STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

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IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

Case No. 14720

APPLICATION OF AGAVE ENERGY COMPANY FOR AUTHORITY TO INJECT ACID GAS AND CARBON DIXIODE, LEA COUNTY, NEW MEXICO

AGAVE ENERGY COMPANY'S MODIFICATIONS TO ITS APPLICATION

Agave Energy Company ("Agave") submitted its application for authorization to inject carbon dioxide and acid gas into its proposed Red Hills AGI #1 well on July 20, 2011. Subsequently, Agave determined that it would be beneficial from an operational standpoint to modify certain elements of its design of the proposed well.

Copies of Agave's changes to the text of Section 3.2, proposed wellbore diagram, and Figures 4a and 4b in its application are attached hereto. All of the changes to the original application are highlighted.

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3.2 WELL DESIGN

The AGI facilities and well are integrated components of the proposed Red Hills Gas Plant design (Figure 2). The schematic of the AGI facilities and tie-in to the proposed Red Hills Gas Plant are shown in Figure 3, and the preliminary well design for the injection well is shown on Figure 4. The final design for the compression facilities and associated piping and layout of H_2S alarms and other safety equipment will be submitted for NMOCD review prior to commencement of injection operations as part of a complete Rule 11 Plan.

The proposed well (Agave Red Hills AGI #1) will be a vertical well, spudded on Agave's Red Hills Gas Plant site and drilled to a final total depth of approximately 6,550 feet. The well will have each string of the telescoping casing cemented to the surface and will include a subsurface safety valve on the production tubing to assure that fluid cannot flow back out of the well in the event of a failure of the injection equipment. In addition, the annular space between the projection tubing and the well bore will be filled with an inert fluid (diesel fuel) as a further safety measure which is consistent with injection well designs which have been previously approved by NMOCD for acid gas injection.

Design and materials considerations include: placement of SSSV and the packer, double casing through freshwater resources (Ogallala and Santa Rosa Formations – groundwater, Rustler – saline groundwater), characterization of the zone of injection, and a total depth (TD) ensuring identification of the reservoir. Three casing strings are proposed (Figure 4):

1. Surface casing to the top of the Rustler anhydrite, approximately 1,245 feet depth, to protect fresh water in the Ogallala and Santa Rosa Formations.
2. Intermediate casing to the base of the Salado and Castile Formations, approximately 5,190 feet, to protect the brackish aquifer in the Rustler Formation.
3. Production casing extending down to the final total depth (TVD 6,550 feet). Following logging and analysis, the injection intervals will be determined, and the final depth of the long string, perforation zones and packer location will be selected.

A suitable drilling rig will be chosen for the job that will include a 4,000 psi blowout preventer (minimum) and choke manifold for any unforeseen pressures encountered. The borehole for the surface casing will be drilled with a 26-inch bit to a depth of approximately 1,245 feet, and 20-inch, 94 ppf, H40, STC casing will be installed and cemented to the surface with approximately 1400 sacks of cement (or amount adequate to circulate the cement to the surface). The intermediate hole will be drilled with a 17 ½-inch bit to a depth of approximately 5,190 feet. There a 13 ⅜-inch, 54.5 ppf, J55, STC surface casing string will be run and cemented to surface with approximately 2,315 sacks of cement. Visual inspections of cement returns to the surface will be noted in both the conductor and surface pipe casing jobs. Casing and cement integrity will be demonstrated by pressure-testing after each cement job.

After verifying the intermediate casing, the well will be drilled to the projected TVD of 6,550 feet using a 12 ¼-inch bit.

The proposed open hole logging suite for the TD run consists of a Dual Induction, Density-Neutron-Gamma Ray Porosity and Fracture Matrix Identification (FMI) log in the Bell Canyon and the Cherry Canyon. A conventional core will be collected from the tight zone near the base of the Bell Canyon into the upper Cherry Canyon target reservoir sands. Representative core samples will be analyzed in the laboratory to determine caprock and reservoir permeabilities and porosity.

After the logs have been evaluated, the production casing consisting of approximately 6550 feet of 7-inch, 26.0 ppf, L80 casing grade will be run and cemented with approximate total of 1,925 sacks of cement. A

30-foot section of Corrosion Resistant Alloy (CRA) material will be inserted into the string at the packer setting depth to provide a corrosion resistant seat for the packer later in the job. The cementing of the long string will be accomplished in two stages. The first stage will seal the annular space from total depth (approximately 6,550 feet) to a level well above the CRA joint. This stage will employ acid-resistant cement (CORROSACEM^{TM} or equivalent). For the second stage, a DV Tool previously inserted in the casing (at approximately 3,000) feet will be used to pump the remaining cement to the surface.

Once the cement has set up, the tubing adaptor for the wellhead will be welded on the wellhead and the rig will be released. A casing integrity (pressure test) will be performed to test the casing just prior to releasing the rig. After a successful test and the drilling rig released, a work-over rig will be mobilized to location and a cement bond log will be run to ascertain the quality of the cement bond of the production casing. It is important that a good bond be established around the injection interval as well as below the CRA joint to minimize any chances that acid gases mixed with formation water do not travel up the outside of the casing and negatively impact the integrity of the casing job.

Once the integrity of the cement job has been determined, the selected injection intervals will be perforated with approximately four shots per foot. At this location a total of approximately 175 feet of target areas may be perforated. A temporary string of removable packer and tubing will be run, and injection tests (step tests) will be performed to determine the final injection pressures and volumes. Once the reservoirs have been tested, the final tubing string including a permanent packer, approximately 6,550 feet of 3 ½-inch 9.3 ppf, L80 ULTRA FX premium thread tubing, and a Subsurface Safety Valve (SSV) will be run into the well. A ¼-inch stainless steel line will connect the SSV to a hydraulic panel at the surface.

The National Association of Corrosion Engineers (NACE) issues guidelines for metals exposed to various corrosive gases like the ones in this well. For a H_2S/CO_2 stream of acid gas that is de-watered at the surface through successive stages of compression, downhole components such as the SSV, (subsurface safety valve), and packer need to be constructed of Inconel 925. The CRA joint will be constructed of a similar alloy from a manufacturer such as Sumitomo. A product like SM2550 (with 50% nickel content) will likely be used. The gates, bonnets and valve stems within the Christmas tree will be nickel coated as well.

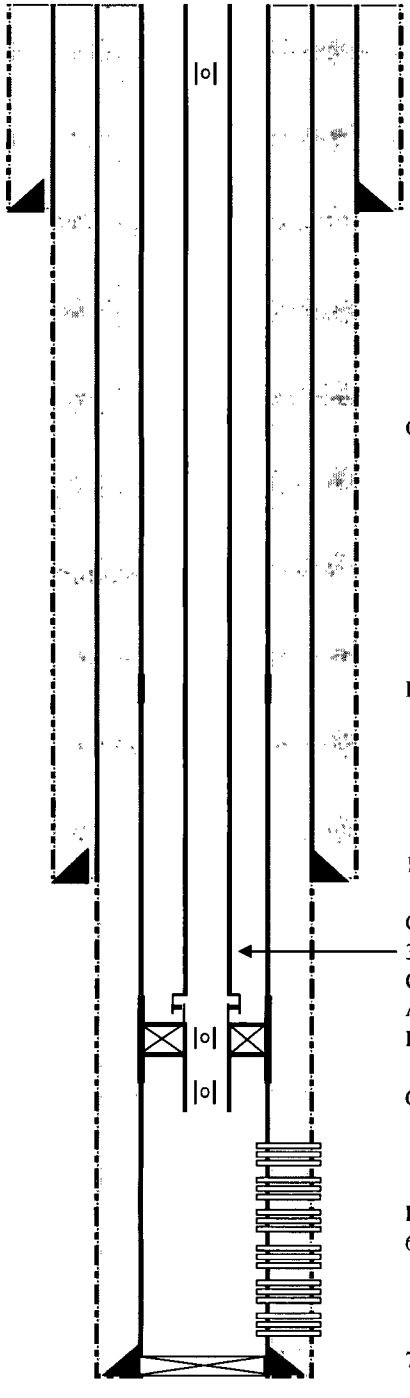
The rest of the Christmas tree will be made of standard carbon steel components and outfitted with annular pressure gauges that report operating pressure conditions in real time to a gas control center located remotely from the wellhead. In the case of abnormal pressures or any other situation requiring immediate action, the acid gas injection process can be stopped at the compressor and the wellhead shut-in using a hydraulically operated wing valve on the Christmas tree. The SSV provides a redundant safety feature to shut in the well in case the wing valve does not close properly.

After the AGI well is drilled and tested to assure that it will be able to accept the volume of injection fluid (without using acid gas), it will be completed with the approved injection equipment for the acid gas stream.

Since the Red Hills Gas Plant has not yet been constructed, no Rule 11 Plan has yet been prepared. Once approval has been granted for this AGI well, the plant design will be finalized and construction undertaken. A Rule 11 Plan will be prepared following the model of the Agave Dagger Draw Gas Plant and Metropolis Disposal #1 and submitted for NMOCD review and approval prior to commencement of TAG injection into the Agave Red Hills AGI #1 well.

AGAVE RED HILLS AGI #1
PROPOSED WELLBORE

Location: RED HILLS PLANT
STR S13-T24S-R33E
County, St.: LEA, NEW MEXICO



TD: 6550'

SURFACE CASING
20", 94#/ft, H40, STC at top of Rustler ~ 1245'

INTERMEDIATE CASING:
13 3/8", 54.5#/ft, J55, STC at base of salt ~ 5190'

PRODUCTION CASING:
7", 26 #/ft, L80, FJ at 6550'

TUBING:
Subsurface Safety Valve at 250 ft

3 1/2", 9.3#/ft, L80, Premium thread at 6170'

PACKER:
Permanent Production Packer

Check valve (optional)

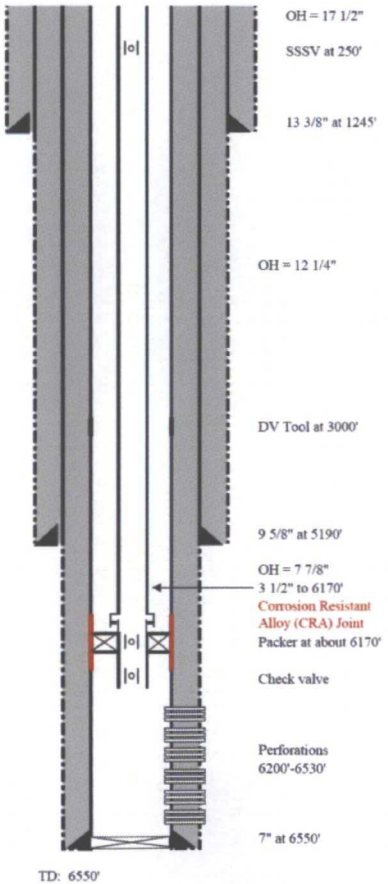
PERFORATIONS:

Primary Target	Secondary Target
Upper Cherry Canyon Fm	
at approx. ¢ 6200'-6530'	

GEOLEX
INCORPORATED

AGAVE RED HILLS AGI #1
PROPOSED WELLBORE

Location: RED HILLS PLANT
STR S13-T24S-R33E
County, St.: LEA, NEW MEXICO



SURFACE CASING
13 3/8", 48.00#/ft, H40, STC at top of Rustler ~ 1245'

INTERMEDIATE CASING:
9 5/8", 40 #/ft, J55, STC at base of salt ~ 5190'

PRODUCTION CASING:
7", 26 #/ft, L80, Prem STC at 6550'

TUBING:
Subsurface Safety Valve at 250 ft

3 1/2", 9.3#/ft, L80, Premium thread at 6170'

PACKER:
Permanent Production Packer

Check valve (optional)

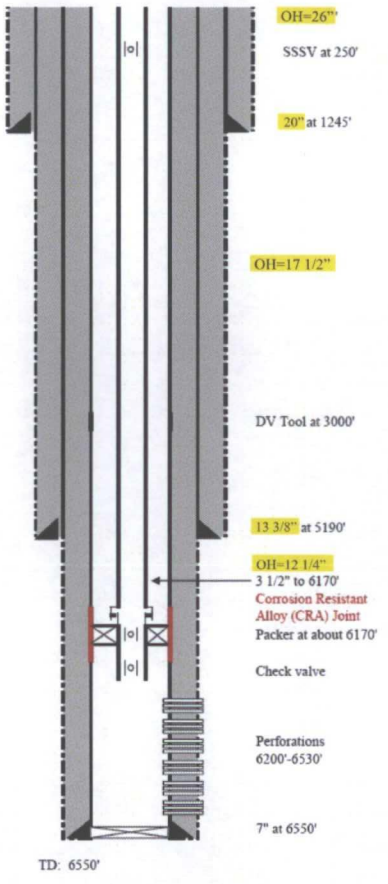
PERFORATIONS:

Primary Target	Secondary Target
Upper Cherry Canyon Fm	
at approx. 6200'-6530'	

Figure 4a: Schematic for Proposed Agave Red Hills AGI #1 Well Included with C-108

AGAVE RED HILLS AGI #1
PROPOSED WELLBORE
MODIFIED 8/2011

Location: RED HILLS PLANT
STR S13-T24S-R33E
County, St.: LEA, NEW MEXICO



SURFACE CASING
20", 94#/ft, H40, STC at top of Rustler ~ 1245'

INTERMEDIATE CASING:
13 3/8", 54.5#/ft, J55, STC at base of salt ~ 5190'

PRODUCTION CASING:
7", 26 #/ft, L80, FJ at 6550'

TUBING:
Subsurface Safety Valve at 250 ft

3 1/2", 9.3#/ft, L80, Premium thread at 6170'

PACKER:
Permanent Production Packer

Check valve (optional)

PERFORATIONS:

Primary Target	Secondary Target
Upper Cherry Canyon Fm	
at approx. 6200'-6530'	

Figure 4b: Schematic for Proposed Agave Red Hills AGI #1 Well Modified August 2011 to Ensure Sufficient Space for 7" Production Casing. Modifications are Highlighted