-foot length of road be constructed to access the pad. This road will be reclaimed following completion of the venting activities and final reclamation of the drill pad.

Retention

As mentioned elsewhere in this technical memorandum, the roads in place at the present time are the property of the heirs of the Milton and Ardith Thayn Trust. They will stay in place after the venting phase of the wells has been completed. The surface use agreement in place between Canyon Fuel Company and the Trust allows the Permittee the use of the roads for the length of the agreement.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

The well sites will be returned to their approximate original contour after reclamation is completed, (See Chapter 5, page 5-15, section **-553.100 Disturbed Area Backfilling and**

Grading, Approximate Original Contour). Also refer to page 5-11, Chapter 5, section **537.200, Regrading of Settled and Revegetated Fills.** As indicated, "upon completion of the well site, **the areas not required for the exhaust blower** will be regraded to approximate original contour". Because of the nature of the well site, settling is not anticipated. The Permittee's submittal makes the commitment to regrade any settled areas.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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

The general location of the proposed wells is depicted on PLATE 1-4, which shows the permit boundary for the Dugout Canyon Mine. The Permittee has submitted a revised PLATE 1-4 which adds the locations of wells G-1 through G-17 in relationship to the Mine's permit boundary. The proposed disturbance for each of the wells is depicted in Chapter 1, **TABLE 1-2, Disturbed Acres by Well Site.** Chapter 5, FIGURES 1, 2, and 3 for each of the proposed well sites also depict the affected areas.

Bonded Area Map

The bonded area for each well is depicted by G-13 FIGURE(s) 1 and 3, through G-17, FIGURES 1 and 3.

Final Surface Configuration Maps

The Permittee will not return the drill pad areas to approximate original contour. The pad areas are to be reclaimed in a fashion that will retain the flatness of the drill pad, but vegetation will be re-established. This is to be done at the request of the surface landowners, the heirs of the Milton and Ardith Thayn Trust. Thus, the final surface configuration should very closely resemble the cross sections depicted on G-13 FIGURE 2, through and G-17 FIGURE 2, which depict the operational drill pad.

Certification Requirements

All maps and drawings requiring certification as listed under R645-301-512 are P.E. certified by Mr. Layne Jensen, P.E., or Mr. Dave Spillman, P.E. Both are Utah registered professional engineers.

Findings:

The submitted information meets the regulatory requirements for this section of the R645 Coal Mining Rules.

RECOMMENDATION:

The Permittee must address the aforementioned deficiencies before receiving a recommendation for approval.

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