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GCC Energy  
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Subject: GCC King Coal II Drilling Programs

Seth;

The following is a summary of the geologic and hydrologic conditions encountered during the 1998, 2012-13 and 2014 drilling programs and the methods used.

↪ General Geology and Hydrologic Conditions

The drilled lithology section begins in the overlying Cliff House Sandstone and terminates in the coal bearing Menefee formation below. The Cliff House Sandstone formation is of marine origin and composed of lenticular hard ledges of sandstone in a softer interbedded mix of fine sandstone, mudstone and silty shales. The Menefee formation is of non-marine origin and characterized by irregular bedding and rapid lateral changes in lithology, which consist of crossbedded sandstones, silty shales, and coal seams.

The coal seam that King Coal I mined and King Coal II is presently mining is called the "A" seam and is located above the topography drainage; outcropping in the primary northeast-southwest trending Hay Gulch. The coal seam also outcrops in all the inclusive minor drainages in the mine area (i.e. East Alkali Gulch, West Alkali Gulch, Deadman Gulch, etc.). The seam dips at 2 degrees (3.5% grade) to the south/southeast and the topography follows the same strata trend, thus the coal seam lies at approximately the same depth, at 280-310 feet on top of the mesa, throughout the area and above all drainages.

During the original exploration and subsequent mine development programs NO water was encountered during the drilling operations. All drill holes were initially drilled by air to core point (approximately 5-15 feet above the coal seam) and then coring was completed by "mist" (i.e. air/water injection). The drill holes were completed down to 20-40 feet below the coal seam so that a geophysical log could be completed. During the core drilling process 200-300 gallons of water were used per hole, of which the remaining injection water is often found at the bottom of the hole by the geophysical log (i.e. drill hole water level).

Drilling Methods and Completion

Drilling consist of using a 6 1/4" drill bit for the "plug" hole followed by the same size core drill bit that produces a 3" core sample. As stated above all drill/core holes were completed through the "A" coal

seam to a total depth of between 320 to 340 feet. However, during the 1998 exploration drilling program 16 of 23 holes were drilled, but not cored, to a lower depth (i.e. generally 400-450 feet with the deepest at 489 feet) to examine the coal seams in the lower Menefee formation. No additional minable coal seams OR water were encountered in these deeper drill holes. All deeper holes used air to total drill depth and all core holes were completed by air to core point and then by air/water injection to total depth.

Upon completion of each drill hole and geophysical log, the hole is filled to the surface by dumping from a cement truck a product called "flow fill". "Flow fill" consist of a mixture of sand, water and cement and is used to seal off the strata in "dry holes" from any surface, subsurface or future mine water contamination.

If any additional procedural information is require or you have any questions please contact me.



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