Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM129263

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
HORSESHOE FED COM
601H 327861

2. Name of Operator
ASCENT ENERGY LLC 325830

9. API Well No. **30-025-47056**

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory 97895
1621 18th Street, Suite 200 Denver CO 80202	(720)710-8999	WC-025 G-08 S213304D; BONE SPRING

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWNE / 300 FNL / 1995 FEL / LAT 32.470834 / LONG -103.609632
At proposed prod. zone NWNE / 100 FNL / 2310 FEL / LAT 32.485892 / LONG -103.610664

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 19 / T21S / R33E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
59.3 miles	LEA	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
100 feet	160	160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
30 feet	11800 feet / 17212 feet	FED: NMB001471

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3806 feet	12/01/2019	30 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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Sarah Ferreyros / Ph: (720)499-1454	12/06/2018

Title
Sr. Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	03/30/2020

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

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 03/31/2020

SL

APPROVED WITH CONDITIONS

KZ
04/06/2020

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 03/30/2020

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

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

WELL NAME & NO.:	601H – HORSESHOE FED COM
SURFACE HOLE FOOTAGE:	300'/N & 1995'/E
BOTTOM HOLE FOOTAGE	100'/N & 2310'/E

WELL NAME & NO.:	602H – HORSESHOE FED COM
SURFACE HOLE FOOTAGE:	300'/N & 675'/E
BOTTOM HOLE FOOTAGE	100'/N & 990'/E

COA

H2S	◉ Yes	○ No	
Potash	○ None	○ Secretary	◉ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Cave/Karst Potential	○ Critical		
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☑ 4 String Area	☑ Capitan Reef	☑ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ 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 **WIPP Areas** cement must come to surface on the first three casing strings.

- ❖ 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 **7-5/8** inch 2nd intermediate casing shall be set at approximately **5265** feet. The minimum required fill of cement behind the **7-5/8** 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.

   c. 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.

   d. Second stage above DV tool:

   - 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.**

4. The minimum required fill of cement behind the **5-1/2** inch production 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.

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 intergrity 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 intergrity 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.

NMK11282019

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

03/30/2020

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Brian Wood **Signed on:** 12/06/2018

Title: President

Street Address: 37 Verano Looop

City: Santa Fe **State:** NM **Zip:** 87508

Phone: (505)466-8120

Email address: afmss@permitswest.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

APD ID: 10400036873 **Submission Date:** 12/06/2018

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

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Section 1 - General

APD ID: 10400036873 **Tie to previous NOS?** N **Submission Date:** 12/06/2018

BLM Office: CARLSBAD **User:** Brian Wood **Title:** President

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM129263 **Lease Acres:** 160

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** ASCENT ENERGY LLC

Operator letter of designation:

Operator Info

Operator Organization Name: ASCENT ENERGY LLC

Operator Address: 1621 18th Street, Suite 200 **Zip:** 80202

Operator PO Box:

Operator City: Denver **State:** CO

Operator Phone: (720)710-8999

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Master Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: HORSESHOE FED COM **Well Number:** 601H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** WC-025 G-08 S213304D; BONE SPRING **Pool Name:** BONE SPRING

Is the proposed well in an area containing other mineral resources? POTASH

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Is the proposed well in an area containing other mineral resources? POTASH

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** NO **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** HORSESHOE WEST **Number:** 601H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 59.3 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 100 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: HS_601H_C102_GCP_20191024093217.pdf

Well work start Date: 12/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 23782 **Reference Datum:**

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	300	FNL	1995	FEL	21S	33E	19	Aliquot NWNE	32.470834	-103.609632	LEA	NEW MEXICO	NEW MEXICO	S	STATE	3806	0	0	
KOP Leg #1	100	FSL	2310	FEL	21S	33E	18	Aliquot SWSE	32.471934	-103.610655	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-7421	11237	11227	
PPP Leg #1-1	100	FSL	2310	FEL	21S	33E	18	Aliquot SWSE	32.471934	-103.610655	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-7421	11237	11227	

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
EXIT Leg #1	100	FNL	2310	FEL	21S	33E	18	Aliquot NWNE	32.485892	-103.610664	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 129263	-7994	17212	11800	
BHL Leg #1	100	FNL	2310	FEL	21S	33E	18	Aliquot NWNE	32.485892	-103.610664	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 129263	-7994	17212	11800	

APD ID: 10400036873 **Submission Date:** 12/06/2018

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

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Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
567481	QUATERNARY	3806	0	0		NONE	N
352037	RUSTLER	-1620	1620	1620	SANDSTONE	NONE	N
565368	SALADO	-1975	1975	1975	SALT	NONE	N
565369	BASE OF SALT	-3406	3406	3406		NONE	N
560521	TANSILL	-3552	3552	3552	DOLOMITE	NONE	N
565370	YATES	-3718	3718	3719		NONE	N
352050	CAPITAN REEF	-4043	4043	4044	OTHER : Carbonate	USEABLE WATER	N
565371	DELAWARE	-5263	5263	5266	SANDSTONE	NATURAL GAS, OIL	N
352052	CHERRY CANYON	-5774	5774	5778	SANDSTONE	NATURAL GAS, OIL	N
352053	BRUSHY CANYON	-7143	7143	7148	SANDSTONE	NATURAL GAS, OIL	N
352054	BONE SPRING LIME	-8890	8890	8898	OTHER : Carbonate	NATURAL GAS, OIL	N
352055	AVALON SAND	-9074	9074	9082	SHALE	CO2, NATURAL GAS, OIL	N
352056	FIRST BONE SPRING SAND	-10027	10027	10036	SANDSTONE	NATURAL GAS, OIL	N
352057	BONE SPRING 2ND	-10259	10259	10269	OTHER, SHALE : Carbonate	NATURAL GAS, OIL	N
565372	BONE SPRING 2ND	-10577	10577	10587	SANDSTONE	NATURAL GAS, OIL	N
565373	BONE SPRING 3RD	-11112	11112	11122	OTHER : Carbonate	NATURAL GAS, OIL	N
352058	BONE SPRING 3RD	-11590	11590	11631	SANDSTONE	NATURAL GAS, OIL	Y

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 15000

Equipment: A 15,000' a 5,000 psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and 1 annular preventer will be used below surface casing to TD. See attachments for BOP and choke manifold diagrams. Also present will be an accumulator that meets the requirements of Onshore Order #2 for the pressure rating of the BOP stack. A rotating head will also be installed as needed. BOP will be inspected and operated as recommended in Onshore Order #2. A top drive check valve and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position. The wellhead will be a multi-bowl speed head.

Requesting Variance? YES

Variance request: Ascent requests a variance to run a multi-bowl speed head for setting the Intermediate 1, Intermediate 2, and Production Strings. Ascent requests a variance to drill this well using a co-flex line between the BOP and choke manifold (instead of the 4" OD steel line). Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Ascent requests a variance to have the option of batch drilling this well with other wells on the same pad. In the event that this well is batch drilled, after drilling surface, 1st intermediate, and 2nd intermediate hole sections and cementing 2nd intermediate casing, a 10M dry hole cap with bleed off valve will be installed. The rig will then walk to another well on the pad. When the rig returns to this well and BOPs are installed, the operator will perform a full BOP test. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A hydraulically operated choke will be installed prior to drilling out of the intermediate casing shoe.

Testing Procedure: After surface casing is set and the BOP is nipped up, the BOP pressure tests will be made with a third party tester to 250 psi low, 5000 psi high, and the annular preventer will be tested to 2,500 psi. The BOP will be tested in this manner after nipple-up if any break of the stack occurs as wells as every 30 days.

Choke Diagram Attachment:

HS_601H_BOP_Choke_20191020130917.pdf

BOP Diagram Attachment:

HS_601H_BOP_Choke_20191020130925.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	CONDUCTOR	30	20.0	NEW	API	N	0	80	0	80	3806	3687	80	OTHER	52.78	OTHER - Weld						
2	SURFACE	17.5	13.375	NEW	API	N	0	1650	0	1650	3806	2007	1650	J-55	54.5	ST&C	1.4	2.89	DRY	1.8	DRY	2
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3600	0	3600	3806	-1393	3600	J-55	40	LT&C	1.4	1.7	DRY	1.8	DRY	2

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

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	INTERMEDIATE	8.75	7.625	NEW	API	N	0	5273	0	5270	-1393	-7420	5273	HCP-110	29.7	OTHER - EZGO FJ3	3.12	3	DRY	1.8	DRY	2
5	PRODUCTION	6.75	5.5	NEW	API	N	0	17169	0	11800	-7420	-7993	17169	HCP-110	20	OTHER - EZGO FJ3	2.1	1.2	DRY	1.3	DRY	2.28

Casing Attachments

Casing ID: 1 **String Type:** CONDUCTOR

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing ID: 2 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Horseshoe_Casing_Design_Assumptions_20191021145417.pdf

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Horseshoe_Casing_Design_Assumptions_20191021145406.pdf

Casing ID: 4 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

7.625_EZGO_Casing_Spec_20191017132322.pdf

Horseshoe_Casing_Design_Assumptions_20191021145324.pdf

Casing ID: 5 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

5.5in_EZGO_Casing_Spec_20191017132747.pdf

Horseshoe_Casing_Design_Assumptions_20191021145348.pdf

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
CONDUCTOR	Lead		0	80	220	1.49	12.9	327		Grout	Bentonite 4% BWOC, Cellophane #/sx, CaCl2 2% BWOC.
SURFACE	Lead		0	1130	905	1.73	13.5	1568	100	Class C HALCEM System	4% Bentonite
SURFACE	Tail		1130	1650	550	1.33	14.8	722	100	Class C HALCEM System	None
INTERMEDIATE	Lead		0	2600	695	1.73	12.7	1627	100	Class C HALCEM System	4% Bentonite
INTERMEDIATE	Tail		2600	3600	485	1.33	14.8	626	100	Class C HALCEM System	None
INTERMEDIATE	Lead		0	3950	220	2.04	12.7	593	50	Class C EconoCem HLC	5% Salt + 3% Microbond + 3 lbm/sk Kol-Seal + 0.3% HR-800
INTERMEDIATE	Tail		3950	5270	155	1.37	14.8	200	50	Class C HALCEM System	3% Microbond
PRODUCTION	Lead		0	9400	625	2.89	11	975	25	Class H NeoCem PL	3% Microbond
PRODUCTION	Tail		9400	17169	1670	1.47	13.2	806	25	Class H NeoCem PT	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: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the wellsite at all times.

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

Circulating Medium Table

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

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	1650	OTHER : Fresh water	8.4	9.6							
1650	3600	OTHER : Brine water	10	10							
5273	17169	OTHER : Cut brine/gel	8.5	9.3							
3600	5273	OTHER : Fresh water	8.4	8.6							

Section 6 - Test, Logging, Coring

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

Electric Logging Program: No open-hole logs are planned at this time for the pilot hole. GR will be collected while drilling through the MWD tools from 9.625” casing shoe to TD. A 2-person mud logging program will be used from 9.625” casing shoe to TD.

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

GR

Coring operation description for the well:

- No DSTs or cores are planned at this time.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6900 **Anticipated Surface Pressure:** 4304

Anticipated Bottom Hole Temperature(F): 170

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

HS_601H_H2S_Plan_20191017135107.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

HORSESHOE_FED_COM_601H_Plan_20181130151101.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Horseshoe_Fed_Com_601H_Gas_Capture_Plan_20181205131217.pdf
HS_601H_CoFlex_Certs_20191017135507.pdf
HS_601H_Speedhead_Specs_20191017135521.pdf
HS_601H_Drill_Plan_20191021154918.pdf

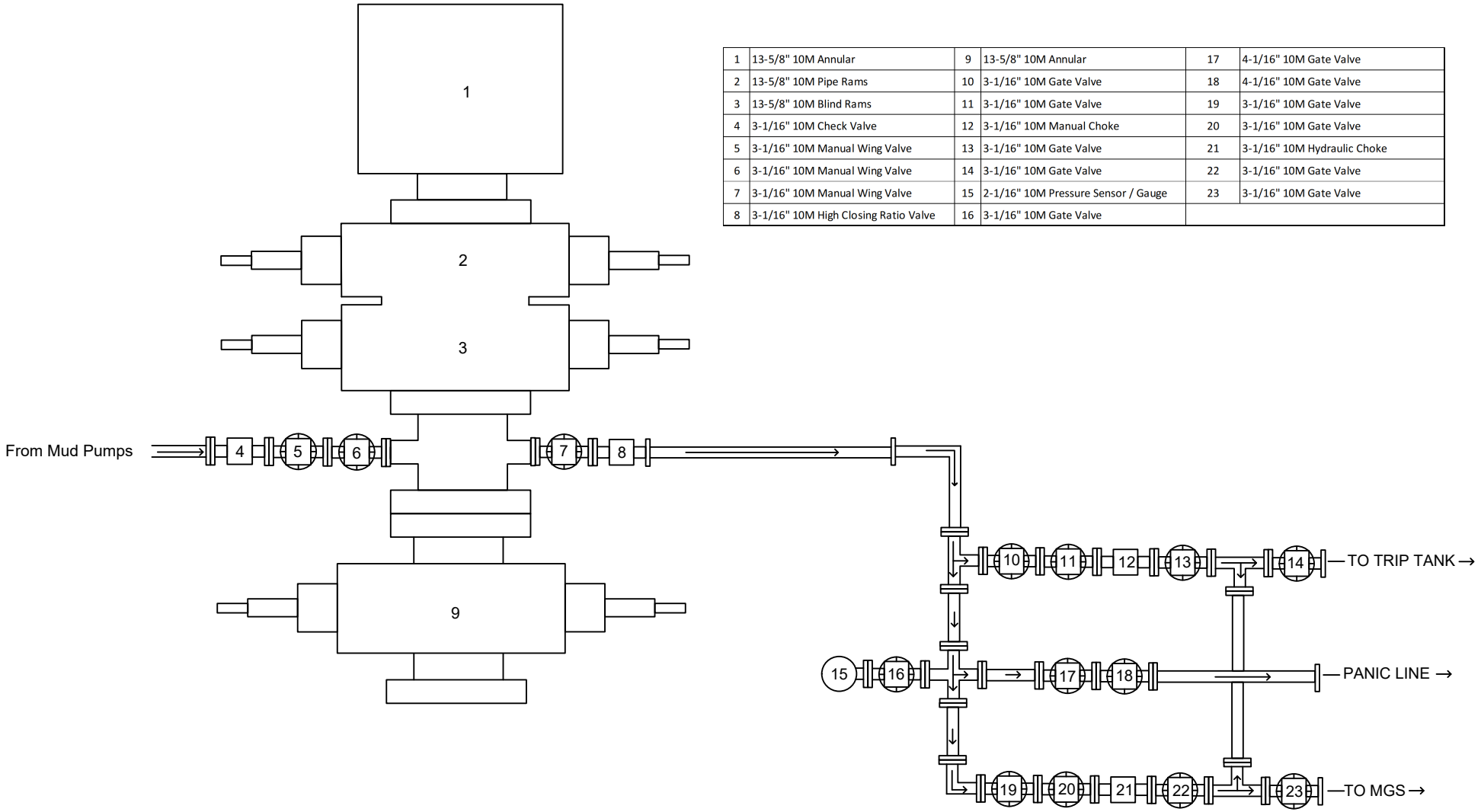
Other Variance attachment:

HS_601H_Casing_Cementing_Variance_20191021145931.pdf
HS_601_Surface_Rig_Variance_20191021145940.pdf

ASCENT ENERGY - NABORS X04

BOPE & CHOKE MANIFOLD DIAGRAM

1	13-5/8" 10M Annular	9	13-5/8" 10M Annular	17	4-1/16" 10M Gate Valve
2	13-5/8" 10M Pipe Rams	10	3-1/16" 10M Gate Valve	18	4-1/16" 10M Gate Valve
3	13-5/8" 10M Blind Rams	11	3-1/16" 10M Gate Valve	19	3-1/16" 10M Gate Valve
4	3-1/16" 10M Check Valve	12	3-1/16" 10M Manual Choke	20	3-1/16" 10M Gate Valve
5	3-1/16" 10M Manual Wing Valve	13	3-1/16" 10M Gate Valve	21	3-1/16" 10M Hydraulic Choke
6	3-1/16" 10M Manual Wing Valve	14	3-1/16" 10M Gate Valve	22	3-1/16" 10M Gate Valve
7	3-1/16" 10M Manual Wing Valve	15	2-1/16" 10M Pressure Sensor / Gauge	23	3-1/16" 10M Gate Valve
8	3-1/16" 10M High Closing Ratio Valve	16	3-1/16" 10M Gate Valve		



ASCENT ENERGY - NABORS X04

BOPE & CHOKE MANIFOLD DIAGRAM

1	13-5/8" 10M Annular	9	13-5/8" 10M Annular	17	4-1/16" 10M Gate Valve
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4	3-1/16" 10M Check Valve	12	3-1/16" 10M Manual Choke	20	3-1/16" 10M Gate Valve
5	3-1/16" 10M Manual Wing Valve	13	3-1/16" 10M Gate Valve	21	3-1/16" 10M Hydraulic Choke
6	3-1/16" 10M Manual Wing Valve	14	3-1/16" 10M Gate Valve	22	3-1/16" 10M Gate Valve
7	3-1/16" 10M Manual Wing Valve	15	2-1/16" 10M Pressure Sensor / Gauge	23	3-1/16" 10M Gate Valve
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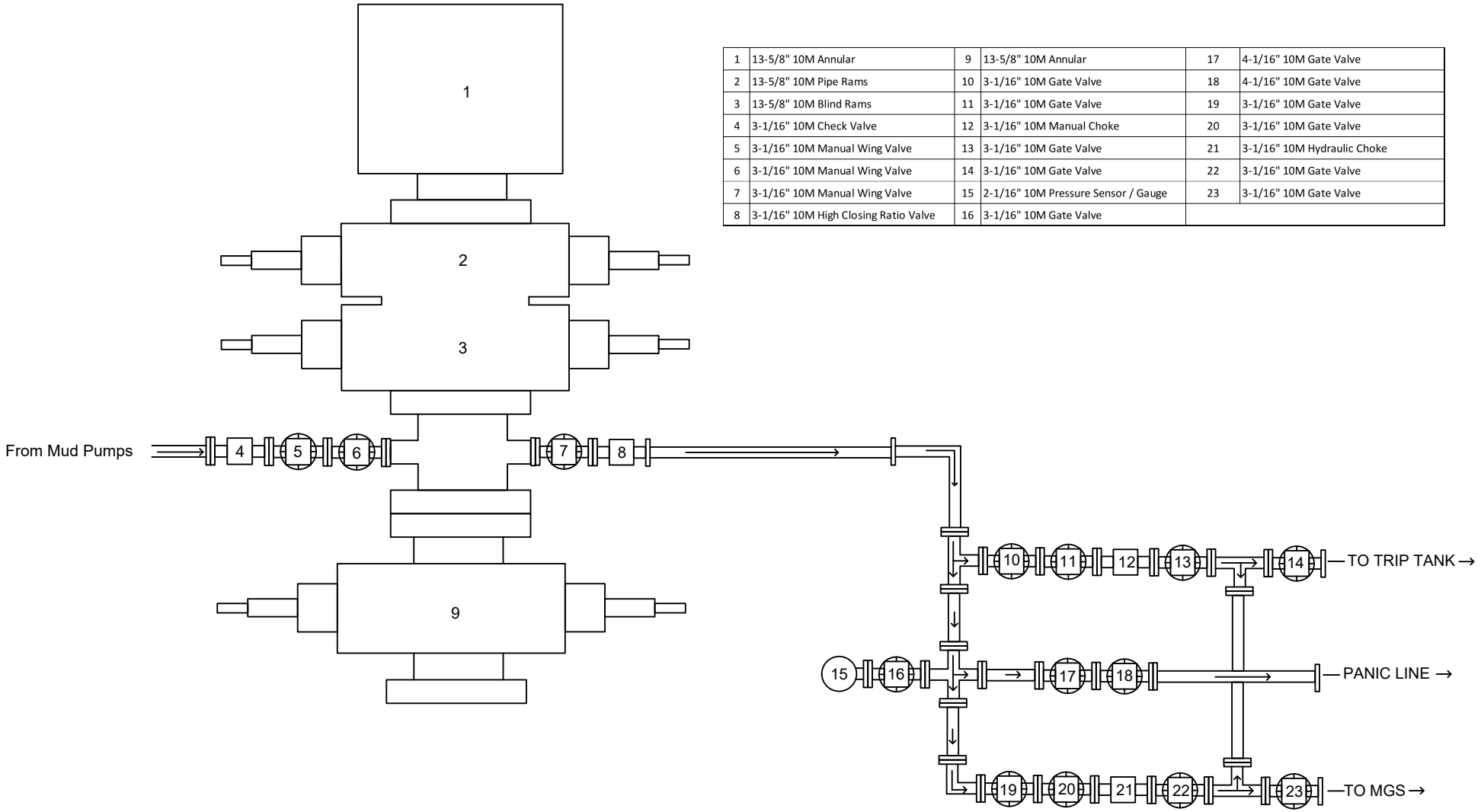


Casing Design Assumptions

- Gas Gradient 0.11 – For all strings
- Frac Gradient 0.7 – For all strings
- 1.5°/ 100ft temperature gradient
- Collapse designed with fully evacuated pipe in mind
- Gas kicks assumed at each shoe
- Strings landed at neutral weight
- Cementing loads based on slurries listed in cement table
- Production string burst designed with frac treating pressures in mind of 8500 psi

Casing Design Assumptions

- Gas Gradient 0.11 – For all strings
- Frac Gradient 0.7 – For all strings
- 1.5°/ 100ft temperature gradient
- Collapse designed with fully evacuated pipe in mind
- Gas kicks assumed at each shoe
- Strings landed at neutral weight
- Cementing loads based on slurries listed in cement table
- Production string burst designed with frac treating pressures in mind of 8500 psi

EZGO™ Connection Data Sheet

Your Requirements

Pipe Size (OD): **7.625 in** | Weight: **29.7 lb/ft** | Grade: **P-110 HC** | Connection: **EZGO™ FJ3**

Material	
Grade	P110 HC
Minimum Yield Strength	125,000 psi
Minimum Ultimate Strength	135,000 psi

Pipe Dimensions	
Nominal OD	7.625 in
Nominal ID	6.875 in
Nominal Wall Thickness	0.375 in
Nominal Weight	29.7 lbs/ft
Plain End Weight	29.06 lbs/ft
Nominal Pipe Body Area	8.541 sq in

Pipe Body Performance	
Minimum Pipe Body Yield Strength	1,069,000 lbs
Minimum Collapse Pressure	7,360 psi
Minimum Internal Yield Pressure	10,760 psi
Hydrostatic Test Pressure	9,800 psi

Torque Values	
Minimum Final Torque	4,600 ft-lbs
Maximum Final Torque	6,000 ft-lbs

EZGO™ Connection Dimensions	
Connection OD	7.625 in
Connection ID	6.782 in
Connection Drift Diameter	6.750 in
Make-Up Loss	4.39 in
Joint Efficiency	65.0 %

EZGO™ Connection Performance	
Joint Strength	694,000 lbs
Compression Rating	416,000 lbs
Collapse Pressure Rating	7,360 psi
Internal Pressure Resistance	10,760 psi
Maximum Uniaxial Bend Rating	29.3°/100 ft
String Length (1.4 Design Factor)	17,060 ft

Casing Design Assumptions

- Gas Gradient 0.11 – For all strings
- Frac Gradient 0.7 – For all strings
- 1.5°/ 100ft temperature gradient
- Collapse designed with fully evacuated pipe in mind
- Gas kicks assumed at each shoe
- Strings landed at neutral weight
- Cementing loads based on slurries listed in cement table
- Production string burst designed with frac treating pressures in mind of 8500 psi

EZGO™ Connection Data Sheet

Your Requirements

Pipe Size (OD): **5.50 in** Weight: **20 lb/ft** Grade: **P110 HC** Connection: **EZGO™ FJ3**

Material	
Grade	P-110 HC
Minimum Yield Strength	125,000 psi
Minimum Ultimate Strength	135,000 psi

Pipe Dimensions	
Nominal OD	5.5 in
Nominal ID	4.778 in
Nominal Wall Thickness	0.361 in
Nominal Weight	20.00 lbs/ft
Plain End Weight	19.83 lbs/ft
Nominal Pipe Body Area	5.828 sq in

Pipe Body Performance	
Minimum Pipe Body Yield Strength	729,000 lbs
Minimum Collapse Pressure	12,090 psi
Minimum Internal Yield Pressure	14,360 psi
Hydrostatic Test Pressure	13,100 psi

Torque Values	
Minimum Final Torque	2,400 ft-lbs
Maximum Final Torque	3,700 ft-lbs

EZGO™ Connection Dimensions	
Connection OD	5.50 in
Connection ID	4.708 in
Connection Drift Diameter	4.653 in
Make-Up Loss	4.64 in
Joint Efficiency	59 %

EZGO™ Connection Performance	
Joint Strength	430,000 lbs
Compression Rating	258,000 lbs
Collapse Pressure Rating	12,090 psi
Internal Pressure Resistance	14,360 psi
Maximum Uniaxial Bend Rating	36°/100 ft

Casing Design Assumptions

- Gas Gradient 0.11 – For all strings
- Frac Gradient 0.7 – For all strings
- 1.5°/ 100ft temperature gradient
- Collapse designed with fully evacuated pipe in mind
- Gas kicks assumed at each shoe
- Strings landed at neutral weight
- Cementing loads based on slurries listed in cement table
- Production string burst designed with frac treating pressures in mind of 8500 psi

ASCENT ENERGY

H_2S Drilling Operations Plan

a. All personnel will be trained in H_2S 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 ≥150' from the wellhead, perpendicular from one another, and easily entered and exited. See H_2S page 5 for more details.

c. H_2S Safety Equipment/Systems:

i. Well Control Equipment

- Flare line will be ≥150' from the wellhead and ignited by a flare gun.
- Beware of SO_2 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 H_2S and SO_2 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. H_2S Detection & Monitoring Equipment

- Every person on site will wear a personal H_2S and SO_2 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 H_2S condition sign will be set at each pad entrance.
- Color-coded condition flag will be installed to indicate current H_2S 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 $\geq$10 will be maintained to control corrosion, H_2S gas returns to the surface, and minimize sulfide stress cracking and embrittlement.
- Drilling mud containing H_2S 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 H_2S where formation pressures are unknown.

vi. Metallurgy

- All equipment that has the potential to be exposed to H_2S will be suitable for H_2S 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 H_2S.

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

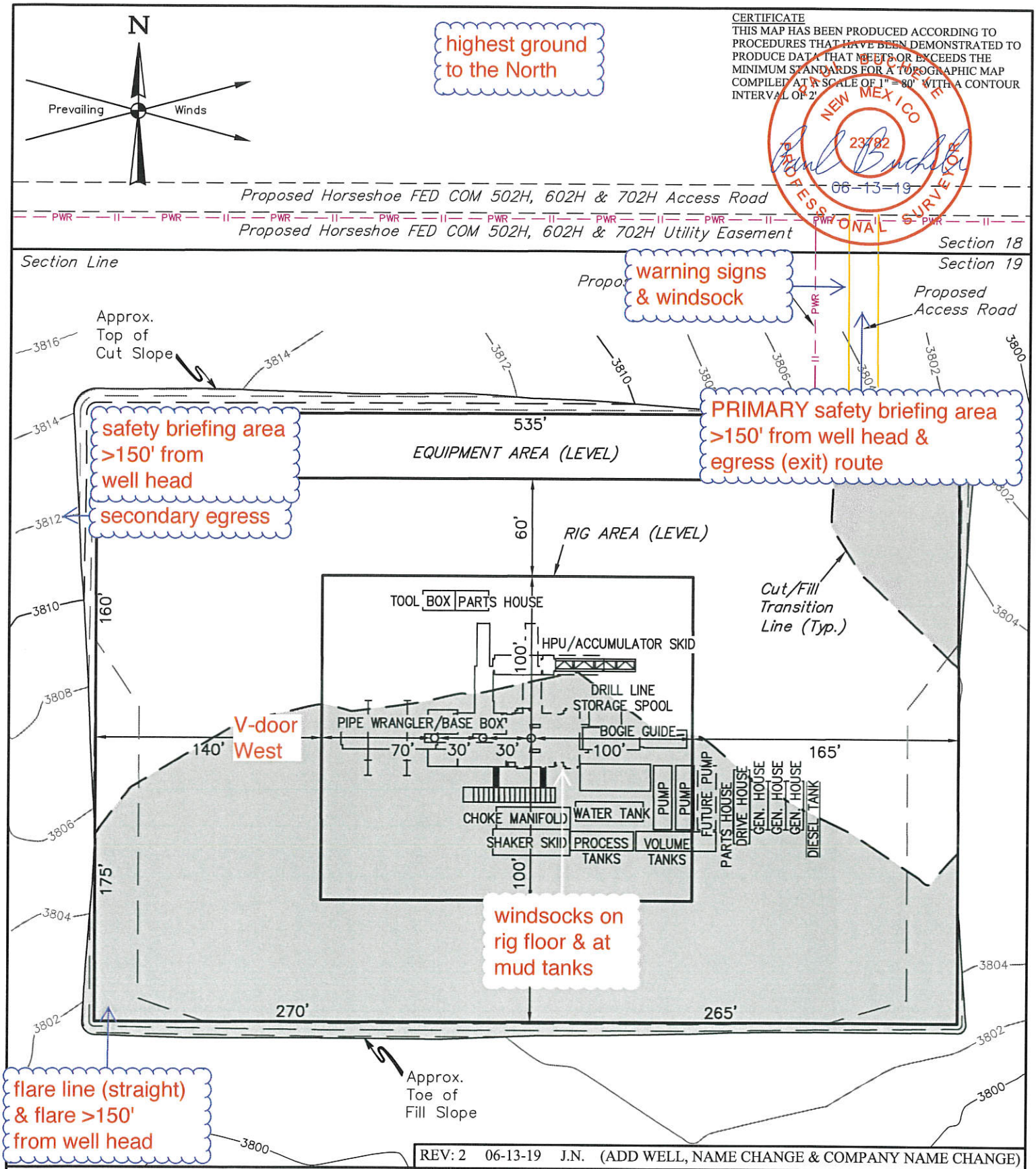
Dal Paso Animal Hospital (Hobbs)	(575) 397-2286
Hobbs Animal Clinic & Pet Care (Hobbs)	(575) 392-5563
Great Plains Veterinary Clinic & Hospital (Hobbs)	(575) 392-5513

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



REV: 2	06-13-19	J.N.	(ADD WELL, NAME CHANGE & COMPANY NAME CHANGE)

NOTES:

- Contours shown at 2' intervals.

ASCENT ENERGY

HORSESHOE FED COM 501H, 601H & 701H
NW 1/4 NE 1/4, SECTION 19, T21S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

UINTAH ENGINEERING & LAND SURVEYING

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

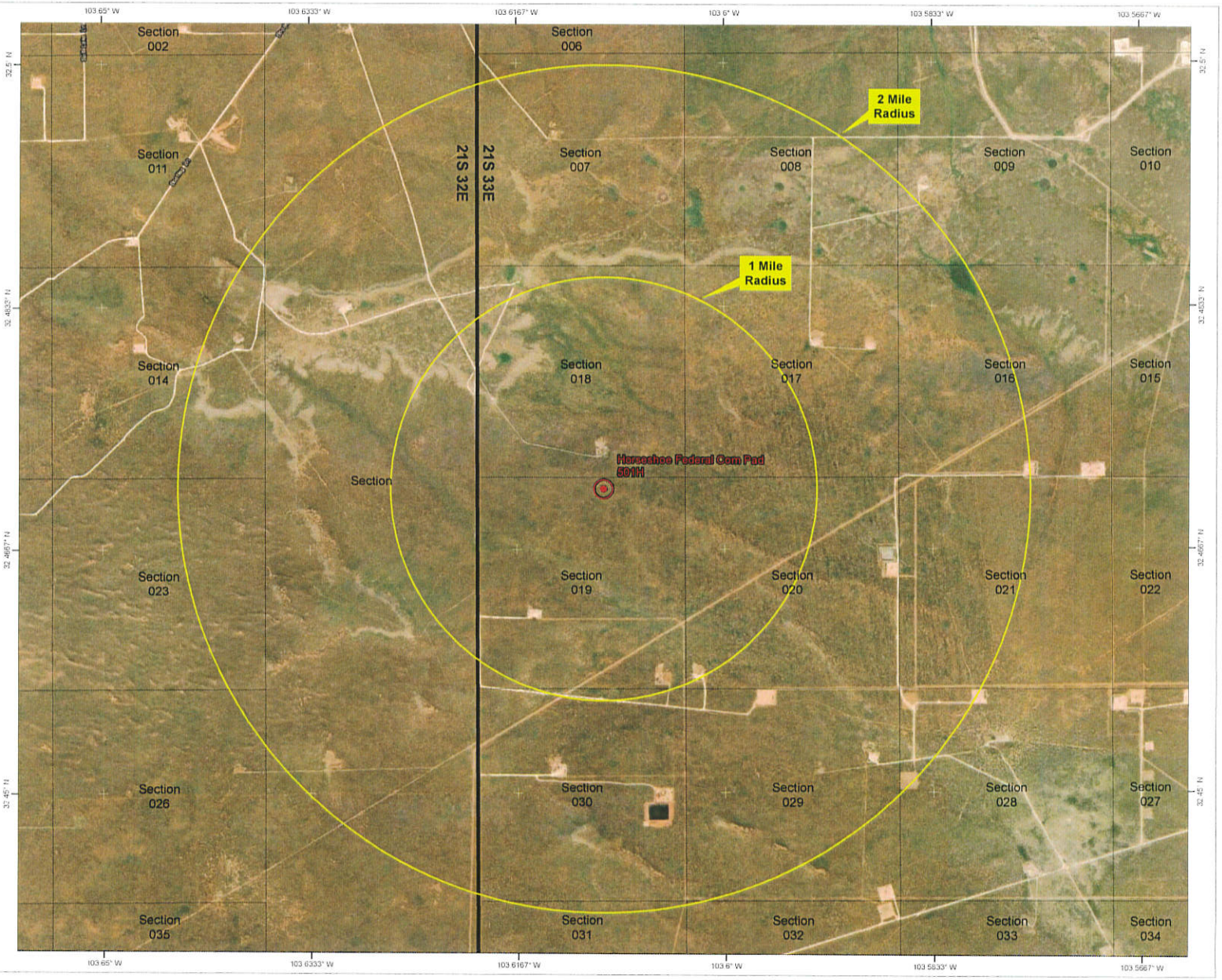
SURVEYED BY	R.C., M.D.	09-06-18	SCALE
DRAWN BY	C.D.	03-28-18	1" = 80'

TYPICAL RIG LAYOUT | **FIGURE #3**

Ascent Energy

Horseshoe Federal Com
501H
H2S Contingency Plan:
Radius Map

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



Proposed SHL

1:27,000

0 0.25 0.5 1

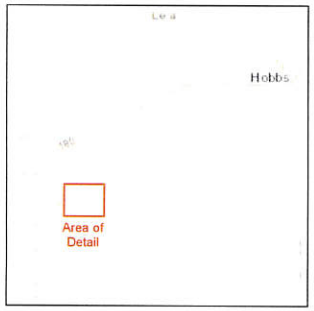
Miles

N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST, Inc.

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



CENTENNIAL
RESOURCE DEVELOPMENT, INC

New Mexico

LEA
HORSESHOE
HORSESHOE FED COM 601H

HORSESHOE FED COM 601H

Plan: PWP0

Standard Survey Report

26 October, 2018

Company:	New Mexico	**Local Co-ordinate Reference:**	Well HORSESHOE FED COM 601H
Project:	LEA	**TVD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Site:	HORSESHOE	**MD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Well:	HORSESHOE FED COM 601H	**North Reference:**	True
Wellbore:	HORSESHOE FED COM 601H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Project LEA

Map System:	Universal Transverse Mercator (US Survey Feet)	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site HORSESHOE

Site Position:		**Northing:**	11,249,335.16 usft	**Latitude:**	30° 59' 18.404 N
From:	Map	**Easting:**	1,308,106.99 usft	**Longitude:**	106° 3' 38.987 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.55 °

Well HORSESHOE FED COM 601H

Well Position	**+N/-S**	0.0 usft	**Northing:**	11,789,599.88 usft	**Latitude:**	32° 28' 15.002 N
	+E/-W	0.0 usft	**Easting:**	2,069,082.71 usft	**Longitude:**	103° 36' 34.674 W
Position Uncertainty		3.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,806.9 usft

Wellbore HORSESHOE FED COM 601H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	7.79	60.46	48,963.65317134

Design PWP0

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	356.67

Survey Tool Program **Date** 10/26/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	17,212.4	PWP0 (HORSESHOE FED COM 601H)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00

Company:	New Mexico	**Local Co-ordinate Reference:**	Well HORSESHOE FED COM 601H
Project:	LEA	**TVD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Site:	HORSESHOE	**MD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Well:	HORSESHOE FED COM 601H	**North Reference:**	True
Wellbore:	HORSESHOE FED COM 601H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	1.00	243.00	3,100.0	-0.4	-0.8	-0.4	1.00	1.00	0.00
3,200.0	2.00	243.00	3,200.0	-1.6	-3.1	-1.4	1.00	1.00	0.00
3,300.0	3.00	243.00	3,299.9	-3.6	-7.0	-3.2	1.00	1.00	0.00
3,400.0	3.00	243.00	3,399.7	-5.9	-11.7	-5.3	0.00	0.00	0.00
3,500.0	3.00	243.00	3,499.6	-8.3	-16.3	-7.4	0.00	0.00	0.00
3,600.0	3.00	243.00	3,599.5	-10.7	-21.0	-9.5	0.00	0.00	0.00
3,700.0	3.00	243.00	3,699.3	-13.1	-25.6	-11.6	0.00	0.00	0.00
3,800.0	3.00	243.00	3,799.2	-15.4	-30.3	-13.7	0.00	0.00	0.00
3,900.0	3.00	243.00	3,899.0	-17.8	-35.0	-15.8	0.00	0.00	0.00
4,000.0	3.00	243.00	3,998.9	-20.2	-39.6	-17.9	0.00	0.00	0.00
4,100.0	3.00	243.00	4,098.8	-22.6	-44.3	-20.0	0.00	0.00	0.00
4,200.0	3.00	243.00	4,198.6	-24.9	-49.0	-22.1	0.00	0.00	0.00
4,300.0	3.00	243.00	4,298.5	-27.3	-53.6	-24.2	0.00	0.00	0.00
4,400.0	3.00	243.00	4,398.4	-29.7	-58.3	-26.3	0.00	0.00	0.00
4,500.0	3.00	243.00	4,498.2	-32.1	-63.0	-28.4	0.00	0.00	0.00
4,600.0	3.00	243.00	4,598.1	-34.5	-67.6	-30.5	0.00	0.00	0.00
4,700.0	3.00	243.00	4,697.9	-36.8	-72.3	-32.6	0.00	0.00	0.00
4,800.0	3.00	243.00	4,797.8	-39.2	-76.9	-34.7	0.00	0.00	0.00
4,900.0	3.00	243.00	4,897.7	-41.6	-81.6	-36.8	0.00	0.00	0.00
5,000.0	3.00	243.00	4,997.5	-44.0	-86.3	-38.9	0.00	0.00	0.00
5,100.0	3.00	243.00	5,097.4	-46.3	-90.9	-41.0	0.00	0.00	0.00
5,200.0	3.00	243.00	5,197.3	-48.7	-95.6	-43.1	0.00	0.00	0.00
5,300.0	3.00	243.00	5,297.1	-51.1	-100.3	-45.2	0.00	0.00	0.00

Company:	New Mexico	**Local Co-ordinate Reference:**	Well HORSESHOE FED COM 601H
Project:	LEA	**TVD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Site:	HORSESHOE	**MD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Well:	HORSESHOE FED COM 601H	**North Reference:**	True
Wellbore:	HORSESHOE FED COM 601H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.0	3.00	243.00	5,397.0	-53.5	-104.9	-47.3	0.00	0.00	0.00
5,500.0	3.00	243.00	5,496.8	-55.8	-109.6	-49.4	0.00	0.00	0.00
5,600.0	3.00	243.00	5,596.7	-58.2	-114.2	-51.5	0.00	0.00	0.00
5,700.0	3.00	243.00	5,696.6	-60.6	-118.9	-53.6	0.00	0.00	0.00
5,800.0	3.00	243.00	5,796.4	-63.0	-123.6	-55.7	0.00	0.00	0.00
5,900.0	3.00	243.00	5,896.3	-65.3	-128.2	-57.8	0.00	0.00	0.00
6,000.0	3.00	243.00	5,996.2	-67.7	-132.9	-59.9	0.00	0.00	0.00
6,100.0	3.00	243.00	6,096.0	-70.1	-137.6	-62.0	0.00	0.00	0.00
6,200.0	3.00	243.00	6,195.9	-72.5	-142.2	-64.1	0.00	0.00	0.00
6,300.0	3.00	243.00	6,295.8	-74.8	-146.9	-66.2	0.00	0.00	0.00
6,400.0	3.00	243.00	6,395.6	-77.2	-151.6	-68.3	0.00	0.00	0.00
6,500.0	3.00	243.00	6,495.5	-79.6	-156.2	-70.4	0.00	0.00	0.00
6,600.0	3.00	243.00	6,595.3	-82.0	-160.9	-72.5	0.00	0.00	0.00
6,700.0	3.00	243.00	6,695.2	-84.3	-165.5	-74.6	0.00	0.00	0.00
6,800.0	3.00	243.00	6,795.1	-86.7	-170.2	-76.7	0.00	0.00	0.00
6,900.0	3.00	243.00	6,894.9	-89.1	-174.9	-78.8	0.00	0.00	0.00
7,000.0	3.00	243.00	6,994.8	-91.5	-179.5	-80.9	0.00	0.00	0.00
7,100.0	3.00	243.00	7,094.7	-93.9	-184.2	-83.0	0.00	0.00	0.00
7,200.0	3.00	243.00	7,194.5	-96.2	-188.9	-85.1	0.00	0.00	0.00
7,300.0	3.00	243.00	7,294.4	-98.6	-193.5	-87.2	0.00	0.00	0.00
7,400.0	3.00	243.00	7,394.2	-101.0	-198.2	-89.3	0.00	0.00	0.00
7,500.0	3.00	243.00	7,494.1	-103.4	-202.8	-91.4	0.00	0.00	0.00
7,600.0	3.00	243.00	7,594.0	-105.7	-207.5	-93.5	0.00	0.00	0.00
7,700.0	3.00	243.00	7,693.8	-108.1	-212.2	-95.6	0.00	0.00	0.00
7,800.0	3.00	243.00	7,793.7	-110.5	-216.8	-97.7	0.00	0.00	0.00
7,900.0	3.00	243.00	7,893.6	-112.9	-221.5	-99.8	0.00	0.00	0.00
8,000.0	3.00	243.00	7,993.4	-115.2	-226.2	-101.9	0.00	0.00	0.00
8,100.0	3.00	243.00	8,093.3	-117.6	-230.8	-104.0	0.00	0.00	0.00
8,200.0	3.00	243.00	8,193.1	-120.0	-235.5	-106.1	0.00	0.00	0.00
8,300.0	3.00	243.00	8,293.0	-122.4	-240.2	-108.2	0.00	0.00	0.00
8,400.0	3.00	243.00	8,392.9	-124.7	-244.8	-110.3	0.00	0.00	0.00
8,500.0	3.00	243.00	8,492.7	-127.1	-249.5	-112.4	0.00	0.00	0.00
8,600.0	3.00	243.00	8,592.6	-129.5	-254.1	-114.5	0.00	0.00	0.00
8,700.0	3.00	243.00	8,692.5	-131.9	-258.8	-116.6	0.00	0.00	0.00
8,800.0	3.00	243.00	8,792.3	-134.2	-263.5	-118.7	0.00	0.00	0.00
8,900.0	3.00	243.00	8,892.2	-136.6	-268.1	-120.8	0.00	0.00	0.00
9,000.0	3.00	243.00	8,992.1	-139.0	-272.8	-122.9	0.00	0.00	0.00
9,100.0	3.00	243.00	9,091.9	-141.4	-277.5	-125.0	0.00	0.00	0.00
9,200.0	3.00	243.00	9,191.8	-143.7	-282.1	-127.1	0.00	0.00	0.00
9,300.0	3.00	243.00	9,291.6	-146.1	-286.8	-129.2	0.00	0.00	0.00
9,400.0	3.00	243.00	9,391.5	-148.5	-291.4	-131.3	0.00	0.00	0.00
9,500.0	3.00	243.00	9,491.4	-150.9	-296.1	-133.4	0.00	0.00	0.00
9,600.0	3.00	243.00	9,591.2	-153.3	-300.8	-135.5	0.00	0.00	0.00

Company:	New Mexico	**Local Co-ordinate Reference:**	Well HORSESHOE FED COM 601H
Project:	LEA	**TVD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Site:	HORSESHOE	**MD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Well:	HORSESHOE FED COM 601H	**North Reference:**	True
Wellbore:	HORSESHOE FED COM 601H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,700.0	3.00	243.00	9,691.1	-155.6	-305.4	-137.6	0.00	0.00	0.00
9,800.0	3.00	243.00	9,791.0	-158.0	-310.1	-139.7	0.00	0.00	0.00
9,900.0	3.00	243.00	9,890.8	-160.4	-314.8	-141.8	0.00	0.00	0.00
10,000.0	3.00	243.00	9,990.7	-162.8	-319.4	-143.9	0.00	0.00	0.00
10,100.0	3.00	243.00	10,090.5	-165.1	-324.1	-146.0	0.00	0.00	0.00
10,200.0	3.00	243.00	10,190.4	-167.5	-328.8	-148.1	0.00	0.00	0.00
10,300.0	2.00	243.00	10,290.3	-169.5	-332.6	-149.9	1.00	-1.00	0.00
10,400.0	1.00	243.00	10,390.3	-170.7	-335.0	-151.0	1.00	-1.00	0.00
10,500.0	0.00	0.00	10,490.3	-171.1	-335.8	-151.3	1.00	-1.00	0.00
10,600.0	0.00	0.00	10,590.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
10,700.0	0.00	0.00	10,690.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
10,800.0	0.00	0.00	10,790.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
10,900.0	0.00	0.00	10,890.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
11,000.0	0.00	0.00	10,990.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
11,100.0	0.00	0.00	11,090.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
11,200.0	0.00	0.00	11,190.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
11,237.0	0.00	0.00	11,227.3	-171.1	-335.8	-151.3	0.00	0.00	0.00
11,300.0	6.30	0.18	11,290.1	-167.6	-335.7	-147.8	10.00	10.00	0.00
11,400.0	16.31	0.18	11,388.1	-148.0	-335.7	-128.3	10.00	10.00	0.00
11,500.0	26.31	0.18	11,481.1	-111.7	-335.6	-92.1	10.00	10.00	0.00
11,600.0	36.31	0.18	11,566.4	-59.8	-335.4	-40.3	10.00	10.00	0.00
11,700.0	46.32	0.18	11,641.5	6.1	-335.2	25.5	10.00	10.00	0.00
11,800.0	56.32	0.18	11,703.9	84.1	-334.9	103.4	10.00	10.00	0.00
11,900.0	66.33	0.18	11,751.8	171.7	-334.7	190.8	10.00	10.00	0.00
12,000.0	76.33	0.18	11,783.8	266.3	-334.4	285.3	10.00	10.00	0.00
12,100.0	86.33	0.18	11,798.8	365.0	-334.1	383.8	10.00	10.00	0.00
12,136.6	90.00	0.18	11,800.0	401.7	-334.0	420.4	10.00	10.00	0.00
12,200.0	90.00	0.18	11,800.0	465.0	-333.8	483.6	0.00	0.00	0.00
12,210.4	90.00	0.18	11,800.0	475.5	-333.7	494.0	0.00	0.00	0.00
12,300.0	90.00	0.18	11,800.0	565.0	-333.4	583.4	0.00	0.00	0.00
12,400.0	90.00	0.18	11,800.0	665.0	-333.1	683.2	0.00	0.00	0.00
12,500.0	90.00	0.18	11,800.0	765.0	-332.8	783.0	0.00	0.00	0.00
12,600.0	90.00	0.18	11,800.0	865.0	-332.5	882.8	0.00	0.00	0.00
12,700.0	90.00	0.18	11,800.0	965.0	-332.2	982.7	0.00	0.00	0.00
12,800.0	90.00	0.18	11,800.0	1,065.0	-331.9	1,082.5	0.00	0.00	0.00
12,900.0	90.00	0.18	11,800.0	1,165.0	-331.6	1,182.3	0.00	0.00	0.00
13,000.0	90.00	0.18	11,800.0	1,265.0	-331.2	1,282.1	0.00	0.00	0.00
13,100.0	90.00	0.18	11,800.0	1,365.0	-330.9	1,381.9	0.00	0.00	0.00
13,200.0	90.00	0.18	11,800.0	1,465.0	-330.6	1,481.7	0.00	0.00	0.00
13,300.0	90.00	0.18	11,800.0	1,565.0	-330.3	1,581.5	0.00	0.00	0.00
13,400.0	90.00	0.18	11,800.0	1,665.0	-330.0	1,681.3	0.00	0.00	0.00
13,500.0	90.00	0.18	11,800.0	1,765.0	-329.7	1,781.2	0.00	0.00	0.00
13,600.0	90.00	0.18	11,800.0	1,865.0	-329.4	1,881.0	0.00	0.00	0.00

Company:	New Mexico	**Local Co-ordinate Reference:**	Well HORSESHOE FED COM 601H
Project:	LEA	**TVD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Site:	HORSESHOE	**MD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Well:	HORSESHOE FED COM 601H	**North Reference:**	True
Wellbore:	HORSESHOE FED COM 601H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,700.0	90.00	0.18	11,800.0	1,965.0	-329.0	1,980.8	0.00	0.00	0.00
13,800.0	90.00	0.18	11,800.0	2,065.0	-328.7	2,080.6	0.00	0.00	0.00
13,900.0	90.00	0.18	11,800.0	2,165.0	-328.4	2,180.4	0.00	0.00	0.00
14,000.0	90.00	0.18	11,800.0	2,265.0	-328.1	2,280.2	0.00	0.00	0.00
14,100.0	90.00	0.18	11,800.0	2,365.0	-327.8	2,380.0	0.00	0.00	0.00
14,200.0	90.00	0.18	11,800.0	2,465.0	-327.5	2,479.9	0.00	0.00	0.00
14,300.0	90.00	0.18	11,800.0	2,565.0	-327.2	2,579.7	0.00	0.00	0.00
14,400.0	90.00	0.18	11,800.0	2,665.0	-326.8	2,679.5	0.00	0.00	0.00
14,500.0	90.00	0.18	11,800.0	2,765.0	-326.5	2,779.3	0.00	0.00	0.00
14,600.0	90.00	0.18	11,800.0	2,865.0	-326.2	2,879.1	0.00	0.00	0.00
14,700.0	90.00	0.18	11,800.0	2,965.0	-325.9	2,978.9	0.00	0.00	0.00
14,800.0	90.00	0.18	11,800.0	3,065.0	-325.6	3,078.7	0.00	0.00	0.00
14,900.0	90.00	0.18	11,800.0	3,165.0	-325.3	3,178.5	0.00	0.00	0.00
15,000.0	90.00	0.18	11,800.0	3,265.0	-325.0	3,278.4	0.00	0.00	0.00
15,100.0	90.00	0.18	11,800.0	3,365.0	-324.6	3,378.2	0.00	0.00	0.00
15,200.0	90.00	0.18	11,800.0	3,465.0	-324.3	3,478.0	0.00	0.00	0.00
15,300.0	90.00	0.18	11,800.0	3,565.0	-324.0	3,577.8	0.00	0.00	0.00
15,400.0	90.00	0.18	11,800.0	3,665.0	-323.7	3,677.6	0.00	0.00	0.00
15,500.0	90.00	0.18	11,800.0	3,765.0	-323.4	3,777.4	0.00	0.00	0.00
15,600.0	90.00	0.18	11,800.0	3,865.0	-323.1	3,877.2	0.00	0.00	0.00
15,700.0	90.00	0.18	11,800.0	3,965.0	-322.8	3,977.0	0.00	0.00	0.00
15,800.0	90.00	0.18	11,800.0	4,065.0	-322.4	4,076.9	0.00	0.00	0.00
15,900.0	90.00	0.18	11,800.0	4,165.0	-322.1	4,176.7	0.00	0.00	0.00
16,000.0	90.00	0.18	11,800.0	4,265.0	-321.8	4,276.5	0.00	0.00	0.00
16,100.0	90.00	0.18	11,800.0	4,365.0	-321.5	4,376.3	0.00	0.00	0.00
16,200.0	90.00	0.18	11,800.0	4,465.0	-321.2	4,476.1	0.00	0.00	0.00
16,300.0	90.00	0.18	11,800.0	4,565.0	-320.9	4,575.9	0.00	0.00	0.00
16,400.0	90.00	0.18	11,800.0	4,665.0	-320.6	4,675.7	0.00	0.00	0.00
16,500.0	90.00	0.18	11,800.0	4,765.0	-320.2	4,775.5	0.00	0.00	0.00
16,600.0	90.00	0.18	11,800.0	4,865.0	-319.9	4,875.4	0.00	0.00	0.00
16,700.0	90.00	0.18	11,800.0	4,965.0	-319.6	4,975.2	0.00	0.00	0.00
16,800.0	90.00	0.18	11,800.0	5,065.0	-319.3	5,075.0	0.00	0.00	0.00
16,900.0	90.00	0.18	11,800.0	5,165.0	-319.0	5,174.8	0.00	0.00	0.00
17,000.0	90.00	0.18	11,800.0	5,265.0	-318.7	5,274.6	0.00	0.00	0.00
17,100.0	90.00	0.18	11,800.0	5,365.0	-318.4	5,374.4	0.00	0.00	0.00
17,200.0	90.00	0.18	11,800.0	5,465.0	-318.0	5,474.2	0.00	0.00	0.00
17,212.4	90.00	0.18	11,800.0	5,477.4	-318.4	5,486.6	0.00	0.00	0.00

Company:	New Mexico	**Local Co-ordinate Reference:**	Well HORSESHOE FED COM 601H
Project:	LEA	**TVD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Site:	HORSESHOE	**MD Reference:**	RKB=3806.9+25 @ 3831.9usft (HP 650)
Well:	HORSESHOE FED COM 601H	**North Reference:**	True
Wellbore:	HORSESHOE FED COM 601H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP - HORSESHOE FE	0.00	0.39	11,800.0	400.3	-315.6	11,789,996.02	2,068,761.87	32° 28' 18.964 N	103° 36' 38.359 W
- plan misses target center by 18.3usft at 12135.3usft MD (11800.0 TVD, 400.3 N, -334.0 E)									
- Circle (radius 50.0)									
LTP/BHL - HORSESHOI	0.00	0.39	11,800.0	5,477.4	-318.4	11,795,072.66	2,068,692.97	32° 29' 9.210 N	103° 36' 38.391 W
- plan hits target center									
- Point									
Interp @ 11800.0 (HORS	0.00	0.00	11,800.0	401.7	-334.0	11,789,997.15	2,068,743.55	32° 28' 18.977 N	103° 36' 38.572 W
- plan hits target center									
- Point									

Checked By: _____ Approved By: _____ Date: _____

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: 12/05/2018

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: Centennial Resource Production, LLC 372165

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete 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	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Horseshoe Fed Com 601H	Pending	B-19-21S-33E	300 FNL & 1995 FEL	2500MCF/D	Neither	New Well
Horseshoe Fed Com 701H	Pending	B-19-21S-33E	300 FNL & 1965 FEL	2500MCF/D	Neither	New Well

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated Lucid Energy Group low/high pressure gathering system located in Lea County, New Mexico. It will require 0' of pipeline to connect the facility to low/high pressure gathering system. Centennial Resource Production, LLC provides (periodically) to Lucid Energy Group a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Centennial Resource Production, LLC and Lucid Energy Group have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Red Hills Plant located in Sec. 13, Twn. 24S, Rng. 33E, Lea County, New Mexico. 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 Lucid Energy Group system at that time. Based on current information, it is Centennial Resource Production, LLC's belief the system 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

APD ID: 10400036873 **Submission Date:** 12/06/2018

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM **Well Number:** 601H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

03/30/2020

APD ID: 10400036873

Submission Date: 12/06/2018

Operator Name: ASCENT ENERGY LLC

Well Name: HORSESHOE FED COM

Well Number: 601H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001471

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: