

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

OCD - HOBBS
06/04/2020
RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM129263
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator ASCENT ENERGY LLC [325830]		8. Lease Name and Well No. HORSESHOE FED COM 502H [327861]
3a. Address 1621 18th Street, Suite 200, Denver, CO 80202	3b. Phone No. (include area code) (720) 710-8999	9. API Well No. 30-025-47269
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NENE / 300 FNL / 705 FEL / LAT 32.470829 / LONG -103.605449 At proposed prod. zone NWNE / 100 FNL / 660 FEL / LAT 32.485883 / LONG -103.605314		10. Field and Pool, or Exploratory [97895] WILD CAT/BONE SPRING
14. Distance in miles and direction from nearest town or post office* 26 miles		12. County or Parish LEA
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 300 feet		13. State NM
16. No of acres in lease 160		17. Spacing Unit dedicated to this well 160.0
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet		20. BLM/BIA Bond No. in file FED: NMB001698
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3793 feet		22. Approximate date work will start* 12/01/2019
		23. Estimated duration 90 days
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Brian Wood / Ph: (720) 710-8999	Date 10/08/2019
Title President		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575) 234-5959	Date 05/27/2020
Title Assistant Field Manager Lands & Minerals Carlsbad Field Office		

Application approval 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.
Conditions of approval, if any, are attached.

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.

GCP Rec 06/04/2020

SL

(Continued on page 2)

APPROVED WITH CONDITIONS
Approval Date: 05/27/2020

Kz
06/12/2020

*(Instructions on page 2)

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws 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 local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and 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., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

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

The BLM connects this information to an evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The 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 8 hours 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 (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

0. SHL: NENE / 300 FNL / 705 FEL / TWSP: 21S / RANGE: 33E / SECTION: 19 / LAT: 32.470829 / LONG: -103.605449 (TVD: 0 feet, MD: 0 feet)

PPP: SESE / 0 FSL / 660 FEL / TWSP: 21S / RANGE: 33E / SECTION: 18 / LAT: 32.471678 / LONG: -103.605309 (TVD: 10810 feet, MD: 10830 feet)

PPP: NENE / 100 FNL / 660 FEL / TWSP: 21S / RANGE: 33E / SECTION: 19 / LAT: 32.3713766 / LONG: -103.6053064 (TVD: 10565 feet, MD: 10570 feet)

BHL: NWNE / 100 FNL / 660 FEL / TWSP: 21S / RANGE: 33E / SECTION: 18 / LAT: 32.485883 / LONG: -103.605314 (TVD: 10937 feet, MD: 16117 feet)

BLM Point of Contact

Name: Ciji Methola

Title: GIS Support - Adjudicator

Phone: (575) 234-5924

Email: cmethola@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME: WELL NAME & NO.: SURFACE HOLE FOOTAGE: BOTTOM HOLE FOOTAGE LOCATION: COUNTY:	Ascent Energy LLC Horseshoe Fed Com 501H 300'/N & 2025'/E 50'/N & 2030'/E Section 19, T.21 S., R.33 E., NMP Lea County, New Mexico
OPERATOR'S NAME: WELL NAME & NO.: SURFACE HOLE FOOTAGE: BOTTOM HOLE FOOTAGE LOCATION: COUNTY:	Ascent Energy LLC Horseshoe Fed Com 601H 300'/N & 1995'/E 100'/N & 2310'/E Section 19, T.21 S., R.33 E., NMP Lea County, New Mexico
OPERATOR'S NAME: WELL NAME & NO.: SURFACE HOLE FOOTAGE: BOTTOM HOLE FOOTAGE LOCATION: COUNTY:	Ascent Energy LLC Horseshoe Fed Com 701H 300'/N & 1965'/E 100'/N & 1650'/E Section 19, T.21 S., R.33 E., NMP Lea County, New Mexico
OPERATOR'S NAME: WELL NAME & NO.: SURFACE HOLE FOOTAGE: BOTTOM HOLE FOOTAGE LOCATION: COUNTY:	Ascent Energy LLC Horseshoe Fed Com 502H 300'/N & 705'/E 100'/N & 660'/E Section 19, T.21 S., R.33 E., NMP Lea County, New Mexico
OPERATOR'S NAME: WELL NAME & NO.: SURFACE HOLE FOOTAGE: BOTTOM HOLE FOOTAGE LOCATION: COUNTY:	Ascent Energy LLC Horseshoe Fed Com 602H 300'/N & 675'/E 100'/N & 990'/E Section 19, T.21 S., R.33 E., NMP Lea County, New Mexico
OPERATOR'S NAME: WELL NAME & NO.: SURFACE HOLE FOOTAGE: BOTTOM HOLE FOOTAGE LOCATION: COUNTY:	Ascent Energy LLC Horseshoe Fed Com 702H 300'/N & 645'/E 100'/N & 330'/E Section 19, T.21 S., R.33 E., NMP Lea County, New Mexico

Intrepid Potash Waiver Stipulation

Potash waivers were received for the Horseshoe 601H, 602H, 701H, and 702H allowing Ascent to drill these wells with no objection from Intrepid Potash. The Horseshoe 501H and 502H will not be drilled until waivers are received, potash memo is received from Jim Rutley, and approval is received from Jim Rutley (Potash Geologist) or Field Manager at the Bureau of Land Management.

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	ASCENT ENERGY LLC
LEASE NO.:	NMNM129263
LOCATION:	SECTION 19, T21S, R33E, NMPM
COUNTY:	LEA

WELL NAME & NO.:	501H – HORSESHOE FED COM
SURFACE HOLE FOOTAGE:	300'/N & 2025'/E
BOTTOM HOLE FOOTAGE:	50'/N & 2030'/E

WELL NAME & NO.:	502H – HORSESHOE FED COM
SURFACE HOLE FOOTAGE:	300'/N & 705'/E
BOTTOM HOLE FOOTAGE:	50'/N & 660'/E

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input type="radio"/> None	<input type="radio"/> Secretary	<input checked="" type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input checked="" type="checkbox"/> 4 String Area	<input checked="" type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into an **unknown formation in the Hat Mesa Pool**. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

Casing Design:

1. The 13-3/8 inch surface casing shall be set at approximately **1635** feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and above the salt) and cemented to the surface.

- 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 will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - 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.
2. The **9-5/8** inch intermediate casing shall be set at approximately **3600** feet. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Option 1 (Single Stage):

- 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 cave/karst or potash.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
 - 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 cave/karst or potash.
- ❖ In R111 Potash Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

- ❖ In Capitan Reef Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
- ❖ **Special Capitan Reef requirements.** If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following:
 - Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.
 - Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.

3. The minimum required fill of cement behind the **7-5/8** inch 2nd intermediate casing is:

Option 1 (Single Stage):

- Cement should tie-back at least **50 feet** on top of Capitan Reef top. 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 cave/karst or potash.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
 - b. Second stage above DV tool:
 - Cement should tie-back at least **50 feet** on top of Capitan Reef top. 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 cave/karst or potash.
4. The minimum required fill of cement behind the **5-1/2** inch production casing is:

- Cement should tie-back **500 feet** into the previous casing. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M) psi. Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. 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.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. 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.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including

lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

NMK03232020



APD ID: 10400048834

Submission Date: 10/08/2019

Highlighted data
reflects the most
recent changes

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 502H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
556806	QUATERNARY	3807	0	0	OTHER : Caliche	USEABLE WATER	N
556807	RUSTLER	2199	1608	1608	ANHYDRITE	NONE	N
556808	SALADO	1844	1963	1963	SALT	NONE	N
556809	CASTILE	414	3393	3393	ANHYDRITE	NONE	N
556810	TANSILL	271	3536	3536	DOLOMITE	NONE	N
556811	YATES	101	3706	3707	OTHER : Carbonates	NATURAL GAS, OIL	N
556812	CAPITAN REEF	-224	4031	4032	LIMESTONE	USEABLE WATER	N
556813	DELAWARE	-1444	5251	5254	SANDSTONE	NONE	N
556814	BELL CANYON	-1649	5456	5459	SANDSTONE	NATURAL GAS, OIL	N
556815	CHERRY CANYON	-1955	5762	5766	SANDSTONE	NATURAL GAS, OIL	N
556816	BRUSHY CANYON	-3324	7131	7136	SANDSTONE	NATURAL GAS	N
556817	BONE SPRING	-5071	8878	8883	LIMESTONE	NATURAL GAS, OIL	N
556818	AVALON SAND	-5255	9062	9067	OTHER : Shale - Bone Spring	NATURAL GAS, OIL	N
556819	BONE SPRING 1ST	-6210	10017	10022	SANDSTONE	NATURAL GAS, OIL	N
556820	BONE SPRING 2ND	-6446	10253	10258	OTHER : Carbonate	NATURAL GAS, OIL	N
556821	BONE SPRING 2ND	-6758	10565	10570	SANDSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 502H

Pressure Rating (PSI): 10M

Rating Depth: 12000

Equipment: Minimum blow out preventer equipment (BOPE) will consist of a single ram, mud cross and double ram type (10,000 psi WP) preventer, and an annular preventer (5000 psi WP). Both units will be hydraulically operated. Ram type will be equipped with blind rams on the bottom and drill pipe rams on the top. Auxiliary equipment: A Kelly cock will be kept in the drill string at all times. A full opening drill pipe stabbing valve (inside BOP) with proper drill pipe connections will always be on the rig floor.

Requesting Variance? YES

Variance request: Variance is requested to use a co-flex line between the BOP and choke manifold instead of using a 4" O. D. steel line. Choke and kill line data book is attached. If this hose is unavailable, then a hose of equal or higher rating will be used. Variance is requested to use a speed head (aka, multi-bowl wellhead). Diagram is attached. After running the 13.375" surface casing, a 13.625" BOP/BOPE system with a >5000 psi WP will be installed on the wellhead system. It will be pressure tested to 250-psi low, followed by a test to 5000-psi high. Pressure test will be repeated at least every 30 days as required by Onshore Order 2. Speed head will be installed by the vendor's representative(s). Well head welding will be monitored by the vendor's representative.

Testing Procedure: Minimum working pressure of the BOP and related BOPE below the surface casing will be 5000-psi. All BOPE will be tested in accordance with Onshore Order 2. All BOPE will be tested using a conventional test plug not a cup or J packer. Both surface and intermediate casing will be tested as required by Onshore Order 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. Before drilling out the surface casing: ram type BOP and accessory equipment will be tested to 5000/250 psig annular preventer will be tested to 3500/250 psig surface casing will be tested to 1500 psi for 30 minutes Before drilling out the intermediate casing: ram type BOP and accessory equipment will be tested to 5000/250 psig annular preventer will be tested to 3500/250 psig intermediate casing will be tested to 2000 psi for 30 minutes Intermediate casing will be landed using a mandrel hanger and separate pack off. After installation, the pack off and lower flange will be pressure tested to 5000 psi. A hydraulically operated choke will be installed before drilling out of the intermediate casing shoe. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each TOOH. These checks will be noted on the daily tour sheets.

Choke Diagram Attachment:

HS_502H_BOP_Choke_20191008105150.pdf

BOP Diagram Attachment:

HS_502H_BOP_Choke_20191008105156.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1630	0	1630	3793	2163	1630	J-55	54.5	ST&C	1.4	2.89	DRY	2	DRY	1.8
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3600	0	3599	3807	194	3600	J-55	40	LT&C	1.4	1.7	DRY	2	DRY	1.8
3	INTERMEDIATE	8.75	7.625	NEW	API	N	0	5250	0	5247	3807	-1454	5250	HCP-110	29.7	OTHER - EZGO FJ3	3.12	3	DRY	2	DRY	1.8

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 502H

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
4	PRODUCTI ON	6.75	5.5	NEW	API	N	0	16117	0	10937	3807	-7144	16117	HCP -110	20	OTHER - EZGO FJ3	2.1	1.2	DRY	2.28	DRY	1.3

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

HS_502H_Casing_Design_Assumptions_20191008105228.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

HS_502H_Casing_Design_Assumptions_20191008105259.pdf

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 502H

Casing Attachments

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

HS_502H_Casing_Design_Assumptions_20191008105326.pdf

7.625_EZGO_Casing_Spec_20191008105333.pdf

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

HS_502H_Casing_Design_Assumptions_20191008105353.pdf

5.5in_EZGO_Casing_Spec_20191008105401.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1630	885	1.72	13.5	1529	100	Class C HALCEM system	4% bentonite
SURFACE	Tail		0	1630	550	1.33	14.8	733	100	Class C HALCEM system	None
INTERMEDIATE	Lead		0	3600	695	1.72	12.7	1200	100	Class C HALCEM system	4% bentonite

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 502H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		0	3600	485	1.33	14.8	646	100	Class C HALCEM system	None
INTERMEDIATE	Lead		0	5250	220	2.03	12.7	448	50	Class C EconoCem HLC	5% salt + 3% Microbond + 3 lb/sk Kol-seal + 0.3% HR-800
INTERMEDIATE	Tail		0	5250	155	1.37	14.8	212	50	Class C HALCEM system	3% Microbond
PRODUCTION	Lead		0	1611 7	625	2.88	11	1804	50	NeoCem PL	3% Microbond
PRODUCTION	Tail		0	1611 7	1445	1.47	13.2	2127	50	NeoCem PL	3% Microbond

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary additives (e. g., barite, bentonite, LCM) to maintain mud properties and meet minimum lost circulation and weight increase needs will be on site at all times. Mud program may change due to hole conditions.

Describe the mud monitoring system utilized: An electronic pit volume totalizer (PVT) will be used to monitor volume, flow rate, pump pressure, and stroke rate.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1630	OTHER : Fresh water	8.4	9.6							
1630	3600	OTHER : Brine water	10	10							
3600	5250	OTHER : Fresh water	8.4	8.6							

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 502H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
5250	1611 7	OTHER : Cut brine/gel	8.5	9.2							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

GR-CCL will be run in cased hole during completion phase of operations.

List of open and cased hole logs run in the well:

GAMMA RAY LOG,

Coring operation description for the well:

No core, drill stem test, or open hole log is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5033

Anticipated Surface Pressure: 2624

Anticipated Bottom Hole Temperature(F): 165

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

HS_502H_H2S_Plan_20191008105718.pdf

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 502H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

HS_502H_Horizontal_Plan_20191008105746.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

HS_502H_Drill_Plan_20191008105759.pdf

HS_502H_CoFlex_Certs_20191008105817.pdf

HS_502H_Anti_Collision_Report_20191008105841.pdf

HS_502H_Speedhead_Specs_20191008105848.pdf

Horseshoe_Well_Control_Plan_20191008105853.pdf

Other Variance attachment:

HS_502H_Casing_Cementing_Variance_20191008105909.pdf

HS_502H_Surface_Rig_Variance_20191008110013.pdf

Ascent Energy, LLC
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SHL 300' FNL & 705' FEL Sec. 19
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DRILL PLAN PAGE 1

fee/fee/Fed

Drilling Program

1. ESTIMATED TOPS

Formation	TVD	MD	Bearing
Quaternary caliche	000'	000'	water
Rustler anhydrite	1608'	1608'	N/A
Salado salt	1963'	1963'	N/A
Castile anhydrite	3393'	3393'	N/A
Tansill dolomite	3536'	3536'	N/A
Yates carbonates	3706'	3707'	hydrocarbons
Capitan Reef limestone	4031'	4032'	water
Delaware sandstone	5251'	5254'	N/A
Bell Canyon sandstone	5456'	5459'	hydrocarbons
Cherry Canyon sandstone	5762'	5766'	hydrocarbons
Brushy Canyon sandstone	7131'	7136'	hydrocarbons
Bone Spring limestone	8878'	8883'	hydrocarbons
Avalon shale of Bone Spring	9062'	9067'	hydrocarbons
1st Bone Spring sandstone	10017'	10022'	hydrocarbons
2 nd Bone Spring carbonate	10253'	10258'	hydrocarbons
(KOP	10512'	10517'	hydrocarbons)
2 nd Bone Spring sandstone	10565'	10570'	hydrocarbons
TD	10937'	16117'	hydrocarbons

2. NOTABLE ZONES

Second Bone Spring sandstone is the goal. Closest water wells (CP 00794 POD1 and CP 00795 POD1) are 1.08 miles northwest. Depth to water was not reported in the 160' and 170' deep windmills.

Ascent Energy, LLC
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DRILL PLAN PAGE 2

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3. PRESSURE CONTROL

Minimum blow out preventer equipment (BOPE) will consist of a single ram, mud cross and double ram type (10,000 psi WP) preventer, and an annular preventer (5000 psi WP). Both units will be hydraulically operated. Ram type will be equipped with blind rams on the bottom and drill pipe rams on the top.

Auxiliary equipment:

A Kelly cock will be kept in the drill string at all times.

A full opening drill pipe stabbing valve (inside BOP) with proper drill pipe connections will always be on the rig floor.

Minimum working pressure of the BOP and related BOPE below the surface casing will be 5000-psi.

All BOPE will be tested in accordance with Onshore Order 2. All BOPE will be tested using a conventional test plug – not a cup or J packer. Both surface and intermediate casing will be tested as required by Onshore Order 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

Before drilling out the surface casing:

ram type BOP and accessory equipment will be tested to 5000/250 psig

annular preventer will be tested to 3500/250 psig

surface casing will be tested to 1500 psi for 30 minutes

Before drilling out the intermediate casing:

ram type BOP and accessory equipment will be tested to 5000/250 psig

annular preventer will be tested to 3500/250 psig

intermediate casing will be tested to 2000 psi for 30 minutes

Intermediate casing will be landed using a mandrel hanger and separate pack off. After installation, the pack off and lower flange will be pressure tested to 5000 psi. A hydraulically operated choke will be installed before drilling out of the intermediate casing shoe.

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DRILL PLAN PAGE 3

fee/fee/Fed

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each TOOH. These checks will be noted on the daily tour sheets.

Variance is requested to use a co-flex line between the BOP and choke manifold instead of using a 4" O. D. steel line. Choke and kill line data book is attached. If this hose is unavailable, then a hose of equal or higher rating will be used.

Variance is requested to use a speed head (aka, multi-bowl wellhead). Diagram is attached. After running the 13.375" surface casing, a 13.625" BOP/BOPE system with a ≥ 5000 psi WP will be installed on the wellhead system. It will be pressure tested to 250-psi low, followed by a test to 5000-psi high. Pressure test will be repeated at least every 30 days as required by Onshore Order 2.

Speed head will be installed by the vendor's representative(s). Well head welding will be monitored by the vendor's representative.

4. CASING & CEMENT

All casing will be API and new. See attached casing assumption worksheet.

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	SF Collapse	SF Burst	SF Tension
17.5"	0' - 1630'	0' - 1630'	Surface 13.375"	54.5	J-55	STC	1.4	2.89	2.0 body / 1.8 conn
12.25"	0' - 3600'	0' - 3599'	Inter. 1 9.625"	40	J-55	LTC	1.4	1.7	2.0 body / 1.8 conn
8.75"	0' - 5250'	0' - 5247'	Inter. 2 7.625"	29.7	HCP-110	EZGO FJ3	3.12	3.0	2.0 body / 1.8 conn
6.75"	0' - 16117'	0' - 10937'	Product. 5.5"	20	HCP-110	EZGO FJ3	2.1	1.2	2.28 body / 1.3 conn

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DRILL PLAN PAGE 4

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Variance is requested to waive centralizer requirements for the 7.625" flush joint casing. An expansion additive will be used in the cement slurry for the entire length of the 8.75" hole to maximize cement bond and zone isolation.

Variance is also requested to waive centralizer requirements for the 5.5" flush joint casing. An expansion additive will be used in the cement slurry for the entire length of the 6.75" hole to maximize cement bond and zone isolation.

Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Lead	885	1.728	1529	13.5	Class C HALCEM system + 4% bentonite
	Tail	550	1.332	733	14.8	Class C HALCEM system
TOC = GL		100% Excess				
Intermediate 1	Lead	695	1.728	1200	12.7	Class C HALCEM system + 4% bentonite
	Tail	485	1.332	646	14.8	Class C HALCEM system
TOC = GL		100% Excess				
Intermediate 2	Lead	220	2.039	448	12.7	Class C EconoCem HLC + 5% salt + 3% Microbond + 3 lb/sk Kol-seal + 0.3% HR-800
	Tail	155	1.368	212	14.8	Class C HALCEM system + 3% Microbond
TOC = GL		50% Excess				
Production	Lead	625	2.887	1804	11.0	NeoCem PL + 3% Microbond
	Tail	1445	1.472	2127	13.2	NeoCem PT + 3% Microbond
TOC = GL		50% Excess				

Ascent Energy, LLC
Horseshoe Fed Com 502H
SHL 300' FNL & 705' FEL Sec. 19
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T. 21 S., R. 33 E., Lea County, NM

DRILL PLAN PAGE 5

fee/fee/Fed

5. MUD PROGRAM

An electronic pit volume totalizer (PVT) will be used to monitor volume, flow rate, pump pressure, and stroke rate. All necessary additives (e. g., barite, bentonite, LCM) to maintain mud properties and meet minimum lost circulation and weight increase needs will be on site at all times. Mud program may change due to hole conditions. A closed loop system will be used.

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss
fresh water	0' - 1630'	8.4 - 9.6	34-38	N/C
brine water	1630' - 3600'	10	28-34	N/C
fresh water	3600' - 5250'	8.4 - 8.6	28-34	N/C
cut brine/gel	5250' - 16117'	8.5 - 9.2	28-34	N/C

6. CORES, TESTS, & LOGS

No core, drill stem test, or open hole log is planned.

GR-CCL will be run in cased hole during completion phase of operations.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈ 5033 psig. Expected bottom hole temperature is $\approx 165^{\circ}$ F.

H2S monitoring and detection equipment will be used from surface casing point to TD.

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DRILL PLAN PAGE 6

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8. OTHER INFORMATION

Anticipated spud date is upon approval. It is expected it will take \approx 1 month to drill and \approx 2-3 months to complete the well.

Variance is requested for the option to contract a surface rig to drill surface hole, set surface casing, and cement the surface casing. If the timing between rigs is such that Ascent would not be able to preset the surface casing, then the primary rig will MIRU and drill the well in its entirety.

This is a "fee/fee/Fed" well. Surface owner is the NM State Land Office, P. O. Box 1148, Santa Fe NM 87504; 505 827-4003). First lease penetrated is NM State Land Office lease V0-8700-0001. Ascent is preparing a business lease to file with the NM State Land Office.



Project: LEA COUNTY, NEW MEXICO (NAD 83)
Site: NE NE SEC. 19 T21S R33E
Well: HORSESHOE FED COM 502H
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS

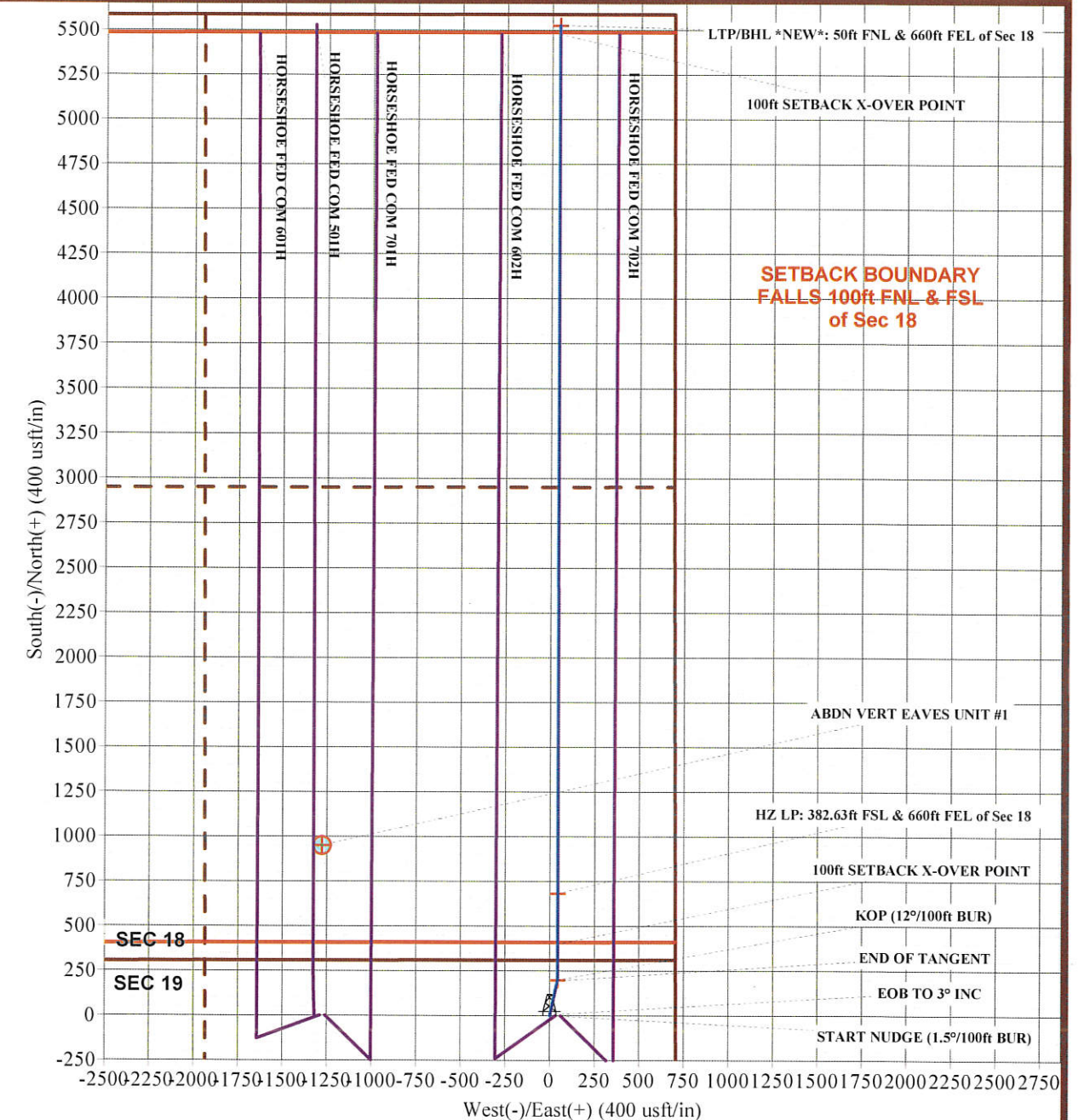
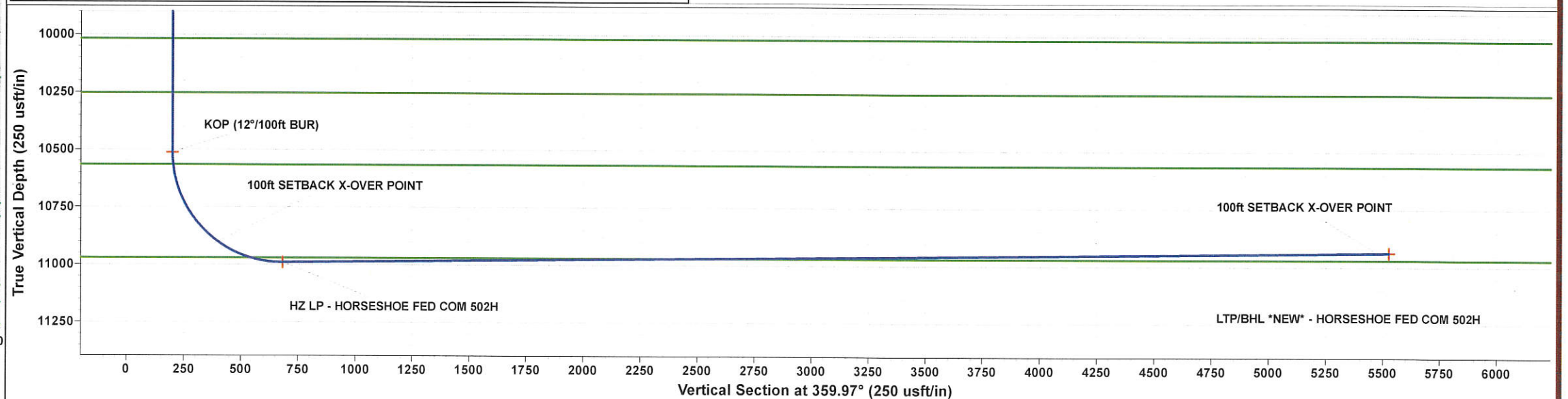
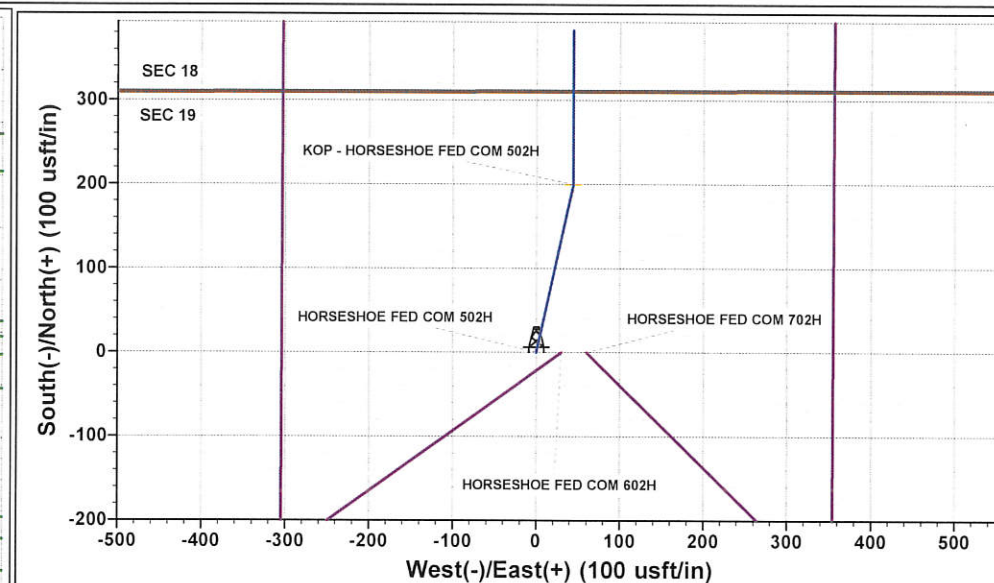
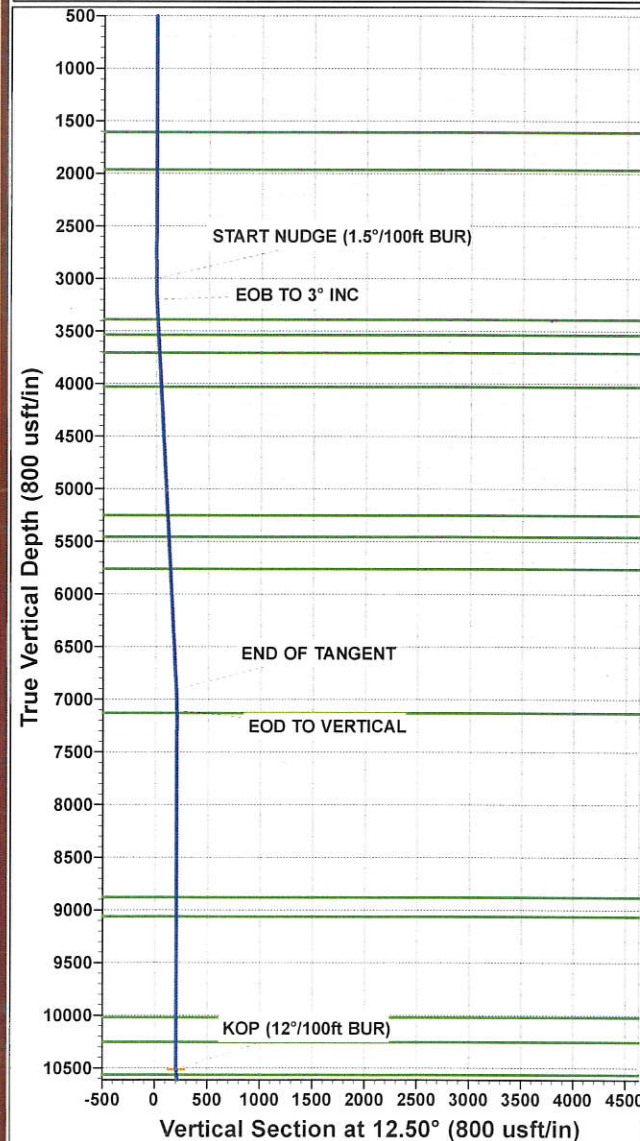
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 300ft FNL & 705ft FEL of Sec 19
3000.00	3000.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (1.5°/100ft BUR)
3199.91	3200.00	3.00	12.50	5.11	1.13	5.11	5.23	EOB TO 3° INC
6906.75	6911.93	3.00	12.50	194.77	43.20	194.75	199.50	END OF TANGENT
7106.66	7111.93	0.00	0.00	199.88	44.33	199.86	204.74	EOD TO VERTICAL
10511.75	10517.02	0.00	0.00	199.88	44.33	199.86	204.74	KOP (12°/100ft BUR)
10900.32	10970.94	54.47	359.97	399.88	44.23	399.85	404.79	100ft SETBACK X-OVER POINT
10989.19	11272.19	90.62	359.97	682.51	44.08	682.49	687.37	HZ LP: 382.63ft FSL & 660ft FEL of Sec 18
10937.44	16066.93	90.62	359.97	5476.97	41.67	5476.95	5481.83	100ft SETBACK X-OVER POINT
10936.90	16116.92	90.62	359.97	5526.96	41.65	5526.94	5531.82	LTP/BHL *NEW*: 50ft FNL & 660ft FEL of Sec 18

PROPOSED LOCAL COORDINATES:

SHL: 300ft FNL & 705ft FEL Sec 19
HZ LP: 382.63ft FSL & 660ft FEL Sec 18
BHL *NEW*: 50ft FNL & 660ft FEL Sec 18

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - HORSESHOE FED COM 502H	10511.75	199.88	44.33	32.471379	-103.605306
LTP/BHL *NEW* - HORSESHOE FED COM 502H	10936.90	5526.96	41.65	32.486021	-103.605314
HZ LP - HORSESHOE FED COM 502H	10989.19	682.51	44.08	32.472705	-103.605306



Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well HORSESHOE FED COM 502H
Company:	ASCENT ENERGY	TVD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Project:	LEA COUNTY, NEW MEXICO (NAD 83)	MD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Site:	NE NE SEC. 19 T21S R33E	North Reference:	True
Well:	HORSESHOE FED COM 502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Project	LEA COUNTY, NEW MEXICO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		Using geodetic scale factor

Site	NE NE SEC. 19 T21S R33E		
Site Position:		Northing:	535,784.18 usft
From:	Map	Easting:	765,814.78 usft
Position Uncertainty:	0.00 usft	Slot Radius:	1.10 ft
		Latitude:	32.470829
		Longitude:	-103.605449
		Grid Convergence:	0.39 °

Well	HORSESHOE FED COM 502H		
Well Position	+N/-S	0.00 usft	Northing: 535,784.18 usft
	+E/-W	0.00 usft	Easting: 765,814.78 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32.470829
		Longitude:	-103.605449
		Ground Level:	3,794.90 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	02/08/2019	6.76	60.25	47,859

Design	PROPOSAL #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.97

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.00	0.00	0.00	0.00	-3,819.90	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	-819.90	0.00	0.00	0.00	0.00	0.00	0.00	
3,200.00	3.00	12.50	3,199.91	-619.99	5.11	1.13	1.50	1.50	0.00	12.50	
6,911.93	3.00	12.50	6,906.75	3,086.85	194.77	43.20	0.00	0.00	0.00	0.00	
7,111.93	0.00	0.00	7,106.66	3,286.76	199.88	44.33	1.50	-1.50	0.00	180.00	
10,517.02	0.00	0.00	10,511.75	6,691.85	199.88	44.33	0.00	0.00	0.00	0.00	KOP - HORSESHC
11,272.19	90.62	359.97	10,989.19	7,169.29	682.51	44.08	12.00	12.00	0.00	359.97	HZ LP - HORSESH
16,116.92	90.62	359.97	10,936.90	7,117.00	5,526.96	41.65	0.00	0.00	0.00	138.26	LTP/BHL *NEW* - I

Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well HORSESHOE FED COM 502H
Company:	ASCENT ENERGY	TVD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Project:	LEA COUNTY, NEW MEXICO (NAD 83)	MD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Site:	NE NE SEC. 19 T21S R33E	North Reference:	True
Well:	HORSESHOE FED COM 502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
SHL: 300ft FNL & 705ft FEL of Sec 19										
0.00	0.00	0.00	0.00	3,819.90	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	3,719.90	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	3,619.90	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	3,519.90	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	3,419.90	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	3,319.90	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	3,219.90	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	3,119.90	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	3,019.90	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	2,919.90	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	2,819.90	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	2,719.90	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	2,619.90	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	2,519.90	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	2,419.90	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	2,319.90	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	2,219.90	0.00	0.00	0.00	0.00	0.00	0.00
Rustler										
1,607.90	0.00	0.00	1,607.90	2,212.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	2,119.90	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	2,019.90	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	1,919.90	0.00	0.00	0.00	0.00	0.00	0.00
Salado										
1,962.90	0.00	0.00	1,962.90	1,857.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	1,819.90	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	1,719.90	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	1,619.90	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	1,519.90	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	1,419.90	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	1,319.90	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	1,219.90	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	1,119.90	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	1,019.90	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	919.90	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (1.5°/100ft BUR)										
3,000.00	0.00	0.00	3,000.00	819.90	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	1.50	12.50	3,099.99	719.91	1.28	0.28	1.28	1.50	1.50	0.00
EOB TO 3° INC										
3,200.00	3.00	12.50	3,199.91	619.99	5.11	1.13	5.11	1.50	1.50	0.00
3,300.00	3.00	12.50	3,299.77	520.13	10.22	2.27	10.22	0.00	0.00	0.00
Castille										
3,390.25	3.00	12.50	3,389.90	430.00	14.83	3.29	14.83	0.00	0.00	0.00
3,400.00	3.00	12.50	3,399.63	420.27	15.33	3.40	15.33	0.00	0.00	0.00
3,500.00	3.00	12.50	3,499.50	320.40	20.44	4.53	20.44	0.00	0.00	0.00
Tansil										
3,536.45	3.00	12.50	3,535.90	284.00	22.30	4.95	22.30	0.00	0.00	0.00
3,600.00	3.00	12.50	3,599.36	220.54	25.55	5.67	25.55	0.00	0.00	0.00
3,700.00	3.00	12.50	3,699.22	120.68	30.66	6.80	30.65	0.00	0.00	0.00
Yates										
3,706.69	3.00	12.50	3,705.90	114.00	31.00	6.88	31.00	0.00	0.00	0.00
3,800.00	3.00	12.50	3,799.09	20.81	35.77	7.93	35.76	0.00	0.00	0.00
3,900.00	3.00	12.50	3,898.95	-79.05	40.88	9.07	40.87	0.00	0.00	0.00

Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well HORSESHOE FED COM 502H
Company:	ASCENT ENERGY	TVD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Project:	LEA COUNTY, NEW MEXICO (NAD 83)	MD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Site:	NE NE SEC. 19 T21S R33E	North Reference:	True
Well:	HORSESHOE FED COM 502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,000.00	3.00	12.50	3,998.81	-178.91	45.99	10.20	45.98	0.00	0.00	0.00
Capitan Reef										
4,032.13	3.00	12.50	4,030.90	-211.00	47.63	10.56	47.62	0.00	0.00	0.00
4,100.00	3.00	12.50	4,098.68	-278.78	51.10	11.33	51.09	0.00	0.00	0.00
4,200.00	3.00	12.50	4,198.54	-378.64	56.21	12.47	56.20	0.00	0.00	0.00
4,300.00	3.00	12.50	4,298.40	-478.50	61.31	13.60	61.31	0.00	0.00	0.00
4,400.00	3.00	12.50	4,398.26	-578.36	66.42	14.73	66.42	0.00	0.00	0.00
4,500.00	3.00	12.50	4,498.13	-678.23	71.53	15.86	71.53	0.00	0.00	0.00
4,600.00	3.00	12.50	4,597.99	-778.09	76.64	17.00	76.63	0.00	0.00	0.00
4,700.00	3.00	12.50	4,697.85	-877.95	81.75	18.13	81.74	0.00	0.00	0.00
4,800.00	3.00	12.50	4,797.72	-977.82	86.86	19.26	86.85	0.00	0.00	0.00
4,900.00	3.00	12.50	4,897.58	-1,077.68	91.97	20.40	91.96	0.00	0.00	0.00
5,000.00	3.00	12.50	4,997.44	-1,177.54	97.08	21.53	97.07	0.00	0.00	0.00
5,100.00	3.00	12.50	5,097.30	-1,277.40	102.19	22.66	102.18	0.00	0.00	0.00
5,200.00	3.00	12.50	5,197.17	-1,377.27	107.30	23.80	107.29	0.00	0.00	0.00
Top Delaware Sand										
5,253.81	3.00	12.50	5,250.90	-1,431.00	110.05	24.41	110.04	0.00	0.00	0.00
5,300.00	3.00	12.50	5,297.03	-1,477.13	112.41	24.93	112.40	0.00	0.00	0.00
5,400.00	3.00	12.50	5,396.89	-1,576.99	117.52	26.06	117.50	0.00	0.00	0.00
Bell Canyon										
5,459.09	3.00	12.50	5,455.90	-1,636.00	120.54	26.73	120.52	0.00	0.00	0.00
5,500.00	3.00	12.50	5,496.76	-1,676.86	122.63	27.20	122.61	0.00	0.00	0.00
5,600.00	3.00	12.50	5,596.62	-1,776.72	127.74	28.33	127.72	0.00	0.00	0.00
5,700.00	3.00	12.50	5,696.48	-1,876.58	132.85	29.46	132.83	0.00	0.00	0.00
Cherry Canyon										
5,765.51	3.00	12.50	5,761.90	-1,942.00	136.19	30.21	136.18	0.00	0.00	0.00
5,800.00	3.00	12.50	5,796.35	-1,976.45	137.96	30.60	137.94	0.00	0.00	0.00
5,900.00	3.00	12.50	5,896.21	-2,076.31	143.07	31.73	143.05	0.00	0.00	0.00
6,000.00	3.00	12.50	5,996.07	-2,176.17	148.18	32.86	148.16	0.00	0.00	0.00
6,100.00	3.00	12.50	6,095.93	-2,276.03	153.28	34.00	153.27	0.00	0.00	0.00
6,200.00	3.00	12.50	6,195.80	-2,375.90	158.39	35.13	158.38	0.00	0.00	0.00
6,300.00	3.00	12.50	6,295.66	-2,475.76	163.50	36.26	163.48	0.00	0.00	0.00
6,400.00	3.00	12.50	6,395.52	-2,575.62	168.61	37.40	168.59	0.00	0.00	0.00
6,500.00	3.00	12.50	6,495.39	-2,675.49	173.72	38.53	173.70	0.00	0.00	0.00
6,600.00	3.00	12.50	6,595.25	-2,775.35	178.83	39.66	178.81	0.00	0.00	0.00
6,700.00	3.00	12.50	6,695.11	-2,875.21	183.94	40.80	183.92	0.00	0.00	0.00
6,800.00	3.00	12.50	6,794.97	-2,975.07	189.05	41.93	189.03	0.00	0.00	0.00
6,900.00	3.00	12.50	6,894.84	-3,074.94	194.16	43.06	194.14	0.00	0.00	0.00
END OF TANGENT										
6,911.93	3.00	12.50	6,906.75	-3,086.85	194.77	43.20	194.75	0.00	0.00	0.00
7,000.00	1.68	12.50	6,994.75	-3,174.85	198.28	43.97	198.26	1.50	-1.50	0.00
7,100.00	0.18	12.50	7,094.73	-3,274.83	199.86	44.33	199.84	1.50	-1.50	0.00
EOD TO VERTICAL										
7,111.93	0.00	0.00	7,106.66	-3,286.76	199.88	44.33	199.86	1.50	-1.50	0.00
Brushy Canyon										
7,136.17	0.00	0.00	7,130.90	-3,311.00	199.88	44.33	199.86	0.00	0.00	0.00
7,200.00	0.00	0.00	7,194.73	-3,374.83	199.88	44.33	199.86	0.00	0.00	0.00
7,300.00	0.00	0.00	7,294.73	-3,474.83	199.88	44.33	199.86	0.00	0.00	0.00
7,400.00	0.00	0.00	7,394.73	-3,574.83	199.88	44.33	199.86	0.00	0.00	0.00
7,500.00	0.00	0.00	7,494.73	-3,674.83	199.88	44.33	199.86	0.00	0.00	0.00
7,600.00	0.00	0.00	7,594.73	-3,774.83	199.88	44.33	199.86	0.00	0.00	0.00
7,700.00	0.00	0.00	7,694.73	-3,874.83	199.88	44.33	199.86	0.00	0.00	0.00
7,800.00	0.00	0.00	7,794.73	-3,974.83	199.88	44.33	199.86	0.00	0.00	0.00

Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well HORSESHOE FED COM 502H
Company:	ASCENT ENERGY	TVD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Project:	LEA COUNTY, NEW MEXICO (NAD 83)	MD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Site:	NE NE SEC. 19 T21S R33E	North Reference:	True
Well:	HORSESHOE FED COM 502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,900.00	0.00	0.00	7,894.73	-4,074.83	199.88	44.33	199.86	0.00	0.00	0.00
8,000.00	0.00	0.00	7,994.73	-4,174.83	199.88	44.33	199.86	0.00	0.00	0.00
8,100.00	0.00	0.00	8,094.73	-4,274.83	199.88	44.33	199.86	0.00	0.00	0.00
8,200.00	0.00	0.00	8,194.73	-4,374.83	199.88	44.33	199.86	0.00	0.00	0.00
8,300.00	0.00	0.00	8,294.73	-4,474.83	199.88	44.33	199.86	0.00	0.00	0.00
8,400.00	0.00	0.00	8,394.73	-4,574.83	199.88	44.33	199.86	0.00	0.00	0.00
8,500.00	0.00	0.00	8,494.73	-4,674.83	199.88	44.33	199.86	0.00	0.00	0.00
8,600.00	0.00	0.00	8,594.73	-4,774.83	199.88	44.33	199.86	0.00	0.00	0.00
8,700.00	0.00	0.00	8,694.73	-4,874.83	199.88	44.33	199.86	0.00	0.00	0.00
8,800.00	0.00	0.00	8,794.73	-4,974.83	199.88	44.33	199.86	0.00	0.00	0.00
Bone Spring Lime										
8,883.17	0.00	0.00	8,877.90	-5,058.00	199.88	44.33	199.86	0.00	0.00	0.00
8,900.00	0.00	0.00	8,894.73	-5,074.83	199.88	44.33	199.86	0.00	0.00	0.00
9,000.00	0.00	0.00	8,994.73	-5,174.83	199.88	44.33	199.86	0.00	0.00	0.00
Avalon										
9,067.17	0.00	0.00	9,061.90	-5,242.00	199.88	44.33	199.86	0.00	0.00	0.00
9,100.00	0.00	0.00	9,094.73	-5,274.83	199.88	44.33	199.86	0.00	0.00	0.00
9,200.00	0.00	0.00	9,194.73	-5,374.83	199.88	44.33	199.86	0.00	0.00	0.00
9,300.00	0.00	0.00	9,294.73	-5,474.83	199.88	44.33	199.86	0.00	0.00	0.00
9,400.00	0.00	0.00	9,394.73	-5,574.83	199.88	44.33	199.86	0.00	0.00	0.00
9,500.00	0.00	0.00	9,494.73	-5,674.83	199.88	44.33	199.86	0.00	0.00	0.00
9,600.00	0.00	0.00	9,594.73	-5,774.83	199.88	44.33	199.86	0.00	0.00	0.00
9,700.00	0.00	0.00	9,694.73	-5,874.83	199.88	44.33	199.86	0.00	0.00	0.00
9,800.00	0.00	0.00	9,794.73	-5,974.83	199.88	44.33	199.86	0.00	0.00	0.00
9,900.00	0.00	0.00	9,894.73	-6,074.83	199.88	44.33	199.86	0.00	0.00	0.00
10,000.00	0.00	0.00	9,994.73	-6,174.83	199.88	44.33	199.86	0.00	0.00	0.00
1st Bone Spring Sand										
10,022.17	0.00	0.00	10,016.90	-6,197.00	199.88	44.33	199.86	0.00	0.00	0.00
10,100.00	0.00	0.00	10,094.73	-6,274.83	199.88	44.33	199.86	0.00	0.00	0.00
10,200.00	0.00	0.00	10,194.73	-6,374.83	199.88	44.33	199.86	0.00	0.00	0.00
2nd Bone Spring Carb										
10,258.17	0.00	0.00	10,252.90	-6,433.00	199.88	44.33	199.86	0.00	0.00	0.00
10,300.00	0.00	0.00	10,294.73	-6,474.83	199.88	44.33	199.86	0.00	0.00	0.00
10,400.00	0.00	0.00	10,394.73	-6,574.83	199.88	44.33	199.86	0.00	0.00	0.00
10,500.00	0.00	0.00	10,494.73	-6,674.83	199.88	44.33	199.86	0.00	0.00	0.00
KOP (12°/100ft BUR)										
10,517.02	0.00	0.00	10,511.75	-6,691.85	199.88	44.33	199.86	0.00	0.00	0.00
2nd Bone Spring Sand										
10,570.28	6.39	359.97	10,564.90	-6,745.00	202.85	44.33	202.82	12.00	12.00	0.00
10,600.00	9.96	359.97	10,594.31	-6,774.41	207.07	44.33	207.05	12.00	12.00	0.00
10,700.00	21.96	359.97	10,690.28	-6,870.38	234.51	44.31	234.49	12.00	12.00	0.00
10,800.00	33.96	359.97	10,778.45	-6,958.55	281.31	44.29	281.29	12.00	12.00	0.00
10,900.00	45.96	359.97	10,854.96	-7,035.06	345.42	44.25	345.39	12.00	12.00	0.00
100ft SETBACK X-OVER POINT										
10,970.94	54.47	359.97	10,900.32	-7,080.42	399.88	44.23	399.85	12.00	12.00	0.00
11,000.00	57.96	359.97	10,916.48	-7,096.58	424.03	44.21	424.00	12.00	12.00	0.00
11,100.00	69.96	359.97	10,960.30	-7,140.40	513.71	44.17	513.69	12.00	12.00	0.00
2nd Bone Spring Landing Target top										
11,130.74	73.65	359.97	10,969.90	-7,150.00	542.91	44.15	542.88	12.00	12.00	0.00
11,200.00	81.96	359.97	10,984.52	-7,164.62	610.54	44.12	610.52	12.00	12.00	0.00
HZ LP: 382.63ft FSL & 660ft FEL of Sec 18										
11,272.19	90.62	359.97	10,989.19	-7,169.29	682.51	44.08	682.49	12.00	12.00	0.00
11,300.00	90.62	359.97	10,988.89	-7,168.99	710.32	44.07	710.30	0.00	0.00	0.00

Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well HORSESHOE FED COM 502H
Company:	ASCENT ENERGY	TVD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Project:	LEA COUNTY, NEW MEXICO (NAD 83)	MD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Site:	NE NE SEC. 19 T21S R33E	North Reference:	True
Well:	HORSESHOE FED COM 502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,400.00	90.62	359.97	10,987.81	-7,167.91	810.32	44.01	810.29	0.00	0.00	0.00
11,500.00	90.62	359.97	10,986.73	-7,166.83	910.31	43.96	910.29	0.00	0.00	0.00
11,600.00	90.62	359.97	10,985.65	-7,165.75	1,010.30	43.91	1,010.28	0.00	0.00	0.00
11,700.00	90.62	359.97	10,984.57	-7,164.67	1,110.30	43.86	1,110.27	0.00	0.00	0.00
11,800.00	90.62	359.97	10,983.48	-7,163.58	1,210.29	43.81	1,210.27	0.00	0.00	0.00
11,900.00	90.62	359.97	10,982.40	-7,162.50	1,310.29	43.76	1,310.26	0.00	0.00	0.00
12,000.00	90.62	359.97	10,981.32	-7,161.42	1,410.28	43.70	1,410.26	0.00	0.00	0.00
12,100.00	90.62	359.97	10,980.24	-7,160.34	1,510.27	43.65	1,510.25	0.00	0.00	0.00
12,200.00	90.62	359.97	10,979.16	-7,159.26	1,610.27	43.60	1,610.25	0.00	0.00	0.00
12,300.00	90.62	359.97	10,978.08	-7,158.18	1,710.26	43.55	1,710.24	0.00	0.00	0.00
12,400.00	90.62	359.97	10,977.00	-7,157.10	1,810.26	43.50	1,810.23	0.00	0.00	0.00
12,500.00	90.62	359.97	10,975.92	-7,156.02	1,910.25	43.45	1,910.23	0.00	0.00	0.00
12,600.00	90.62	359.97	10,974.84	-7,154.94	2,010.25	43.40	2,010.22	0.00	0.00	0.00
12,700.00	90.62	359.97	10,973.76	-7,153.86	2,110.24	43.35	2,110.22	0.00	0.00	0.00
12,800.00	90.62	359.97	10,972.68	-7,152.78	2,210.23	43.30	2,210.21	0.00	0.00	0.00
12,900.00	90.62	359.97	10,971.60	-7,151.70	2,310.23	43.25	2,310.20	0.00	0.00	0.00
13,000.00	90.62	359.97	10,970.52	-7,150.62	2,410.22	43.20	2,410.20	0.00	0.00	0.00
13,100.00	90.62	359.97	10,969.44	-7,149.54	2,510.22	43.14	2,510.19	0.00	0.00	0.00
13,200.00	90.62	359.97	10,968.36	-7,148.46	2,610.21	43.09	2,610.19	0.00	0.00	0.00
13,300.00	90.62	359.97	10,967.28	-7,147.38	2,710.20	43.04	2,710.18	0.00	0.00	0.00
13,400.00	90.62	359.97	10,966.20	-7,146.30	2,810.20	42.99	2,810.18	0.00	0.00	0.00
13,500.00	90.62	359.97	10,965.12	-7,145.22	2,910.19	42.94	2,910.17	0.00	0.00	0.00
13,600.00	90.62	359.97	10,964.04	-7,144.14	3,010.19	42.89	3,010.16	0.00	0.00	0.00
13,700.00	90.62	359.97	10,962.96	-7,143.06	3,110.18	42.84	3,110.16	0.00	0.00	0.00
13,800.00	90.62	359.97	10,961.88	-7,141.98	3,210.18	42.79	3,210.15	0.00	0.00	0.00
13,900.00	90.62	359.97	10,960.81	-7,140.91	3,310.17	42.74	3,310.15	0.00	0.00	0.00
14,000.00	90.62	359.97	10,959.73	-7,139.83	3,410.16	42.69	3,410.14	0.00	0.00	0.00
14,100.00	90.62	359.97	10,958.65	-7,138.75	3,510.16	42.64	3,510.13	0.00	0.00	0.00
14,200.00	90.62	359.97	10,957.57	-7,137.67	3,610.15	42.59	3,610.13	0.00	0.00	0.00
14,300.00	90.62	359.97	10,956.49	-7,136.59	3,710.15	42.54	3,710.12	0.00	0.00	0.00
14,400.00	90.62	359.97	10,955.41	-7,135.51	3,810.14	42.49	3,810.12	0.00	0.00	0.00
14,500.00	90.62	359.97	10,954.33	-7,134.43	3,910.13	42.44	3,910.11	0.00	0.00	0.00
14,600.00	90.62	359.97	10,953.25	-7,133.35	4,010.13	42.39	4,010.11	0.00	0.00	0.00
14,700.00	90.62	359.97	10,952.17	-7,132.27	4,110.12	42.34	4,110.10	0.00	0.00	0.00
14,800.00	90.62	359.97	10,951.10	-7,131.20	4,210.12	42.29	4,210.09	0.00	0.00	0.00
14,900.00	90.62	359.97	10,950.02	-7,130.12	4,310.11	42.25	4,310.09	0.00	0.00	0.00
15,000.00	90.62	359.97	10,948.94	-7,129.04	4,410.11	42.20	4,410.08	0.00	0.00	0.00
15,100.00	90.62	359.97	10,947.86	-7,127.96	4,510.10	42.15	4,510.08	0.00	0.00	0.00
15,200.00	90.62	359.97	10,946.78	-7,126.88	4,610.09	42.10	4,610.07	0.00	0.00	0.00
15,300.00	90.62	359.97	10,945.70	-7,125.80	4,710.09	42.05	4,710.07	0.00	0.00	0.00
15,400.00	90.62	359.97	10,944.63	-7,124.73	4,810.08	42.00	4,810.06	0.00	0.00	0.00
15,500.00	90.62	359.97	10,943.55	-7,123.65	4,910.08	41.95	4,910.05	0.00	0.00	0.00
15,600.00	90.62	359.97	10,942.47	-7,122.57	5,010.07	41.90	5,010.05	0.00	0.00	0.00
15,700.00	90.62	359.97	10,941.39	-7,121.49	5,110.06	41.85	5,110.04	0.00	0.00	0.00
15,800.00	90.62	359.97	10,940.32	-7,120.42	5,210.06	41.80	5,210.04	0.00	0.00	0.00
15,900.00	90.62	359.97	10,939.24	-7,119.34	5,310.05	41.76	5,310.03	0.00	0.00	0.00
16,000.00	90.62	359.97	10,938.16	-7,118.26	5,410.05	41.71	5,410.02	0.00	0.00	0.00
100ft SETBACK X-OVER POINT										
16,066.93	90.62	359.97	10,937.44	-7,117.54	5,476.97	41.67	5,476.95	0.00	0.00	0.00
16,100.00	90.62	359.97	10,937.08	-7,117.18	5,510.04	41.66	5,510.02	0.00	0.00	0.00
LTP/BHL *NEW*: 50ft FNL & 660ft FEL of Sec 18										
16,116.92	90.62	359.97	10,936.90	-7,117.00	5,526.96	41.65	5,526.94	0.00	0.00	0.00

Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well HORSESHOE FED COM 502H
Company:	ASCENT ENERGY	TVD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Project:	LEA COUNTY, NEW MEXICO (NAD 83)	MD Reference:	KB 25' @ 3819.90usft (Original Well Elev)
Site:	NE NE SEC. 19 T21S R33E	North Reference:	True
Well:	HORSESHOE FED COM 502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,607.90	1,607.90	Rustler		0.00		
1,962.90	1,962.90	Salado		0.00		
3,390.25	3,389.90	Castille		0.00		
3,536.45	3,535.90	Tansil		0.00		
3,706.69	3,705.90	Yates		0.00		
4,032.13	4,030.90	Capitan Reef		0.00		
5,253.81	5,250.90	Top Delaware Sand		0.00		
5,459.09	5,455.90	Bell Canyon		0.00		
5,765.51	5,761.90	Cherry Canyon		0.00		
7,136.17	7,130.90	Brushy Canyon		0.00		
8,883.17	8,877.90	Bone Spring Lime		0.00		
9,067.17	9,061.90	Avalon		0.00		
10,022.17	10,016.90	1st Bone Spring Sand		0.00		
10,258.17	10,252.90	2nd Bone Spring Carb		0.00		
10,570.28	10,564.90	2nd Bone Spring Sand		0.00		
11,130.74	10,969.90	2nd Bone Spring Landing Target top		0.00		

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 300ft FNL & 705ft FEL of Sec 19
3,000.00	3,000.00	0.00	0.00	START NUDGE (1.5°/100ft BUR)
3,200.00	3,199.91	5.11	1.13	EOB TO 3° INC
6,911.93	6,906.75	194.77	43.20	END OF TANGENT
7,111.93	7,106.66	199.88	44.33	EOD TO VERTICAL
10,517.02	10,511.75	199.88	44.33	KOP (12°/100ft BUR)
10,970.94	10,900.32	399.88	44.23	100ft SETBACK X-OVER POINT
11,272.19	10,989.19	682.51	44.08	HZ LP: 382.63ft FSL & 660ft FEL of Sec 18
16,066.93	10,937.44	5,476.97	41.67	100ft SETBACK X-OVER POINT
16,116.92	10,936.90	5,526.96	41.65	LTP/BHL *NEW*: 50ft FNL & 660ft FEL of Sec 18



H₂S Drilling Operations Plan

- a. All personnel will be trained in H₂S working conditions as required by Onshore Order 6 before drilling out of the surface casing.
- b. Two briefing areas will be established. Each briefing area will be $\geq 150'$ from the wellhead, perpendicular from one another, and easily entered and exited. See H₂S page 5 for more details.
- c. H₂S Safety Equipment/Systems:
 - i. Well Control Equipment
 - Flare line will be $\geq 150'$ from the wellhead and ignited by a flare gun.
 - Beware of SO₂ created by flaring.
 - Choke manifold will have a remotely operated choke.
 - Mud gas separator
 - ii. Protective Equipment for Personnel
 - Every person on site will wear a personal H₂S and SO₂ monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the waist or chest.
 - One self-contained breathing apparatus (SCBA) 30-minute rescue pack will be at each briefing area. Two 30-minute SCBA packs will be stored in the safety trailer.
 - Four work/escape packs will be on the rig floor. Each pack will have a sufficiently long hose to allow unimpaired work activity.
 - Four emergency escape packs will be in the doghouse for emergency evacuation.
 - Hand signals will be used when wearing protective breathing apparatus.
 - Stokes litter or stretcher
 - Two full OSHA compliant body harnesses
 - A 100' long x 5/8" OSHA compliant rope
 - One 20-pound ABC fire extinguisher
 - iii. H₂S Detection & Monitoring Equipment
 - Every person on site will wear a personal H₂S and SO₂ monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the waist or chest.

- A stationary detector with three sensors will be in the doghouse.
- Sensors will be installed on the rig floor, bell nipple, and at the end of the flow line or where drilling fluids are discharged.
- Visual alarm will be triggered at 10 ppm.
- Audible alarm will be triggered at 10 ppm.
- Calibration will occur at least every 30 days. Gas sample tubes will be kept in the safety trailer.

iv. Visual Warning System

- A color-coded H₂S condition sign will be set at each pad entrance.
- Color-coded condition flag will be installed to indicate current H₂S conditions.
- Two wind socks will be installed that will be visible from all sides.

v. Mud Program

- A water based mud with a pH of ≥ 10 will be maintained to control corrosion, H₂S gas returns to the surface, and minimize sulfide stress cracking and embrittlement.
- Drilling mud containing H₂S gas will be degassed at an optimum location for the rig configuration.
- This gas will be piped into the flare system.
- Enough mud additives will be on site to scavenge and/or neutralize H₂S where formation pressures are unknown.

vi. Metallurgy

- All equipment that has the potential to be exposed to H₂S will be suitable for H₂S service.
- Equipment that will meet these metallurgical standards include the drill string, casing, wellhead, BOP assembly, casing head and spool, rotating head, kill lines, choke, choke manifold and lines, valves, mud-gas separators, DST tools, test units, tubing, flanges, and other related equipment (elastomer packings and seals).

vii. Communication from well site

- Cell phones and/or two-way radios will be used to communicate from the well site.

d. A remote-controlled choke, mud-gas separator, and a rotating head will be installed before drilling or testing any formation expected to contain H₂S.

Company Personnel to be Notified

Dean Gimbel, Vice President Completions	Office: (720) 710-8995 Mobile: (303) 945-1323
Matt Ward, Chief Operations Officer	Mobile: (303) 506-6647
Ascent Emergency Contact Number	(303) 281-9951

Local & County Agencies

Monument Fire Department	911 or (575) 393-4339
Hobbs Fire Marshal	(575) 391-8185
Lea County Sheriff (Lovington)	911 or (575) 396-3611
Lea County Emergency Management (Lovington)	(575) 396-8602
Lea Regional Medical Center Hospital (Hobbs)	(575) 492-5000

State Agencies

NM State Police (Hobbs)	(575) 392-5588
NM Oil Conservation (Hobbs)	(575) 370-3186
NM Oil Conservation (Santa Fe)	(505) 476-3440
NM Dept. of Transportation (Roswell)	(575) 637-7201

Federal Agencies

BLM Carlsbad Field Office	(575) 234-5972
BLM Hobbs Field Station	(575) 393-3612
National Response Center	(800) 424-8802
US EPA Region 6 (Dallas)	(800) 887-6063 (214) 665-6444

Veterinarians

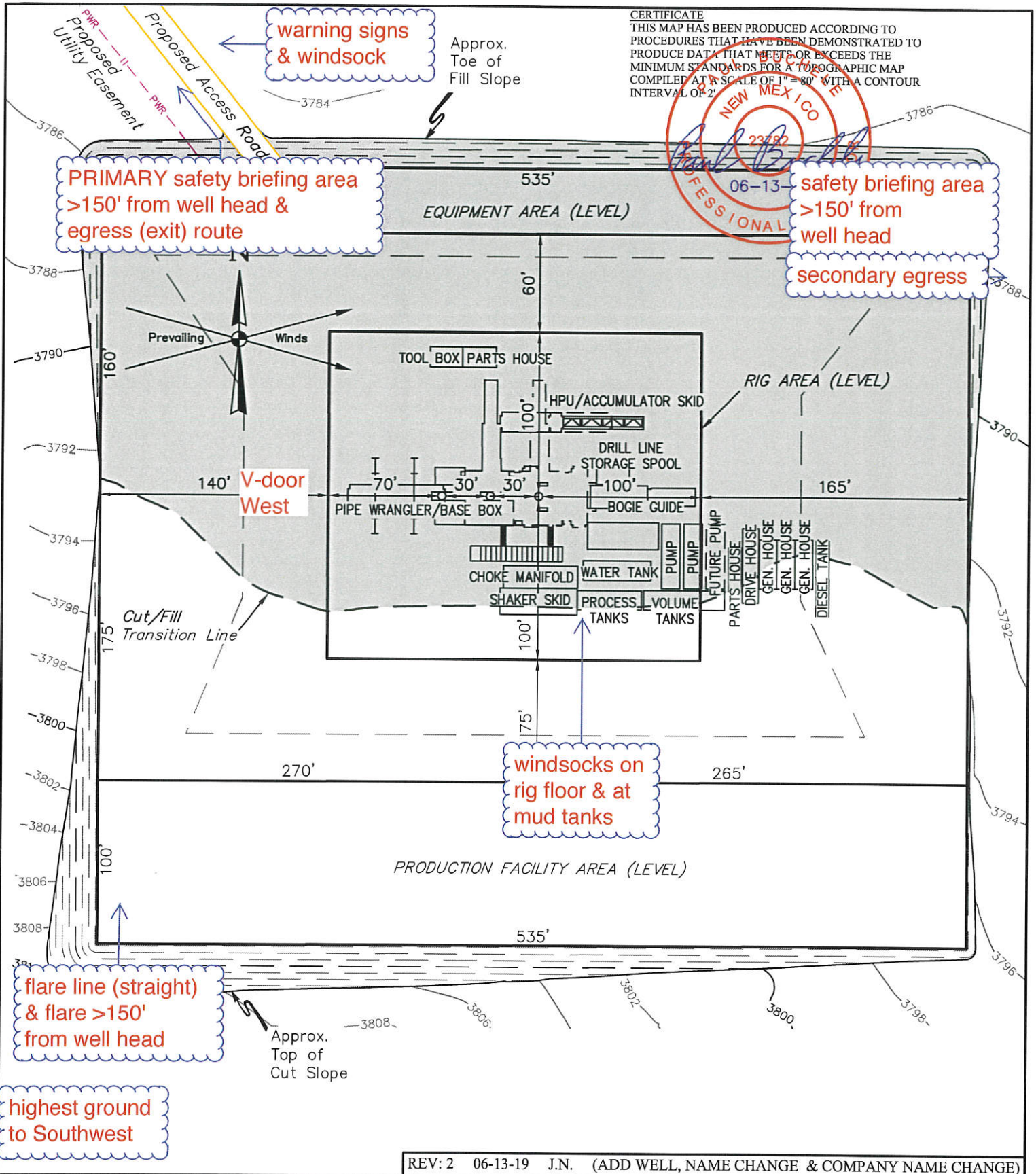
Dal Paso Animal Hospital (Hobbs)	(575) 397-2286
Hobbs Animal Clinic & Pet Care (Hobbs)	(575) 392-5563
Great Plains Veterinary Clinic & Hospital (Hobbs)	(575) 392-5513

Residents within 2 miles

No residents are within 2 miles.

Air Evacuation

Med Flight Air Ambulance (Albuquerque)	(800) 842-4431
Lifeguard (Albuquerque)	(888) 866-7256



NOTES:
• Contours shown at 2' intervals.

ASCENT ENERGY

HORSESHOE FED COM 502H, 602H & 702H
NE 1/4 NE 1/4, SECTION 19, T21S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	09-06-18	SCALE
DRAWN BY	J.N.	03-26-18	1" = 80'
TYPICAL RIG LAYOUT		FIGURE #3	



UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

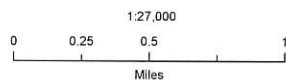
Ascent Energy

Horseshoe Federal Com
502H
H2S Contingency Plan:
Radius Map

Section 19, Township 21S, Range 33E
Lea County, New Mexico



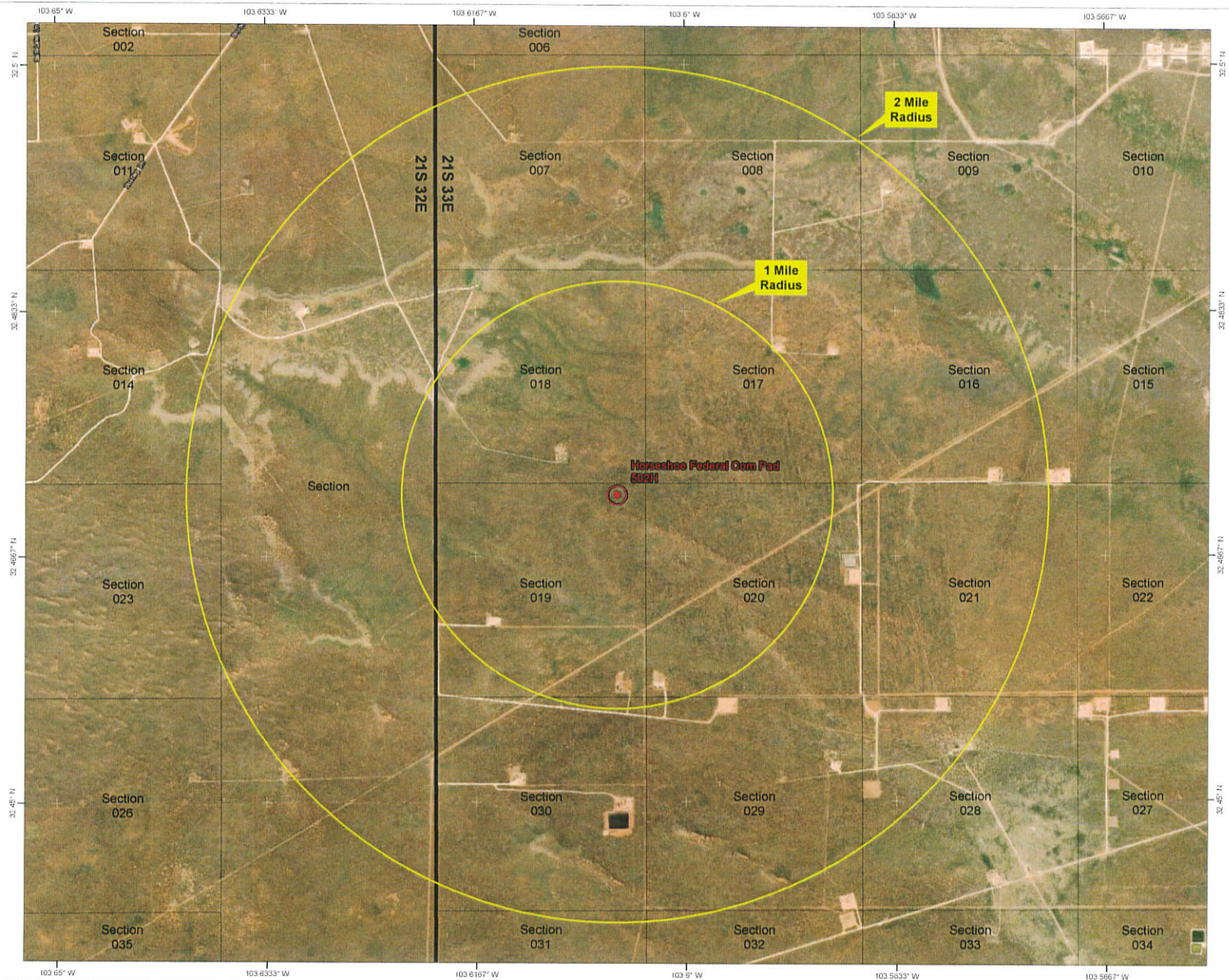
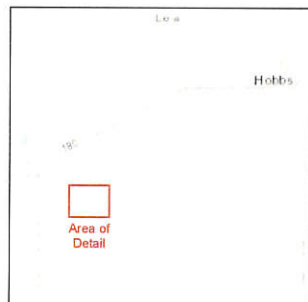
Proposed SHL

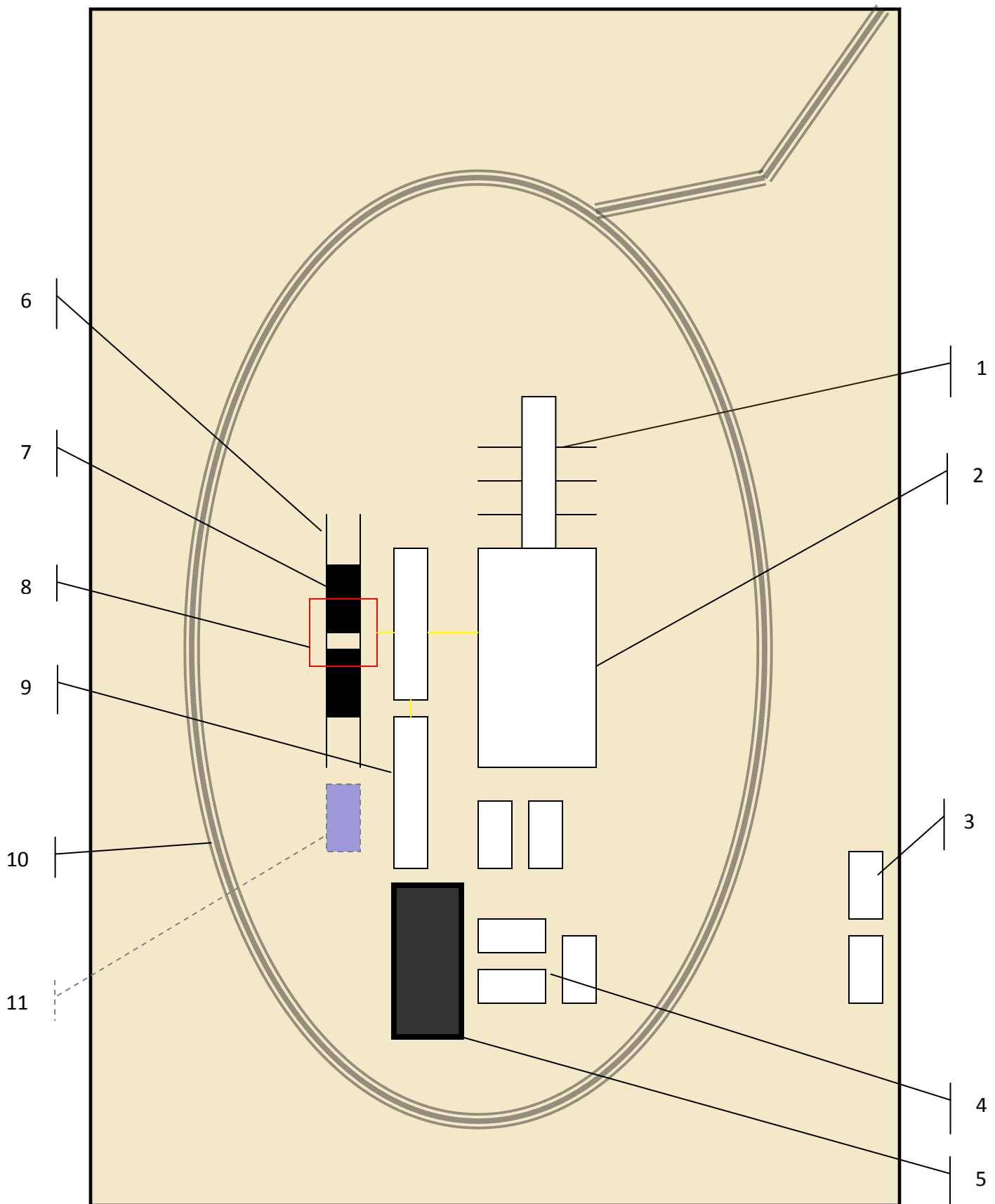


NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



Prepared by Permits West, Inc., September 23, 2019
for Lime Rock Resources





Schematic Closed Loop Drilling Rig*

1. Pipe Rack
2. Drill Rig
3. House Trailers/ Offices
4. Generator/Fuel/Storage
5. Overflow-Frac Tank
6. Skids
7. Roll Offs
8. Hopper or Centrifuge
9. Mud Tanks
10. Loop Drive
11. Generator (only for use with centrifuge)

*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available

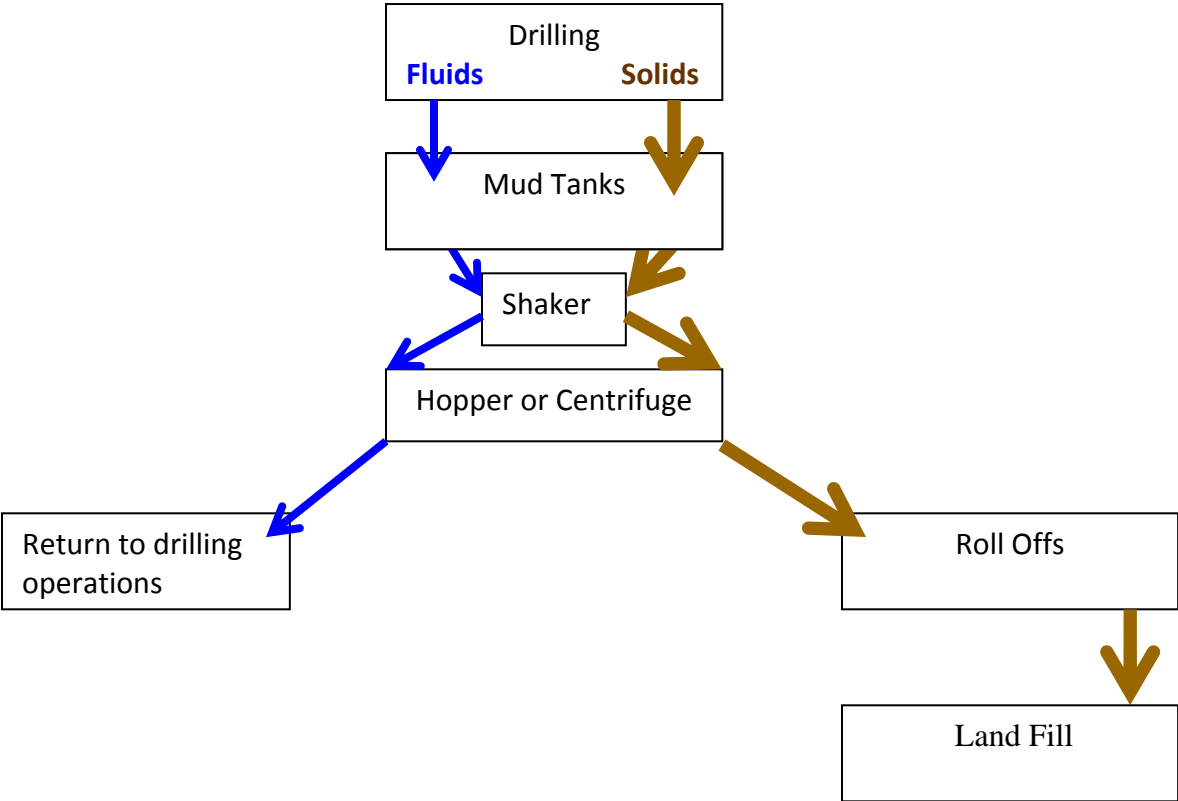


Above: Centrifugal Closed Loop System



Closed Loop Drilling System: Mud tanks to right (1)
Hopper in air to settle out solids (2)
Water return pipe (3)
Shaker between hopper and mud tanks (4)
Roll offs on skids (5)

Flow Chart for Drilling Fluids and Solids



District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

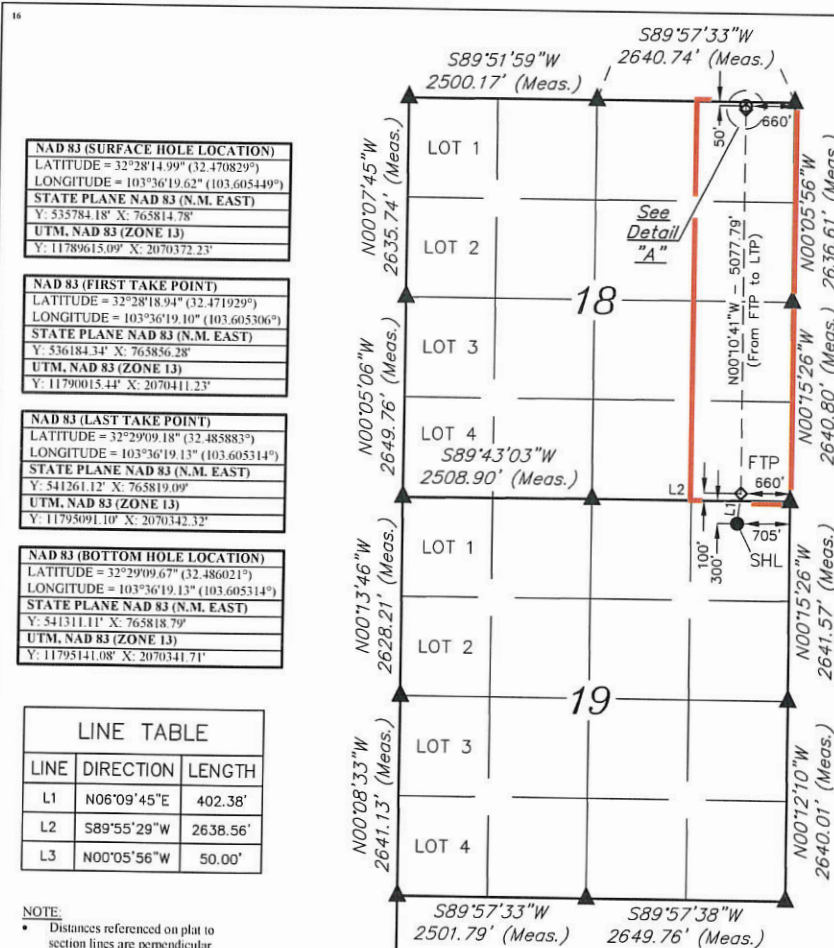
WELL LOCATION AND ACREAGE DEDICATION PLAT

30-025- ^{API Number} 47269		97895 WC-025 G-08 S213304D; BONE SPRING
⁴ Property Code 327861	⁵ Property Name HORSESHOE FED COM	
325830	ASCENT ENERGY, LLC	
		⁶ Well Number 502H
		⁹ Elevation 3793.1'

10 Surface Location									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	19	21S	33E		300	NORTH	705	EAST	LEA

11 Bottom Hole Location If Different From Surface									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	18	21S	33E		50	NORTH	660	EAST	LEA
12 Dedicated Acres 160		13 Joint or Infill		14 Consolidation Code C		15 Order No.			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



NAD 83 (SURFACE HOLE LOCATION)	
LATITUDE = 32°28'14.99" (32.470829°)	
LONGITUDE = 103°36'19.62" (103.605449°)	
STATE PLANE NAD 83 (N.M. EAST)	
Y: 535784.18' X: 765814.78'	
UTM, NAD 83 (ZONE 13)	
Y: 11789615.09' X: 2070372.23'	

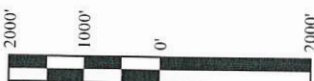
NAD 83 (FIRST TAKE POINT)	
LATITUDE = 32°28'18.94" (32.471929°)	
LONGITUDE = 103°36'19.10" (103.605306°)	
STATE PLANE NAD 83 (N.M. EAST)	
Y: 536184.34' X: 765856.28'	
UTM, NAD 83 (ZONE 13)	
Y: 11790015.44' X: 2070411.23'	

NAD 83 (LAST TAKE POINT)	
LATITUDE = 32°29'09.18" (32.485883°)	
LONGITUDE = 103°36'19.13" (103.605314°)	
STATE PLANE NAD 83 (N.M. EAST)	
Y: 541261.12' X: 765819.09'	
UTM, NAD 83 (ZONE 13)	
Y: 11795091.10' X: 2070342.32'	

NAD 83 (BOTTOM HOLE LOCATION)	
LATITUDE = 32°29'09.67" (32.486021°)	
LONGITUDE = 103°36'19.13" (103.605314°)	
STATE PLANE NAD 83 (N.M. EAST)	
Y: 541311.11' X: 765818.79'	
UTM, NAD 83 (ZONE 13)	
Y: 11795141.08' X: 2070341.71'	

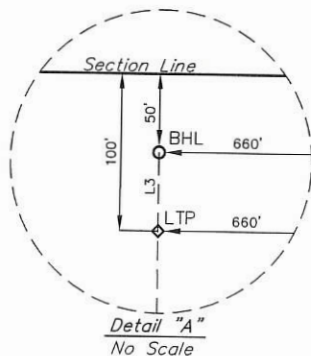
LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N06°09'45"E	402.38'
L2	S89°55'29"W	2638.56'
L3	N00°05'56"W	50.00'

- NOTE:
- Distances referenced on plat to section lines are perpendicular.
 - Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W 103°53'00"
- = SURFACE HOLE LOCATION
◇ = FTP/LTP
○ = BOTTOM HOLE LOCATION
▲ = SECTION CORNER LOCATED



DRAWN BY: J.N. 06-13-19

REV: I 09-30-19 L.C.W. (BHL CHANGE)



17 OPERATOR
CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature *Brian Wood* Date 10-5-19

Printed Name Brian Wood

E-mail Address

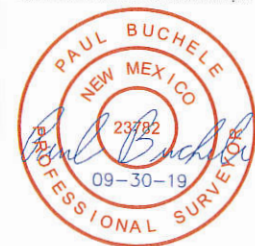
brian@permitswest.com
(505) 466-8120

18 SURVEYOR
CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

February 26, 2018

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number:

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 10-5-19

X Original

☐ Amended - Reason for Amendment: _____

Operator & OGRID No.: Ascent Energy, LLC (325830)

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Horseshoe Fed Com 502H	30-025- 47269	A-19-21s-33e	300' FNL & 705' FEL	160	≈30 days	flare until well clean, then connect

Gathering System and Pipeline Notification

Well will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. Gas produced from this production facility has not yet been dedicated. One possible outlet is a Versado Gas Processors, LLC (159160) line in K-19-21s-33e, ≈0.85 mile southwest of the Horseshoe pad. Operator will provide (periodically) to Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Operator and Gas Transporter will have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Gas Transporter Processing Plant at an as yet undetermined location. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system ultimately can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines