

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



MEMORANDUM

Date: September 28, 2017

To: Well file; API 30-025-40448

From: Phillip Goetze, Engineering Bureau, OCD 

RE: CURRENT STATUS OF RED HILLS AGI WELL NO. 1 UNDER COMMISSION ORDER NO. R-13507-E

WELL INFORMATION:

Well Name: Red Hills AGI Well No. 1 (30-025-40448)

Well Location: Unit letter I, Section 13, T24S, R33E, NMPM; 1600' FSL and 150' FEL

Operator: Current of record on date of memorandum: Agave Energy (OGRID 147831)

Injection Authority: Commission Order Nos. R-13507 through R-13507-E

This AGI well was approved for disposal of treated acid gas (TAG) through open hole in the Cherry Canyon Formation, of the Delaware Mountain Group, from 6,200 feet to 6,530 feet below surface, a total interval length of 330 feet. The well was drilled and casing set and cemented to total depth (instead of open-hole completion) in November 2013. Following the completion of the well, the operator selected not to perforate the injection interval and petitioned for a temporarily abandon (TA) status for the well (see attached presentation). The Division approved the operators request for a TA status in 2014 and requested the operator to follow the standard TA procedures used for production wells.

During the period of temporary abandonment, the ownership of the processing facility was transferred. The new owners, Lucid Energy, proposed bringing the AGI well online in January 2018. In August 2017, a discussion was initiated by Geolex, consultant for Lucid, with the Division to address any outstanding issues regarding Order R-13507 (see attached August 18th e-mail correspondence). The Division identified items that needed to be addressed including the re-instatement of authority by Commission (due to administrative lapse of extension requests), correction of the approved disposal interval (based subsurface information obtained during drilling operations), and a request that all documentation on the well was made current. The Division recommended that Lucid petition the Commission to resolve the continuity of injection authority to the new operator and provide correction of footages for the injection interval.

Following this discussion, Lucid Energy completed their orientation to become an operator and fulfilled the requirement for financial assurance (see attached August 15th e-mail correspondence).

In response to the proposed completion of the AGI well, Division reviewed recent drilling activities in the vicinity of the well and compared this information provided in the original application. This review found expanded production in the Bone Spring Formation, principally the 2nd Bone Spring sand. Since the completion of the AGI well, COG Operating LLC has completed seven, one-mile horizontal wells in Section 13 (T24S, R33E) and adjoining Section 18 (T24S, R34E) (see attached map). True vertical depths (TVD) for these wells range from 10,338 feet to 11,103 feet. There is no record of any horizontal

completions in the shallower 1st carbonates/sands of the Bone Spring or the Avalon Shale in these two sections.

There is no record of any active APDs for horizontal development of the Bone Spring formation in the two adjacent sections south of the AGI well. These sections include Section 24 of T24S, R33E, NMPM and Section 19, T24S, R34E, NMPM.

Development of the Avalon Shale or Upper Bone Spring Shale in this area is found approximately 1.5 miles to the south of the AGI well location. The closest well completions in this shallower unit are found in Section 25, T24S, R33E, NMPM, and are assigned to the Red Hills; Upper Bone Spring Shale Pool (pool code 97900). Current completions show a TVD of approximately 9,400 feet.

Based on the depth of the production for the new Bone Spring wells and the current trend in development in the area, there is no indication that the disposal operations will interfere with the hydrocarbon development in the upper Bones Spring formation.

Consideration was given to impacts of the AGI disposal operation to future development of the Wolfcamp Formation in the area. The Division has confidence that these drilling efforts would follow the current drilling patterns for Bone Spring development and would be developed from surface locations outside of the predicted future boundary of the injected TAG.

The review of the Commission Order R-13507 and its amendments by the Division found only one requirement that differs from current conditions for new AGI wells. This difference is the requirement for a MIT every two years (Ordering Paragraph (1)(a) of R-13507) as opposed to the current practice of annual MITs. However, this change does not appear to be imperative considering the scale of injection proposed for this well and other reporting requirements of the order.

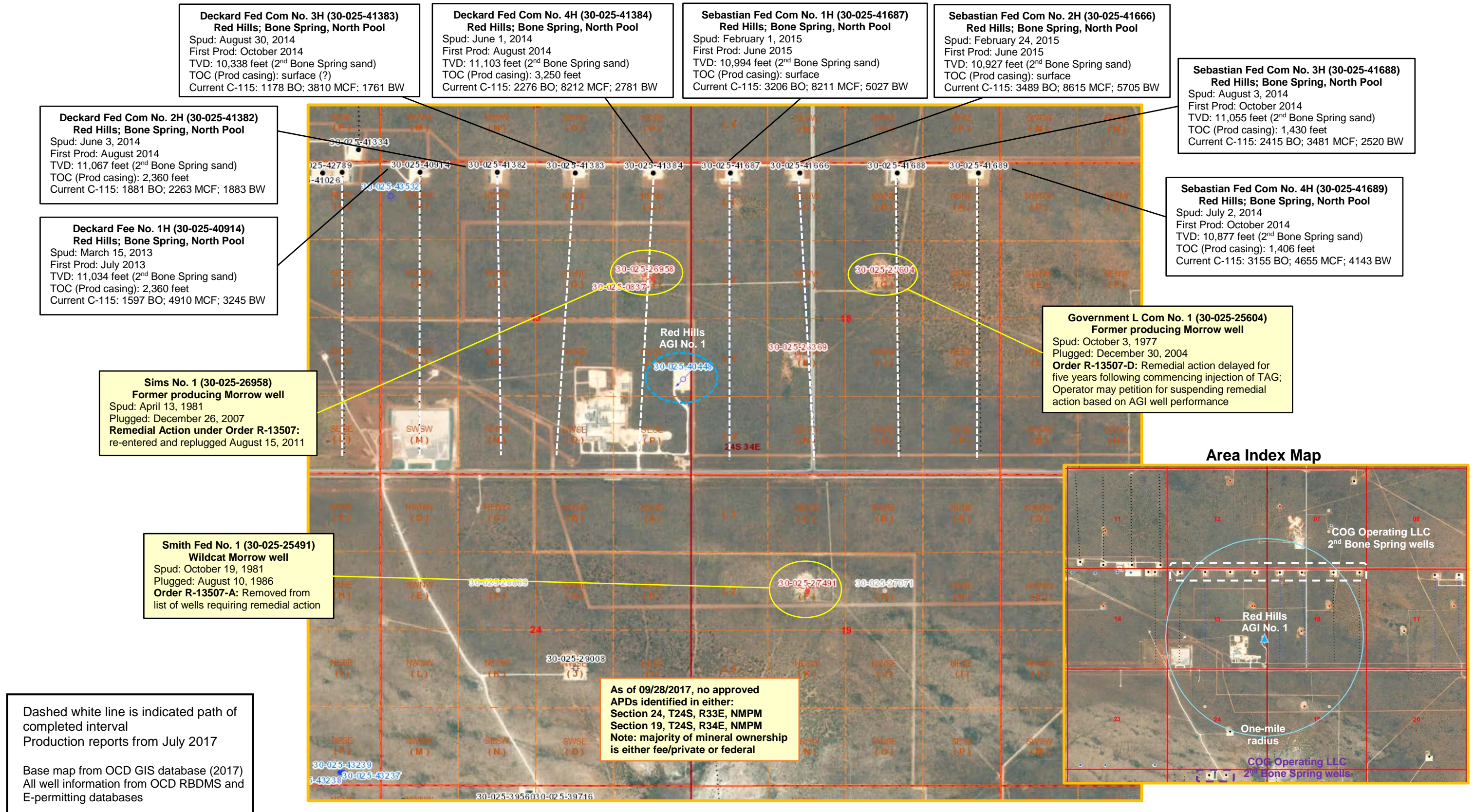
The Division continues to support the original intent of the AGI well for TAG disposal in the Cherry Canyon Formation. However, based on the continued expansion of the hydrocarbon plays in the Permian, the Division would recommend that any future proposal for a redundant AGI well assess the potential for disposal in a deeper interval, preferably below the Wolfcamp Formation.

Attachments: Map Showing Recent Well Completions in Vicinity of AGI Well
August 18th e-mail correspondence between P. Goetze and Geolex personnel
August 15th e-mail correspondence between P. Goetze and D. Gallegos
Geolex Presentation on Temporary Abandonment of Red Hills AGI No. 1



Oil Conservation Division
Energy, Minerals and Natural Resources Department
State of New Mexico

Red Hills AGI Well No. 1: Unit I, Sec 13, T24S, R33E, NMPM; API 30-025-40448
Commission Order No. R-13507 (as amended): Review of Recent Well Completions in Vicinity of AGI Well (As of 09/28/2017)




Goetze, Phillip, EMNRD

From: Goetze, Phillip, EMNRD
Sent: Friday, August 18, 2017 9:37 AM
To: 'aag@geolex.com'; 'Jared Smith {Geolex}'
Cc: Brown, Maxey G, EMNRD; Jones, William V, EMNRD
Subject: RE: Red Hills AGI #1 - TA Status

Alberto and Jared:

Talked over the variety of issues with the Director and this is our recommendations to clean up the loose ends:

1. Have the operator apply for an appearance for the next Commission hearing set for **October 4th**. [Legally, the hearing application has to be in 20 days prior, but that's cutting it close].
2. Suggest the application be to amend R-~~1357~~ (i.e. this would be No. R-~~1357~~-F) with two intentions: R-13507 
 - a. To have the injection authority re-established with the new operator and a new deadline for commencement of injection, and
 - b. Correct the orders approved injection interval based upon the logging and correlation (in this case the bottom depth).
 - c. And, of course, with all other amended orders in full force and effect.

Both the Director and I feel that this can be completed through affidavit(s) based on the information already provided for the TA effort. For the re-instatement, an affidavit should be prepared of the review a. that addresses any new AOR wells that penetrate the injection interval and b. any changes in affected parties notified in the original application. This would also be an opportunity to highlight the change in operator process which may have interrupted the continuity of maintaining the paper trail for the order.

For the change in approved interval, again an affidavit showing the correlations and the correction of the depths to conform with the logging results. You can refer to the Division's practice for amending administrative SWD orders for Devonian wells where logging conducted with well completion was used to change the approved interval (e.g. Mewbourne's Santo Nino Federal SWD Well No. 1 (SWD-1470-A; 30-015-28698; September 22, 2014). This modification would not require notice since it is a correction of a projected depth and has been verified by actual demonstration while remaining within the formation described and approved in the first order.

This will satisfy all parties and would protect against any liabilities due to procedure. Take this in and give me a call with any questions. PRG

Phillip Goetze, PG

Engineering Bureau, Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive, Santa Fe, NM 87505
Direct: 505.476.3466
E-mail: phillip.goetze@state.nm.us



From: Alberto A. Gutierrez, RG [mailto:aag@geolex.com]

Sent: Tuesday, August 15, 2017 11:53 AM

To: Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>; 'Jared Smith {Geolex}' <JSmith@geolex.com>

Cc: Brown, Maxey G, EMNRD <MaxeyG.Brown@state.nm.us>; Kautz, Paul, EMNRD <paul.kautz@state.nm.us>; Jones, William V, EMNRD <WilliamV.Jones@state.nm.us>; Grant McAfee <GMcAfee@lucid-energy.com>

Subject: RE: Red Hills AGI #1 - TA Status

Phillip,

Thanks for your questions.

I will answer them to the best of my knowledge.

1. When the Division placed the well in TA status following our request in 2014, I believe we did file a sundry with BLM to put the well into TA status, I don't believe separate paperwork was filed with the Division since we understood that the Division approved placing the well in TA status.
2. I will attempt to find out about the deadline to commence injection and whether Agave filed a request to extend that date; however, given the fact that at that time is about when the Agave assets were sold to Lucid, I am not aware of a request to extend the deadline being filed. I believed that deadline was by January 23, 2018 based on our TA request but I will check again. Can we deal with this by making a request to the Director now given the circumstances and confusion on this issue? If so I will do so immediately.
3. As you correctly state, the well diagram was originally set to have perforations "approximately between 6200-6530" but the section came in deeper when the well was drilled and logged and a request was made to extend the TD to 6650 which was granted by BLM (as it was a BLM lead well). Copy is attached. Also the TA request had perforations down to 6583. The answer is basically that the section came in a little deeper than anticipated with the available well control at the time.
4. The change of operator form was awaiting final approval of the bond and getting the OGRID number which we received only this morning and will be done today or tomorrow at latest.
5. There will be a revised H2S contingency plan submitted and we have no problem with a condition that this will be approved prior to injection commencing. We intend to file this plan in September or October when we have a better handle on final anticipated inlet concentrations of H2S and CO2 in the well.

I believe the above should answer your questions. We are in a time crunch here such that we would like to get the completion plan approved so we can proceed with the previously approved completion including ordering a couple of remaining long lead items we need to order this month to have available for the schedule of bringing the well online in January 2018. When is a good time for us to have a call this week to develop the optimal path forward?

Let me know.

Thanks

Alberto

Alberto A. Gutiérrez, RG

Geolex, Incorporated®

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Goetze, Phillip, EMNRD

From: Gallegos, Denise, EMNRD
Sent: Tuesday, August 15, 2017 9:12 AM
To: Goetze, Phillip, EMNRD
Subject: RE: Lucid Energy Bonding Status

Yes, they have a single well bond in place for API: 30-025-40448 in the amount of \$11,650.

Thank you,

Denise A. Gallegos

Compliance Officer/Bond Administrator

Oil Conservation Division

Energy, Minerals & Natural Resources Department

1220 South Saint Francis Drive

Santa Fe, NM 87505

Office: 505.476.3453

Fax: 505.476.3462

From: Goetze, Phillip, EMNRD
Sent: Tuesday, August 15, 2017 9:05 AM
To: Gallegos, Denise, EMNRD <Denise.Gallegos@state.nm.us>
Subject: Lucid Energy Bonding Status

Denise:

When you have the time, does Lucid Energy have a bond in place? Daniel said he had gone through the orientation last week and there is an effort for them to initiate the completion of the Red Hill AGI well currently owned by Agave Energy. Thanks. PRG

Phillip Goetze, PG

Engineering Bureau, Oil Conservation Division

New Mexico Energy, Minerals and Natural Resources Department

1220 South St. Francis Drive, Santa Fe, NM 87505

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E-mail: phillip.goetze@state.nm.us



AGAVE REDHILLS AGI#1 TEMPORARY ABANDONMENT



**AGAVE ENERGY COMPANY
RED HILLS AGI #1
API NO. 30-025-40448**

**LOCATION: 1600' FSL, 150 FEL, SECTION 13, T24S, R33E
LEA COUNTY, NM**

JULY 2014

OPTIONS FOR REDHILLS AGI #1 COMPLETION AND TEMPORARY ABANDONMENT

- ▶ OPTION 1: Shut-in and Temporarily Abandon Redhills AGI #1 (unperforated casing remains in ground) prior to completion
- ▶ OPTION 2: Perforate and Install Packer, Tubing, Downhole Sensors and Safety Valve; Step-rate Pressure Test and Thermal Test, and Shut-in and Temporarily Abandon Redhills AGI #1

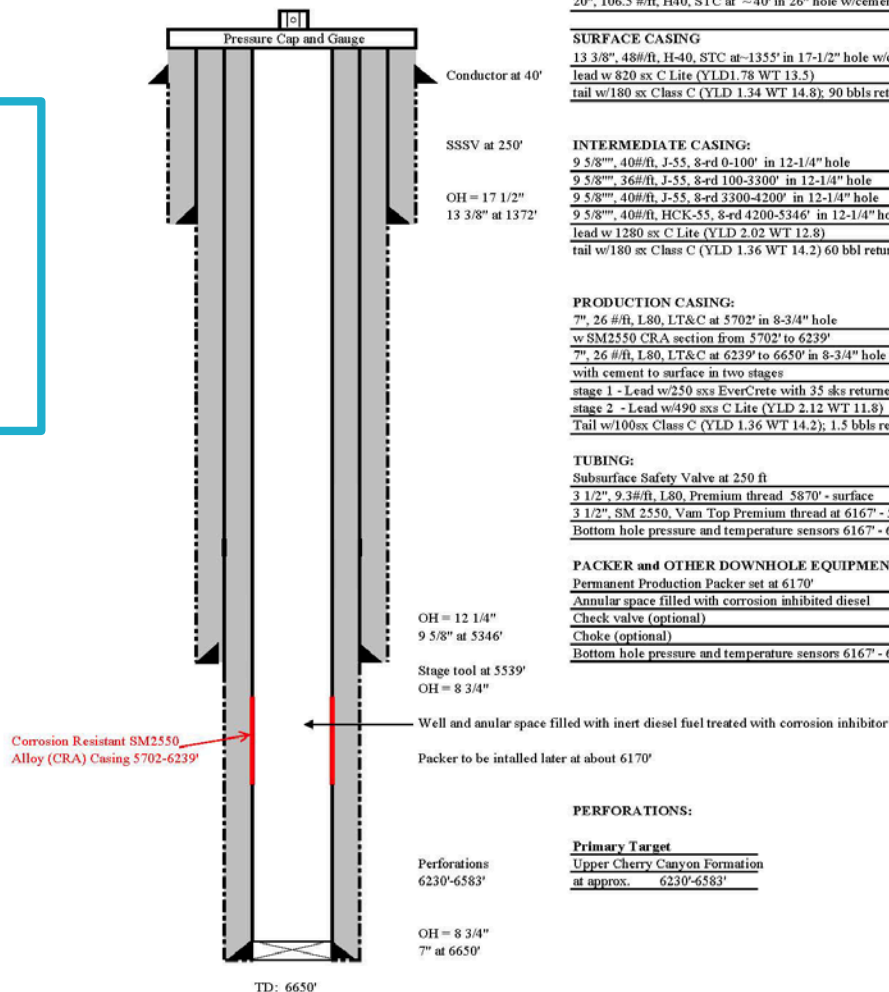
OPTION 1: REQUIREMENTS TO SHUT-IN AND TEMPORARILY ABANDON REDHILLS AGI #1 PRIOR TO COMPLETION

1. Obtain NMOCC approval to extend deadline to begin injection for up to 5-years.
2. Run CBL on long string.
3. Fill casing with inert fluid from the bottom to the surface.
4. Install well cap with pressure gauge.
5. File sundry with BLM for temporary abandonment for up to five years.
6. Geolex recommends that the purchased completion equipment, i.e. packer, SSSV, tree, BH P/T equipment, and tubing, be sold and repurchased prior to completion at a later date to avoid potential damage to the equipment in storage.
7. Demonstration of no recoverable hydrocarbons was previously submitted to the BLM.

AGAVE RED HILLS AGI #1
AS-BUILT WELL SCHEMATIC

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

OPTION 1:
WELL SCHEMATIC
SHOWING UNCOMPLETED
SHUT-IN AND
TEMPORARILY ABANDONED
REDHILLS AGI #1



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 820 sxs C Lite (YLD 1.78 WT 13.5)

tail w/180 sxs Class C (YLD 1.34 WT 14.8); 90 bbls returned to surface

INTERMEDIATE CASING:

9 5/8", 40#/ft, J-55, 8-rd 0-100' in 12-1/4" hole

9 5/8", 36#/ft, J-55, 8-rd 100-3300' in 12-1/4" hole

9 5/8", 40#/ft, J-55, 8-rd 3300-4200' in 12-1/4" hole

9 5/8", 40#/ft, HCK-55, 8-rd 4200-5346' in 12-1/4" hole

lead w 1280 sxs C Lite (YLD 2.02 WT 12.8)

tail w/180 sxs Class C (YLD 1.36 WT 14.2) 60 bbl returned to surface

PRODUCTION CASING:

7", 26 #/ft, L80, LT&C at 5702' in 8-3/4" hole

w SM2550 CRA section from 5702' to 6239'

7", 26 #/ft, L80, LT&C at 6239' to 6650' in 8-3/4" hole

with cement to surface in two stages

stage 1 - Lead w/250 sxs EverCrete with 35 sxs returned to diverter tool

stage 2 - Lead w/490 sxs C Lite (YLD 2.12 WT 11.8)

Tail w/100sxs Class C (YLD 1.36 WT 14.2); 1.5 bbls returned to surface

TUBING:

Subsurface Safety Valve at 250 ft

3 1/2", 9.3#/ft, L80, Premium thread, 5870' - surface

3 1/2", SM 2550, Van Top Premium thread at 6167' - 5870'

Bottom hole pressure and temperature sensors 6167' - 6170'

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 6167' - 6170'

PERFORATIONS:

Primary Target

Upper Cherry Canyon Formation

at approx. 6230'-6583'

OPTION 2: REQUIREMENTS TO COMPLETE, SHUT-IN AND TEMPORARILY ABANDON REDHILLS AGI #1

1. Obtain NMOCC approval to extend deadline to begin injection for up to 5-years.
2. Run CBL on long string.
3. Perforate 250' with 6 shots per foot at 60 degrees according to perforation program.
4. Install packer, pressure sensing equipment, subsurface safety valve, and tubing.
5. Step-rate pressure test and long-term injection/flowback test on AGI #1.
6. File sundry with BLM for temporary abandonment for up to five years.
7. Demonstration of no recoverable hydrocarbons was previously submitted to the BLM.

SELECTED PERFORATION INTERVALS AGAVE REDHILLS AGI #1

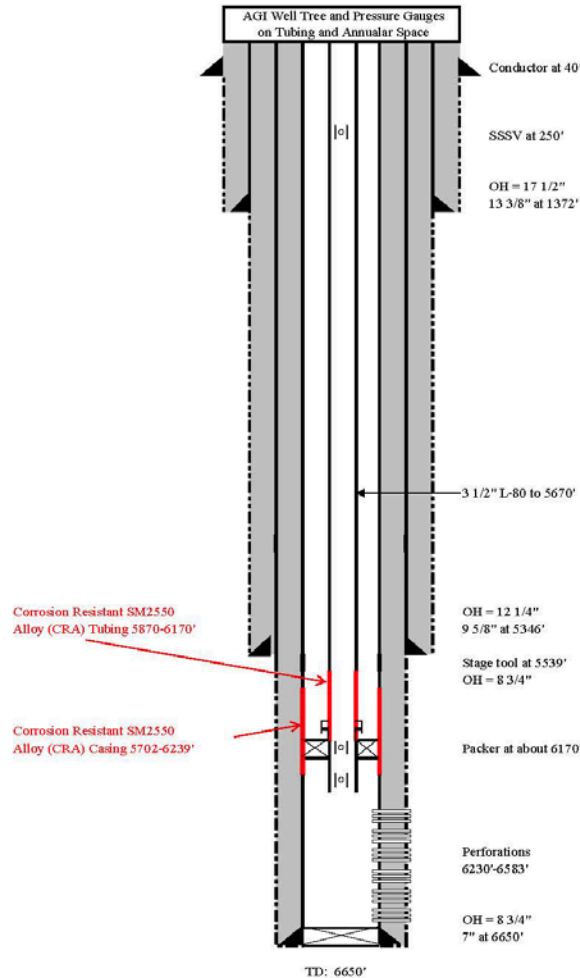
| <u>Perforation Interval (ft)</u> | <u>Thickness (ft)</u> | <u>Net Porosity (ft)</u> |
|----------------------------------|-----------------------|--------------------------|
| 6230 – 6250 | 20 | 3.4 |
| 6260 – 6280 | 20 | 3.81 |
| 6295 – 6335 | 40 | 7.69 |
| 6355 – 6380 | 25 | 10.872 |
| 6400 – 6415 | 15 | 2.265 |
| 6435 – 6500 | 65 | 12.684 |
| <u>6525 – 6583</u> | <u>58</u> | <u>9.85</u> |
| Totals | 250 | 50.571 |

Each interval perforated with six shots per foot at 60°

for a total of 1,500 shots

OPTION 2: WELL SCHEMATIC SHOWING COMPLETED SHUT-IN AND TEMPORARILY ABANDONED REDHILLS AGI #1

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-10, STC at ~1355' in 17-1/2" hole w/cement to surface
lead w 820 ss C Lite (YLD 1.78 WT 13.5)
tail w/180 ss Class C (YLD 1.34 WT 14.8); 90 bbls returned to surface

INTERMEDIATE CASING:

9 5/8", 40 #/ft, J-55, 8-rd 0-100' in 12-1/4" hole
9 5/8", 36 #/ft, J-55, 8-rd 100-3300' in 12-1/4" hole
9 5/8", 40 #/ft, J-55, 8-rd 3300-4200' in 12-1/4" hole
9 5/8", 40 #/ft, HCK-55, 8-rd 4200-5346' in 12-1/4" hole
lead w 1280 ss C Lite (YLD 2.02 WT 12.8)
tail w/180 ss Class C (YLD 1.36 WT 14.2) 60 bbl returned to surface

PRODUCTION CASING:

7", 26 #/ft, L80, LT&C at 5702' in 8-3/4" hole
w SM2550 CRA section from 5702' to 6239'
7", 26 #/ft, L80, LT&C at 6239' to 6650' in 8-3/4" hole
with cement to surface in two stages
stage 1 - Lead w/250 ssx EverCrete with 35 sks returned to diverter tool
stage 2 - Lead w/490 ssx C Lite (YLD 2.12 WT 11.8)
Tail w/100ss Class C (YLD 1.36 WT 14.2); 1.5 bbls returned to surface

TUBING:

Subsurface Safety Valve at 250 ft
3 1/2", 9.3 #/ft, L80, Premium thread 5870' - surface
3 1/2", SM 2550, Vam Top Premium thread at 6167' - 5870'
Bottom hole pressure and temperature sensors 6167' - 6170'

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 6167' - 6170'

PERFORATIONS:

Primary Target

Upper Cherry Canyon Formation
at approx. 6230'-6583'

ACTION REQUIRED

- ▶ Meet with NMOCD and OCC to determine if either or both options are acceptable.
- ▶ Negotiate conditions of extension:
 - Obtain TA status administratively.
 - Obtain NMOCC extension to begin injection administratively or with hearing, if required.
- ▶ Agave to determine path forward after Geolex/Hinkle meet with NMOCD and NMOCC.
- ▶ Prepare regulatory documents and hearing request if needed.