Form 3160-5
(September 2001)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs
HOBBS OCD
APR 22 2013
RECEIVED

FORM APPROVED
OM B No. 1004-0135
Expires: January 31, 2004

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160 - 3 (APD) for such proposals.

SUBMIT IN TRIPLICATE *- Other instructions on reverse side.*

1. Type of Well: Oil Well / Gas Well / Other Acid Gas Injection Well
2. Name of Operator: Agave Energy Company
3a. Address: 105 S. Fourth Street, Artesia, NM 88210
3b. Phone No. *(include area code)*: 575-748-4528
4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*: 1600' FSL, 150' FEL, Sec. 13, T24S, R33E NMPM, Lea Co. NM
5. Lease Serial No.: NMLC063798
6. If Indian, Allottee or Tribe Name: N/A
7. If Unit or CA/Agreement, Name and/or No.: N/A
8. Well Name and No.: Red Hills AGI #1
9. API Well No.: 30025 40498
10. Field and Pool, or Exploratory Area: Exploratory (Lower Wolfcamp)
11. County or Parish, State: Lea

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
Notice of Intent	Acidize	Deepen	Production (Start/Resume)	Water Shut-Off
	Alter Casing	Fracture Treat	Reclamation	Well Integrity
Subsequent Report	Casing Repair	New Construction	Recomplete	Other well redesign
	Change Plans	Plug and Abandon	Temporarily Abandon	
Final Abandonment Notice	Convert to Injection	Plug Back	Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

SUBJECT TO LIKE APPROVAL BY STATE

The operator wishes to revise the well casing design to optimize drilling process and to upgrade the overall corrosion resistance of the approved design. All other aspects of the APD which was approved on 2/13/2012 will remain the same. The casing design for the well has been modified as per the attached wellbore diagram. The casing integrity calculations and the cementing modifications have also been revised and the revised portions of the approved 9 point drilling plan are also attached. We would not propose any other changes to the approved APD or the associated COA.

The primary change from the approved design is a change in the previous casing design to reduce the diameter of the four casing strings from 26"/20"/13-3/8"/7" to a 20"/13-3/8"/9-5/8"/7" design. This is accompanied by an enhanced section of corrosion resistant (SM2550) steel casing in the production string and in the bottom 500' of the tubing as shown on the attached wellbore diagram. This change resulted in the need to redo the casing integrity calculations and to revise the cement quantities and staging based on the revised wellbore design. The proposed changes to Sections IV and V of the approved nine point drilling plan are detailed in the attached revised pages which should substitute for the same pages in the approved drilling plan and COA. No other changes are proposed or required and the operator agrees to remain bound by all other approved requirements of the APD and COA.

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)*: Alberto A. Gutierrez, RG
Title: Consultant to Agave Energy Company
Signature:
Date: April 11, 2012

SEE ATTACHED FOR CONDITIONS OF APPROVAL

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED
APR 18 2013
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Approved by: PETROLEUM ENGINEER
Title:
Date:
Office:

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

SEE ATTACHED FOR CONDITIONS OF APPROVAL

SUBJECT TO LIKE APPROVAL BY STATE

APR 22 201

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13 - Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3 - 4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

This information is being collected to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

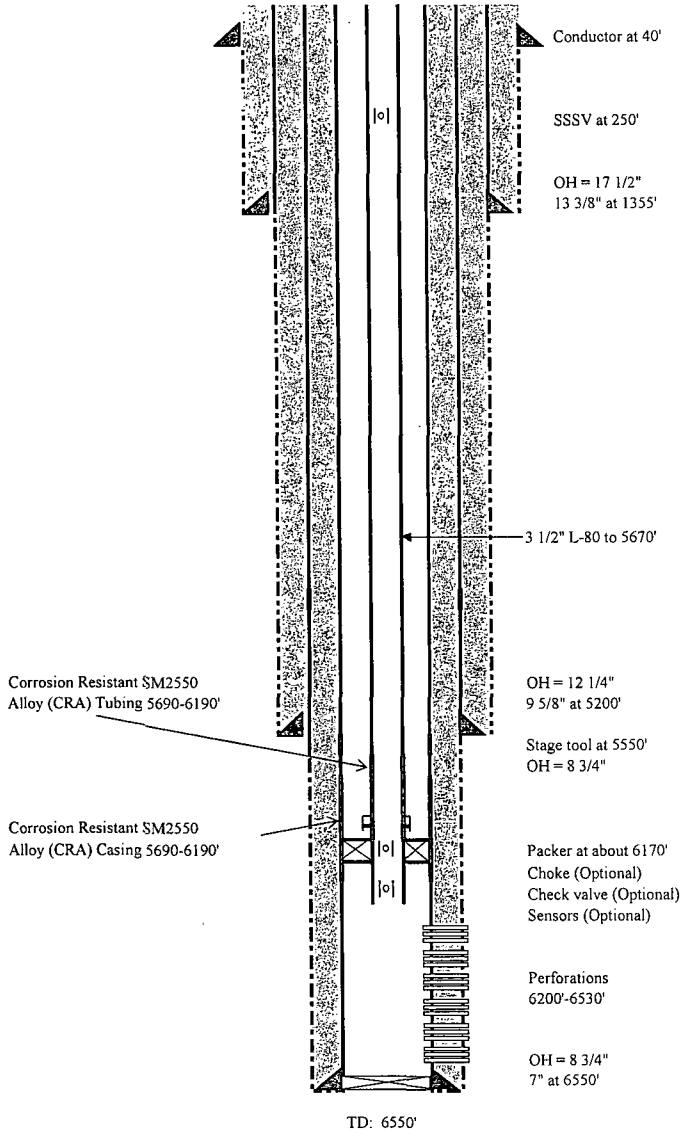
BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0135), Bureau Information Collection Clearance Officer, (WO-630), Mail Stop 401 LS, 1849 C St., N.W., Washington D.C. 20240

AGAVE RED HILLS AGI #1
PROPOSED WELLBORE

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



CONDUCTOR
20", 106.5 #/ft, H40, STC at ~ 40' in 26" hole w/cement to surface

SURFACE CASING
13 3/8", 48#/ft, H-40, STC at ~ 1355' in 17-1/2" hole w/ cement to surface
lead w 900 sx C Lite (YLD1.78 WT 13.5)
tail w/200 sx Class C (YLD 1.34 WT 14.8)

INTERMEDIATE CASING:
9 5/8"", 40#/ft, J-55, LT&C 0-100' in 12-1/4" hole
9 5/8"", 36#/ft, J-55, LT&C 100-3300' in 12-1/4" hole
9 5/8"", 40#/ft, J-55, LT&C 3300-4200' in 12-1/4" hole
9 5/8"", 40#/ft, HCK-55, LT&C 4200-5200' in 12-1/4" hole
lead w 900sx C Lite (YLD 2.01 WT 12.8)
tail w/200 sx Class C (YLD 1.36 WT 14.2)
Volumes with 25% excess. Actual volumes to be calculated from fluid caliper.

PRODUCTION CASING:
7", 26 #/ft, L80, LT&C at 6550' in 8-3/4" hole
w SM2550 CRA section from 6190' to 5690' (500')
with cement to surface in two stages
stage 1 6550' - 5550' 200 sx EverCrete with 25% excess
stage 2 5550' - surface Lead w/375sx C Lite (YLD 2.12 WT 11.8)
Tail w/200sx Class C (YLD 1.36 WT 14.2)
Volumes with 25% excess. Actual volumes to be calculated from fluid caliper.

TUBING:
Subsurface Safety Valve at 250 ft
3 1/2", 9.3#/ft, L80, Premium thread 5670' - surface
3 1/2", SM 2550, Vam Top Premium thread at 6170' - 5670'

PACKER and OTHER DOWNHOLE EQUIPMENT:
Permanent Production Packer set at 6170'
Annular space filled with corrosion inhibited diesel
Check valve (optional)
Choke (optional)
Bottom hole pressure and temperature sensors (optional)

PERFORATIONS:

Primary Target	
Upper Cherry Canyon Formation	
at approx. 620 6200'-6530'	

SEE ATTACHED FOR CONDITIONS OF APPROVAL

IV. CASING

All well tubulars which would potentially be exposed to H2S will meet or exceed NACE MR0175, latest edition. The well design shown on the attached well bore diagram complies with applicable industry and API standards including, but not limited to the use and design of the Inconel alloy containing SSV, tubing, casing and packer.

TYPE	INTERVAL	HOLE SIZE	PURPOSE
20", 106.5#/ft, H40	0'-40'	26"	Conductor
13-3/8", 48 #/ft, H40, STC	0'-1,355'	17-1/2"	Surface
9-5/8", 36 & 40#/ft, J55 & HCK-55, LTC	0'-5,200'	12-1/4"	Intermediate
7", 26 #/ft, L80 & SM2550, LTC	0'-6,550'	8-3/4"	Production

CASING DESIGN SAFETY FACTORS

TYPE	TENSION	COLLAPSE	BURST
13-3/8", 48 #/ft, H40, STC	3.16	1.90	1.29
9-5/8", 36 & 40#/ft, J55 & HCK-55, LTC	1.52	1.60	1.56
7", 26 #/ft, L80 & SM2550, LTC	1.92	1.54	1.36

DESIGN CRITERIA AND CASING LOADING ASSUMPTIONS

The operator commits to keeping the casing liquid-filled to the greatest degree possible while running casing and cementing.

SURFACE CASING – (13-3/8")

Tension — A minimum 1.8 design factor utilizing the effects of buoyancy (8.5 ppg).

Collapse — A minimum 1.125 design factor with 50% evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft).

Burst — A minimum 1.1 design factor with a surface pressure equal to the fracture gradient at setting depth. Internal burst force at the shoe will be cement hydrostatic pressure at that depth. No backup pressure or effects of tension on burst are utilized.

INTERMEDIATE CASING – (9-5/8")

Tension — A minimum 1.8 design factor utilizing the effects of buoyancy (9.8 ppg).

Collapse — A minimum 1.125 design factor with 50% evacuation and the remaining casing filled with 9.8 ppg drilling mud as backup pressure. The collapse force is equal to the cement hydrostatic pressure at the casing shoe. The effects of axial load on collapse are not considered.

Burst — A minimum 1.1 design factor with an internal burst force at the shoe equal to the cement column hydrostatic pressure inside the casing at that depth. Back pressure will be the mud gradient at the shoe depth (0.51 psi/ft). The effects of tension on burst will not be utilized.

PRODUCTION CASING – (7")

Tension A minimum 1.8 design factor utilizing the effects of buoyancy (8.7 ppg).

Collapse A minimum 1.125 design factor with 50% evacuation and the remaining casing filled with 8.7 ppg drilling mud as backup pressure. The collapse force is equal to the cement column hydrostatic pressure at the casing shoe. The effects of axial load on collapse are not considered.

Burst A minimum 1.0 safety factor with an internal burst force at the shoe equial to the mud hydrostatic pressure at that depth. Running the casing (with cement on the inside and mud on the outside) yields a safety factor of 2.21. However, an alternative, worst case scenario considers an anticipated maximum tubing pressure (5,000 psig) on top of the maximum anticipated packer fluid (diesel) gradient (0.37 psi/ft). Back pressure on production string will be formation pore pressure (0.433 psi/ft). The effects of tension on burst will not be utilized.

V. CEMENT See CoA

The cementing program is summarized in the table below:

INTERVAL	AMOUNT (SACKS)	FT OF FILL	EXCESS	TYPE	ADDITIVES	GALS/SX	PPG	FT^3/SX
Surface	900	969	100%	Class C Lite (Lead)	2% CaCl		13.5	1.78
	200	386	100%	Class C (Tail)			14.8	1.34
Intermediate	900	4,331	25%	Class C Lite (Lead)	2% CaCl		12.8	2.01
	200	869	25%	Class C (Tail)			14.2	1.36
Production								
Stage 1 (6,550-5,550)	200	1,000	25%	CorrosaCem (Tail)	0.5% Fe_2 (buffer)		15.0	0.91
Stage 2 (5,550 - Surface)	375	3,828	25%	Class C Lite (Lead)	1lb/sx Pheno Seal (lost circ add)		11.8	2.12
	200	1,722	25%	Class C (Tail)	2% CaCl		14.2	1.36

Note: The number of sacks of cement included in the table above accounts for the excess based on calculated hole volumes. During cementing operations, hole caliper logs will be used to calculate actual hole volumes and the additional 25%-100% excess will be added as required to achieve the desired excess amounts.

VI. MUD PROGRAM

DEPTH	MUD TYPE	WEIGHT	FV	PV	YP	FL	Ph
0'-1,355'	FW Spud Mud	8.5-9.2	38-70	NC	NC	NC	10.0
1,355'-5,200	Brine Water	9.8-10.2	28-30	NC	NC	NC	9.5-10.5
5,200'-6,550'	FW/Gel	8.7-9.0	28-36	NC	NC	NC	9.5-10.0

The borehole for the surface casing will be drilled with a 17-1/2 inch bit to a depth of approximately 1,355 feet, and 13-3/8 inch, 48 ppf, H40, STC surface casing will be installed and cemented to the surface with approximately 1,100 sacks of cement (or amount adequate to circulate the cement to the surface). The intermediate hole will be drilled with a 12-1/4 inch bit to a depth of approximately 5,200 feet. There a 9-5/8 inch, 40/36 ppf, J55/HCK-55, LTC tapered intermediate casing string will be run and cemented to surface with approximately 1,100 sacks of cement (or amount adequate to circulate the cement to the surface). Visual inspections of cement returns to the surface will be noted in both the surface and intermediate pipe casing jobs. Casing and cement integrity will be demonstrated by pressure-testing after each cement job.

The cementing of the production string will be accomplished in two stages. The first stage will seal the annular space from total depth at 6,550 ft to 5,550 ft which is well above the Corrosion Resistant Alloy casing at 5,690 ft. This stage will employ acid-resistant cement (CORROSACEM™ or equivalent). For the second stage, a DV Tool previously inserted in the casing (at approximately 5,550 feet) will be used to pump the remaining cement to the surface using approximately 575 sacks of cement.

CONDITIONS OF APPROVAL

Sundry dated April 11, 2013

OPERATOR'S NAME:	Agave Energy Company
LEASE NO.:	NMLC063798
WELL NAME & NO.:	Red Hills AGI 1
SURFACE HOLE FOOTAGE:	130' FSL & 1813' FEL
LOCATION:	Section 13, T. 24 S., R. 33 E., NMPM
COUNTY:	Lea County, New Mexico

Original COA still applies with the following changes:
Subject to like approval by State

A. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.
The use of appropriate cement placement techniques such as centralizers, turbolizers, and casing reciprocation is recommended for primary cementing of the intermediate and production casing strings.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial. (Note: we will not authorize)

Possible water and brine flows in the Salado, Castile and Delaware Mountain Groups.

Possible lost circulation in the Castile and Delaware Mountain Groups Groups.

Special drilling requirements to provide for AGI well operating conditions.

1. The **13-3/8** inch surface casing shall be set at approximately **1355** feet **in a competent bed below the Magenta Dolomite, a Member of the Rustler,** and if salt is encountered, set casing at least 25 feet above the salt and cemented to the surface. **Freshwater mud to be used to setting depth.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Operator shall run a circumferential cement bond log for the 13-3/8" surface casing. The log will be run after drilling out the shoe and prior to running the next casing string. All anomalies in cement bond quality are to be discussed with BLM before proceeding.

2. The minimum required fill of cement behind the **9-5/8"** inch intermediate casing is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to acid gas injection.**
    Additional cement shall be required as excess cement calculates to 20%.

Operator shall run a circumferential cement bond log for the 9-5/8" intermediate casing. The log will be run after drilling out the shoe and prior to running the next casing string. All anomalies in cement bond quality are to be discussed with BLM before proceeding.

Operator to provide a precise tally of the 7" production casing with CRA Packer joint(s) identified to the BLM.

3. The minimum required fill of cement behind the **7 inch production casing** is:

   a. **First stage using 15 ppg acid resistant CORROSACEM cement:**

   ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage. **Additional cement may be required as excess cement calculates to 15%.**

   b. Second stage above DV tool:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to acid gas injection. Additional cement will be required, as excess cement calculates to a negative 18%**

Operator shall run a circumferential cement bond log for the 7" production casing. The log shall be capable of providing casing condition baseline, such as a Corrosion Evaluation log. The log is to be calibrated for the hole, with the calibration strip to be clearly labeled and included with the final print and digital data file. Any identified anomalies in cement bond quality are to be discussed with BLM before proceeding.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

EGF 041813