

EXPLORATION TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

June 14, 2006

TO: Internal File

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

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

RE: NOTICE OF INTENT TO CONDUCT MINOR COAL EXPLORATION-2006, Ark Land Company, Canyon Fuel Company, SUFCO Mine, C/041/002, Task ID #2390

SUMMARY:

Ark Land Company, a subsidiary of Arch Coal, Inc., (parent Company of Canyon Fuel Company, LLC / SUFCO Mine) submitted an application to permit two coal exploration holes to evaluate coals relative to School and Institutional Trust Lands Administration Muddy Tract and Utah State Coal Lease ML 49443-OBA, to the Division on December 15, 2005. A copy of the application was received in the Price Field Office on January 12, 2006.

All surface lands are managed by the USDA / USFS / Manti-LaSal National Forest. Approximately 2,560 acres of reserves are associated with the SITLA lease.

The USFS is conducting the NEPA for this minor coal exploration application. Final approval by the Division is based upon having all clearances from the surface landowner, the coal owner, as well as the State Division of Water Rights in place.

Due to concerns aired by the USFS to the Permittee relative to the amount of disturbed area acres to be created, the Permittee met with the USFS and the DOGM to discuss several access routes associated with the two proposed exploration holes. This technical memorandum will address the adequacy of the information received on January 12, 2006 and March 30, 2006 relative to the R645 engineering requirements for minor coal exploration applications.

EXPLORATION TECHNICAL ANALYSIS:

COAL EXPLORATION

Regulatory Reference: R645-200.

SCOPE AND RESPONSIBILITIES

Regulatory Reference: 30 CFR 772.1; 30 CFR 772.10; 30 CFR 772.11; R645-100-400; R645-200-100; R645-200-200; R645-201-100.

Analysis:

The applicant is proposing to drill two holes on the SITLA Muddy Coal Tract to determine seam thickness as well as coal quality. CFC has already leased the Muddy Tract / Upper Hiawatha seam, (Hole "B-05", Utah State Coal Lease ML49443-OBA, upper Hiawatha seam only). Hole "A-05" is located on the unleased portion of the Muddy Tract, (SITLA). As of 1/25/2006, the applicant has applied for a right of mineral entry (No. ML 50186-ROME) authorization from SITLA in order to conduct this minor coal exploration activity. Same was approved on January 27, 2006. A copy of the approval is included in the #2390 application. All exploration activities will occur on surface lands managed by the USDA / USFS / Manti-LaSal National Forest.

Findings:

The minimum regulatory requirements of this section have been met.

REQUIREMENTS FOR NOTICE OF INTENTION TO CONDUCT MINOR COAL EXPLORATION

Regulatory Reference: 30 CFR 772.10; 30 CFR 772.11; R645-100-412; R645-201-200.

Analysis:

Regulation R645-201-224 requires that the application contain "a statement of the period of intended exploration". The Permittee states on pages 7 and 8 of the December 15, 2005 submittal, "it is anticipated that the exploration will be initiated in early June, 2006. This timetable may vary somewhat depending on U.S. Forest Service stipulations and other factors such as weather". Exploration activities will continue for approximately six weeks as depicted by the bar graph on page 8. Holes A and B are planned as part of a larger 4-hole drilling project.

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The remaining two holes are planned for the Federal lease [BLM administered portion of the Muddy Tract (See Map 2 of the 12/15 submittal)].

This information is adequate to meet the minimum regulatory requirements of this section.

Regulation R645-201-225 requires the following from a coal exploration application:

- 1) A description of the method of exploration to be used.
- 2) The amount of coal to be removed.
- 3) The practices that will be followed to protect the area from adverse impacts of the exploration activities.
- 4) (The methods to be used) to reclaim the area in accordance with the applicable requirements of R645-202.

Page 8, section R645-201-225, paragraph two of the application contains the following description of the method of exploration to be used; “drilling will be accomplished utilizing continuous core drilling techniques. Drilling will involve one or two truck-mounted core-rig(s) capable of drilling 2000 feet; with necessary support equipment such as rod trucks/trailers, supply trailers, portable mud tanks, pickup trucks, etc. The drilling procedure will be to continuously core to total depth utilizing water, foam, polymer, and / or mud as drilling medium.”

“The general method to be followed during drill hole exploration, reclamation, and abandonment is: 1) repair the Forest Development Roads as required by the U.S.F.S. and temporary widening of the National Forest Trail 025, 2) construct temporary access roads and drill pads, 3) set temporary water tanks, pumps, and water lines, 4) drill and log holes, and if hole conditions and drilling equipment permit, install water monitor(ing) well in hole A-05 or B-05, and 5) reclaim drill sites and roads and remove all waterlines, tanks, and pumps. No blasting will be done for road building or repair. Repair of Forest System Roads will include hauling of gravel to fill rough areas on bedrock ledges and grading rutted areas. U.S. Forest Service road use permits will be obtained prior to initiation of the project. Water bars on NFT 025 will be removed temporarily during drilling and reclamation but will be replaced upon completion of activities. The trail (NFT 025) will be widened to approximately 12 feet, and narrowed back to current ATV width upon completion. Road construction work and drill site preparation will be done with a D-8 Cat or equivalent. Equipment operators will use pickup trucks for transportation.”

Relative to the amount of coal to be removed, “the only coal to be removed during exploration activities will be cores (See page 9, paragraph 3, of the #2390 application). Cores will nominally be 2.4 inches (HQ) in diameter. Given an approximate projected thickness of 7

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feet for the Upper Hiawatha seam and 12 feet for the Lower Hiawatha seam, approximately 30 to 60 pounds of coal will be removed” (per hole/PHH). Thus, a total amount of 60 to 120 pounds of coal will be obtained for the two holes in the SITLA tract; this is far short of the 250 ton or less requirement that designates the difference between minor and major coal exploration applications. Task ID #2390 is thus classified as a minor coal exploration application.

The practices that will be implemented to protect the area from any adverse impacts of the exploration activities include the following:

- Continuous wireline core drilling will be utilized via truck mounted drill rigs. Supply trailers will carry and store drill steels, coring equipment, drilling additives, cutting and welding equipment, and other supplies to the staging area and drill sites. Also located at the staging area will be a double lined diesel fuel tank for the drill rig and the support equipment, an 18,000-gallon FRAC tank and pump, construction equipment, and other supplies such as waterline, etc. Support vehicles such as pickup trucks and a geophysical logging truck will be parked at the drill sites and staging area. No drilling fluids, oil and grease, or diesel fuel will be allowed to contact the topsoil.
- Forest Trail 025 will be widened to approximately 12 feet and water bars / vehicle barriers will be temporarily removed. The length of Trail 025 that will be widened will be 11,980 feet. This amounts to 2.2 acres of disturbance.
- It will be necessary to construct Temporary Access Routes to exploratory holes A-05 and B-05. The distance that will be widened to a width of 12 feet to do this will amount to 4705 feet. Thus, this disturbance will amount to 1.3 acres.
- Disturbance to wildlife will be minimized by utilizing the existing disturbed route along Forest Trail 025.
- No wetlands or riparian (areas) are known along the proposed routes.
- Roads will be maintained during the project by grading as needed.
- Spot placement of gravel may be necessary depending on weather conditions and USFS stipulations.
- Roads will not be located in perennial or intermittent streams.
- Proper temporary sediment controls will be installed or constructed to minimize downstream sedimentation. “Contributions of suspended solids will be

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minimized by placing native stream gravel or rocks beneath the screens and suction hoses wherever they can potentially stir up sediment at pump pick-up points” (See page 16, section R645-301-742.410 thru 742.420 of the application).

- Drill pads will be constructed at sites A-05 and B-05, and have a disturbed area per pad of 0.275 acres (100 feet by 120 feet). A mud pit 40 feet long, with a ten-foot width, and an eight-foot depth will be lined such that drilling fluids, cuttings, and foam are contained.
- Soil horizon “A” will be removed and stockpiled for reclamation.
- Soil horizon “B” will be created and stored separately and will consist of material generated from the leveling of the pad area, and incising the mud pit within the disturbed area.
- Precipitation intercepted by the area comprising the drill pad will be contained by a one to three foot berm constructed about the pad perimeter. The pad will be sloped to direct runoff into the mud pit.
- Noncoal waste will not be disposed of at the drill sites.
- Excess drill core will be buried at depths greater than four feet, after the pit has been allowed to dry, and the liner has been removed.
- If it is determined that fluids contained within the mud pits require pumping, those fluids will be pumped into a suitable method of transportation, and transported off of USFS lands to an approved disposal site.
- Mud pits will be fenced when unattended to prevent a hazard to wildlife.
- There will be no diversion of overland flows.
- The Permittee’s application indicates that the encounter of acid or toxic forming materials is unlikely because none have been encountered previously. Samples of the drill core will be analyzed for acid and toxic forming materials. The samples will be taken from the ten-foot interval above and below each seam of mineable thickness. Page 16, item 3, states, “excess...core will be hauled off of Forest Service land and disposed of properly”. Page 10 of the application contains the statement that “samples of drill core will be analyzed for acid and toxic forming materials”. The Permittee will transport all core showing acid or toxic potential

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off of USFS lands for proper disposal (previous applications have committed to disposing of this material within the SUFCO Mine waste rock disposal site).

The methods that will be used to reclaim the drill sites include the following:

- Reclaim all of the exploration activities as contemporaneously as possible (See page 10 of the application).
- “Upon completion of the hole, all excavations will be filled in to original contour, topsoil replaced, all equipment will be removed, and all trash will be hauled away.”
- “An approved seed mix will then be applied to the drill area.”
- Page 12, paragraph 3 of the application states the following; “upon completion of drilling, the holes will either be plugged with a cement, bentonite, cement/bentonite slurry to full depth, or a water monitoring well will be constructed. In either case, a brass tag will be placed at the top of the drill hole stating the operator’s name, drill hole number, and legal description. The tag will be placed in cement at ground level”.

Page 13 of this NOI states that this minor coal exploration project will utilize approximately two acre-feet of water for drilling purposes. Water will be obtained from the Quitchupah or Muddy Creek drainages, after an approved “Temporary Change of Water” is received from the Division of Water Rights. If drought conditions prevail within those drainages, “water will be hauled from the SUFCO Mine site”.

Page 9 of the application states “water for road watering will be pumped from the north and/or south forks of Quitchupah Creek into 4,000 gallon water trucks. Water will be pumped via 1, 2, and 3 inch HDPE waterline. All necessary arrangements will be made for water usage, including agreements with water rights owners in each of the drainages and Temporary Water Change approvals from the Division of Water Rights. Copies of approved Temporary Water Changes will be forwarded to the Division prior to project startup. Where not located adjacent to a road, waterlines and pumps will be placed and removed via horseback, helicopter, or on foot.”

Page 13 of this minor coal exploration application states under section R645-202.230 that “no adverse impacts to the stream channel will occur during water pumping or drilling activities. The USFS, BLM and the Division will be notified as to points of diversion. Stream flows will not be pumped dry during pumping activities. In the past, the BLM and the USFS have authorized the placement of a water tank at the pump location to allow more gradual pumping and water storage. If, due to drought conditions, stream flow drops too low to pump, water will

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be hauled from the SUFCO Mine site. No water will be pumped from Quitcupah or Muddy Creek without an approved “Temporary Change of Water” from the Division of Water Rights. Approved Temporary Change documents will be forwarded to the Division and USFS prior to startup of drilling operations. It is projected that approximately two acre-feet of water will be utilized during the project.”

The total amount of disturbance which exists or which will be created to drill holes A-05 and B-05 is 4.05 acres. This acreage includes the two drill sites (2 @ 0.275 acres per pad), 2.2 acres of disturbance associated with widening FT025 (8 feet X 11,980 feet), and developing the temporary access routes (12 feet X 4,705 feet = 1.3 acres).

As previously noted, a total of 4.05 acres of disturbance will be created by this minor coal exploration activity.

Findings:

The minimum regulatory requirements of this section have been addressed.

COMPLIANCE DUTIES

Regulatory Reference: 30 CFR 772.13; R645-202.

OPERATIONAL STANDARDS

Regulatory Reference: 30 CFR 772.13; R645-202-100.

Analysis:

Roads

R645-202-232 Roads / Associated Performance Standards.

The application states on page 10, paragraph one that “the reclamation of the temporary access routes to sites A-05 and B-05 and the narrowing of Forest Trail 025 will occur as soon as possible upon completion of the drilling operations. Reclamation will include scarifying, ripping, replacement of topsoil and reseeding the disturbed surface with the USFS approved seed mix. Forest Development Roads 007 and 044, (See Map 2 of NOI) will be utilized to access the staging area. As previously noted, trucks pulling supply trailers for the drilling project will utilize the roads.

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- 1) The permittee's NOI application gives a description of the access route to the borehole locations (See Map 2).
- 2) R645-301-525-200, Utility Installation and Support Facilities. The requirements of this regulation as they relate to roads associated with minor coal exploration activities are that the application must include a utility installation description which states that all coal mining and reclamation operations will be conducted in a manner which minimizes damage, destruction or disruption of services provided by oil, gas, water wells, oil, gas or coal slurry pipelines, railroads, electric and telephone lines, water and sewage lines which pass over or under or through the permit area unless otherwise approved by the owner of those facilities and the Division. As far as this minor coal exploration submittal is concerned, the application states on page 15, section 525-200 that "no major utilities pass over, under, or through the exploration area. Use of roads and development of the exploration site(s) will not disrupt or damage any utility service." This is adequate to address the Division's concerns.
- 3) R645-301-527.230, the maintenance plan is described as follows on page 13, paragraph 3, section R645-301-527.230. "U.S. Forest system roads utilized as part of this minor coal exploration plan will be maintained as per the U.S.F.S. authorized road use permit, including proper control of fugitive dust to minimize effects to fish, wildlife, and related environmental values. Approved road use permits will be obtained prior to startup of the drilling project.

Findings:

The application dated December 12, 2005, Task ID #2390, meets the minimum regulatory requirements for the engineering discipline.

RECLAMATION STANDARDS

Regulatory Reference: 30 CFR 772.13; R645-202-200.

Analysis:

Approximate original contour

The NOI makes the following commitment; "upon completion of the hole, all excavations will be filled in to original contour".

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Boreholes

R645-202-243, Reclamation of Exploration Holes. Page 12, paragraph three of the minor coal exploration application specifically addresses the plugging of each of the exploration boreholes. "Upon completion of the drilling, the holes will be plugged with a cement, bentonite, or cement/bentonite slurry to full depth. A brass tag will be placed at the top of the drill hole stating the operator's name, drill hole number, and legal description. The tag will be placed in cement at ground level."

Facilities and Equipment

R645-202-244, Prompt Removal of Facilities and Equipment. The NOI minor coal exploration application contains a commitment to promptly remove facilities and equipment upon completion of the exploration activities, (See page 10, paragraph four of the NOI).

Reclamation Bond Amount

R645-201-225; Determination of Reclamation Bond Amount. There is no information provided relative to the amount of reclamation bond that is necessary to reclaim the two proposed exploration boreholes. As holes A-05 and B-05 will be drilled on USFS lands, it is likely that the required reclamation bond will be a part of the approved USFS "Special Use Permit". The Division has accepted this bond amount in the past as adequate.

Findings:

The application received on December 12, 2005 meets the minimum regulatory requirements of this section of the R645 Coal Mining Rules.

RECOMMENDATIONS:

This minor coal exploration application should be approved.