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

HOBBS OCD
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RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM050346

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.
SOMBRERO [illegible]
401H (32[illegible])

2. Name of Operator
CENTENNIAL RESOURCE PRODUCTION LLC (372165)

9. API Well No.
30-025-[illegible]

3a. Address
1001 17th Street, Suite 1800 Denver CO 80202

3b. Phone No. *(include area code)*
(720)499-1400

10. Field and Pool, or Exploratory (97895)
[illegible]SSELL / W[illegible]5 G-08 S213304D; BO

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SESW / 700 FSL / 1825 FWL / LAT 32.488092 / LONG -103.613926
At proposed prod. zone SESW / 100 FSL / 2310 FWL / LAT 32.471934 / LONG -103.61[illegible]364

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 7 / [illegible]R33E / NMP

14. Distance in miles and direction from nearest town or post office*
33 miles

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
700 feet

16. No of acres in lease
151.49

17. Spacing Unit dedicated to this well

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
30 feet

19. Proposed Depth
11650 [illegible]40 feet

20. BLM/BIA Bond No. in file
FED: NMB001496

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3901 feet

22. Approximate date work will start*
05/[illegible]8020

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.
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)	Kanicia Schlichting / Ph: (720)499-1537	06/25/2018

Title
Sr. Regulatory Analyst

Approved by (Signature)	Name *(Printed/Typed)*	Date
(Electronic Submission)	Christopher Walls / Ph: (575)234-2234	01/06/2020

Title	Office
Petroleum Engineer	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.

OCD Rec 01/09/2020

APPROVED WITH CONDITIONS

KS 01/13/2020

Approval Date: 01/06/2020

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(Continued on page 2)

*(Instructions on page 2)

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Centennial Resource Production, LLC**
LEASE NO.:	**NMNM-050346**
WELL NAME & NO.:	**Sombrero Fed Com 401H**
SURFACE HOLE FOOTAGE:	**0700' FSL & 1825' FWL**
BOTTOM HOLE FOOTAGE	**0100' FSL & 2310' FWL Sec. 18, T. 21 S., R 33 E.**
LOCATION:	**Section 07, T. 21 S., R 33 E., NMPM**
COUNTY:	**County, New Mexico**

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

[redacted]

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

R-111-P Potash
Capitan Reef
Possibility of water flows in the Salado and Artesia Group.
Possibility of lost circulation in the Artesia Group, Capitan Reef, and Delaware.
Abnormal pressures may be encountered when penetrating the 3rd Bone Spring lime and all subsequent formations.

B. CASING

1. The **20** inch surface casing shall be set at approximately **1825** feet **(in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet 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.

    13-3/8 1st Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **13-3/8** inch 1st intermediate casing, which shall be set at approximately **3800** feet **(below the Yates and above the Capitan Reef)**, is:

    - Cement to surface. If cement does not circulate see B.1.a, c-d above.
      Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to 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.

9-5/8 2nd Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

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

- Cement to surface. If cement does not circulate see B.1.a, c-d above.
  Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Capitan Reef and potash.

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

- Cement to surface as proposed. Operator shall provide method of verification. **Excess calculates to 24% - Additional cement may be required.**

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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be psi.

3. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the **13-3/8** inch 1st intermediate casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 13-3/8 inch 1st intermediate 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)

☐ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 3933612

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. 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.

4. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

5. 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.

6. 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.

7. 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.

5. The appropriate BLM office shall be notified a minimum of hours in advance for a representative to witness the tests.

    a. 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).

    b. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer.

    c. 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.

    d. The results of the test shall be reported to the appropriate BLM office.

    e. 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.

    f. 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.

    g. 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

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.

JAM 111519

AFMSS

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

Operator Certification Data Report

01/06/2020

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: Kanicia Schlichting **Signed on:** 07/03/2019

Title: Sr. Regulatory Analyst

Street Address:

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

Phone: (720)499-1537

Email address: Kanicia.schlichting@cdevinc.com

Field Representative

Representative Name:

Street Address:

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

Phone:

Email address:

AFMSS

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

Application Data Report

01/06/2020

APD ID: 10400031543 **Submission Date:** 06/25/2018

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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

[redacted]

Show Final Text

Section 1 - General

APD ID: 10400031543 **Tie to previous NOS?** **Submission Date:** 06/25/2018

BLM Office: CARLSBAD **User:** Kanicia Schlichting **Title:** Sr. Regulatory Analyst

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

Lease number: NMNM050346 **Lease Acres:** 151.49

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? YES **APD Operator:** CENTENNIAL RESOURCE PRODUCTION LLC

Operator letter of designation:

Operator Info

Operator Organization Name: CENTENNIAL RESOURCE PRODUCTION LLC

Operator Address: 1001 17th Street, Suite 1800

Zip: 80202

Operator PO Box:

Operator City: Denver **State:** CO

Operator Phone: (720)499-1400

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: SOMBRERO FED COM **Well Number:** 401H **Well API Number:**

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

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

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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:** SOMBRERO **Number:** SOUTH

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: 33 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 700 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: SOMBRERO_FED_COM_401H___C102_20190703061901.pdf

SOMBRERO_FED_COM_401H___Lease_Plat_20190703061902.pdf

Well work start Date: 05/01/2020 **Duration:** 90 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 23786 **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	700	FSL	1825	FWL	21S	33E	7	Aliquot SESW	32.488092	-103.613926	LEA	NEW MEXICO	NEW MEXICO	S	STATE	3901	0	0	
KOP Leg #1	700	FSL	1825	FWL	21S	33E	7	Aliquot SESW	32.488092	-103.613926	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-7176	11148	11077	

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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?
PPP Leg #1-1	100	FNL	2310	FWL	21S	33E	18	Aliquot NENW	32.485893	-103.612353	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 050346	-7647	11700	11548	
EXIT Leg #1	100	FSL	2310	FWL	21S	33E	18	Aliquot SESW	32.471934	-103.612364	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-7749	16540	11650	
BHL Leg #1	100	FSL	2310	FWL	21S	33E	18	Aliquot SESW	32.471934	-103.612364	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-7749	16540	11650	

APD ID: 10400031543 **Submission Date:** 06/25/2018

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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

[redacted]

Show Final Text

Section 1 - Geologic Formations

250970	RUSTLER	3901	1680	1680	SANDSTONE	NONE	N
491326	CAPITAN REEF	-14	3915	3915	OTHER : Carbonate	USEABLE WATER	N
491327	BELL CANYON	-1697	5598	5598	SANDSTONE	NATURAL GAS, OIL	N
491328	CHERRY CANYON	-1994	5895	5895	SANDSTONE	NATURAL GAS, OIL	N
491329	BRUSHY CANYON	-3429	7330	7330	SANDSTONE	NATURAL GAS, OIL	N
491330	BONE SPRING LIME	-5085	8986	8986	OTHER : Carbonate	NATURAL GAS, OIL	N
491331	AVALON SAND	-5209	9110	9110	SHALE	CO2, NATURAL GAS, OIL	N
491332	BONE SPRING 1ST	-6087	9988	9988	SANDSTONE	NATURAL GAS, OIL	N
491333	BONE SPRING 2ND	-6369	10270	10270	OTHER, SHALE : Carbonate	NATURAL GAS, OIL	N
491334	BONE SPRING 3RD	-7646	11547	11547	SANDSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 11650

Equipment: From the Base of the 20" Surface pipe, the well will be equipped with a 2M Annular system with rotating head. See attached 2M BOPE Schematic. Before drilling out the 20" surface pipe, the 2M system will be tested to 250psi low and 1000psi high by an independant service company. The 2M BOP and related equipment will meet or exceed the requirements of a 2M psi system as set forth in On Shore Order No. 2 while drilling below the 20" shoe and to TD of Intemediate #1 (13-3/8" Casing). Once the 13-3/8" Casing is cemented at the base of the Salt Zone, the 20" 2M BOPE and 21-1/4" wellhead will be removed and a 13-5/8" 5M Multi-bowl wellhead and 13-5/8" BOPE will be installed. From the base of the 13-3/8" surface pipe, through running of the production string, the well will be equipped with the 5M-psi BOP system as set forth in On Shore Order No. 2. See attached schematic of the 13-5/8" Cameron Multi-bowl wellhead and 5M BOPE. A. Casinghead: 13 5/8" – 5,000 psi SOW x 13" – 5,000 psi WP Intermediate Spool: 13" – 5,000 psi WP x 11" – 5,000 psi WP Tubinghead: 11" – 5,000 psi WP x 7 1/16" – 15,000 psi WP B. Minimum Specified Pressure Control Equipment • Annular preventer • One Pipe ram, One blind ram • Drilling spool, or blowout preventer with 2 side outlets. Choke side will be a 3-inch minimum diameter, kill line shall be at least 2-inch diameter • 3 inch diameter choke line • 2 – 3 inch choke line valves • 2 inch kill line • 2 chokes with 1 remotely controlled from rig floor (see Figure 2) • 2 – 2 inch kill line valves and a check valve • Upper kelly cock valve with

handle available • When the expected pressures approach working pressure of the system, 1 remote kill line tested to stack pressure (which shall run to the outer edge of the substructure and be unobstructed) • Lower kelly cock valve with handle available • Safety valve(s) and subs to fit all drill string connections in use • Inside BOP or float sub available • Pressure gauge on choke manifold • All BOPE connections subjected to well pressure shall be flanged, welded, or clamped • Fill-up line above the uppermost preventer. C. Auxiliary Equipment • Audio and visual mud monitoring equipment shall be placed to detect volume changes indicating loss or gain of circulating fluid volume. (OOS 1, III.C.2) • Gas Buster will be used below intermediate casing setting depth. • Upper and lower kelly cocks with handles, safety valve and subs to fit all drill string connections and a pressure gauge installed on choke manifold.
Requesting Variance? YES

Variance request: Centennial Resource Production, LLC hereby requests to use a flex hose on H&P 650's choke manifold for the Sombrero Fed Com 401H well. The Flex Hose specifications are listed on page 8.
Testing Procedure: From the Base of the 20" Surface pipe, the well will be equipped with a 2M Annular system with rotating head. See attached 2M BOPE Schematic. Before drilling out the 20" surface pipe, the 2M system will be tested to 250psi low and 1000psi high by an independant service company. The 2M BOP and related equipment will meet or exceed the requirements of a 2M psi system as set forth in On Shore Order No. 2 while drilling below the 20" shoe and to TD of Intemediate #1 (13-3/8" Casing). Once the 13-3/8" Casing is cemented at the base of the Salt Zone, the 20" 2M BOPE and 21-1/4" wellhead will be removed and a 13-5/8" 5M Multi-bowl wellhead and 13-5/8" BOPE will be installed. From the base of the 13-3/8" surface pipe, through running of the production string, the well will be equipped with the 5M-psi BOP system as set forth in On Shore Order No. 2. "The BOP test shall be performed before drilling out of the 13-3/8"" casing shoe and will occur at a minimum: a. when initially installed b. whenever any seal subject to test pressure is broken c. following related repairs d. at 30 day intervals e. checked daily as to mechanical operating conditions. The ram type preventer(s) will be tested using a test plug to 250 psi (low) and 5,000 psi (high) (casinghead WP) with a test plug upon its installation onto the 13" surface casing. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing. The annular type preventer(s) shall be tested to 3500psi. Pressure will be maintained for at least 10 minutes or until provisions of the test are met, whichever is longer. • A Sundry Notice (Form 3160 5), along with a copy of the BOP test report, shall be submitted to the local BLM office within 5 working days following the test. • If the bleed line is connected into the buffer tank (header), all BOP equipment including the buffer tank and associated valves will be rated at the required BOP pressure. • The BLM office will be provided with a minimum of four (4) hours' notice of BOP testing to allow witnessing. The BOP Configuration, choke manifold layout, and accumulator system, will be in compliance with Onshore Order 2 for a 5,000 psi system. A remote accumulator will be used. Pressures, capacities, and specific placement and use of the manual and/or hydraulic controls, accumulator controls, bleed lines, etc., will be identified at the time of the BLM 'witnessed BOP test. Any remote controls will be capable of both opening and closing all preventers and shall be readily accessible".
Choke Diagram Attachment:

HP650_10M_Choke_Manifold_20190703064253.pdf

BOP Diagram Attachment:

CDEV_BOP_Wellhead_Running_Procedure_4_String_Bonesprings_20190703064316.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

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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	36	OTHER	NEW	API	N	0	120	0	120	3901	3781	120	H-40	119	OTHER - Weld						
2	SURFACE	24	20.0	NEW	API	N	0	1750	0	1750	3901	2151	1750	K-55	133	LT&C	1.74	3.54	DRY	9.13	DRY	6.24
3	INTERMEDIATE	17.5	13.375	NEW	API	N	0	3309	0	3300	3901	601	3309	J-55	61	OTHER - BTC	1.24	1.8	DRY	4.78	DRY	4.78
4	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5435	0	5400	3901	-1499	5435	J-55	40	LT&C	1.4	1.48	DRY	2.41	DRY	2.92
5	PRODUCTION	8.75	5.5	NEW	API	N	0	11148	0	11077	3901	-7176	11148	OTHER	20	OTHER - TCBC-HT	1.84	2.09	DRY	5.65	DRY	5.65
6	PRODUCTION	8.5	5.5	NEW	API	N	11148	16540	11077	11650	-7176	-7749	5392	OTHER	20	OTHER - TCBC-HT	1.75	1.99	DRY	55.93	DRY	55.93

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20190703065217.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20190703065454.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20190703065724.pdf

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20190703065957.pdf

Technical_Data_Sheet_HIS_TCBC_HT_5.5_20__P110RY_20190703065958.pdf

Casing ID: 6 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20190703070221.pdf

Technical_Data_Sheet_HIS_TCBC_HT_5.5_20__P110RY_20190703070221.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
PRODUCTION	Lead					0					
CONDUCTOR	Lead					1.49					

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead					1.74					
SURFACE	Tail										
INTERMEDIATE	Lead					3.44					
INTERMEDIATE	Tail										
INTERMEDIATE	Lead					3.44					
INTERMEDIATE	Tail										
PRODUCTION	Lead					3.41					
PRODUCTION	Tail										

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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 quantities of mud materials will be on the well site at all times for the purpose of assuring well control and maintaining wellbore integrity. Surface interval will employ fresh water mud. The intermediate hole will utilize a diesel emulsified brine fluid to inhibit salt washout and prevent severe fluid losses. The production hole will employ oil base fluid to inhibit formation reactivity and of the appropriate density to maintain well control.

Describe the mud monitoring system utilized: Centrifuge separation system. Open tank monitoring with EDR will be used for drilling fluids and return volumes. Open tank monitoring will be used for cement and cuttings return volumes. Mud properties will be monitored at least every 24 hours using industry accepted mud check practices.

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
1750	3309	OTHER : Brine water	9.8	10							
0	1750	OTHER : Fresh water	8.6	9.5							
3309	5435	OTHER : Cut Brine/ FW	8.3	9.5							
5435	11148	OTHER : Brine/OBM	8.8	10.5							

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

Section 6 - Test, Logging, Coring

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

Will utilize MWD/LWD (Gamma ray logging) from intermediate hole to TD of the well.

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

GR

Coring operation description for the well:

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

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6361 **Anticipated Surface Pressure:** 3798

Anticipated Bottom Hole Temperature(F): 162

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:

H2S_Plan_Sombrero_Fed_Com_401H_20190703071628.pdf

SOMBRERO_FED_COM_201H___Rig_layout_20190827071403.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

SOMBRERO_FED_COM_401H_Dir_AC_Plot_Report_20190703071646.pdf

Other proposed operations facets description:

Bone Springs Formations

o 13-3/8" Surface Casing - CRD intends to preset 13-3/8" casing to a depth approved in the APD. Surface Holes will be batch set by a Spudder rig. Appropriate notifications will be made prior to spudding the well, running and cementing casing and prior to skidding to the rig to the next well on pad.

o Intermediate and Production Casing – For all subsequent Intermediate and Production Casing Strings, the well will be drilled below 13-3/8" to it's intended final TD. Batch drilling will not be executed for casing strings below the 13-3/8". Appropriate notifications will be made prior Testing BOPE, and prior to running/cementing all casing strings.

Please see attached Gas Capture Plan

Other proposed operations facets attachment:

Sombrero_Gas_Capture_Plan_20190703071739.docx

Other Variance attachment:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

H_P650_Flex_Hose____Continental_Hose_PO_4500409659_SN_67255_20190703072120.pdf

BOPE Installed and tested before drilling which hole? (in)	Casing Size (in)	Min Required WP	Type	x	Tested to: (psi)
17-1/2	20	2M	Annular	x	50% of Working Pressure
			Pipe		
			Blind		
			Double Ram		
12-1/4	13-5/8	5M	Annular	x	3500
			Pipe	x	5000
			Blind	x	5000
			Double Ram	x	5000
8-3/4 x 8-1/2	9-5/8	5M	Annular	x	3500
			Pipe	x	5000
			Blind	x	5000
			Double Ram	x	5000

CENTENNIAL
RESOURCE DEVELOPMENT, INC

HYDROGEN SULFIDE CONTINGENCY PLAN

[redacted]

Initial Date: 3/4/18

Revision Date:

Table of Contents

INTRODUCTION

This plan specifies precautionary measures, safety equipment, emergency procedures, responsibilities, duties, and the compliance status pertaining to the production operations of Hydrogen Sulfide producing wells on:

Centennial Resource Development, Inc.

This plan will be in full effect prior to and continuing with all drilling operations for all wells producing potential Hydrogen Sulfide on the

[redacted]

This plan was developed in response to the potential hazards involved when producing formations that may contain Hydrogen Sulfide (H_2S) It has been written in compliance with current New Mexico Oil Conservation Division Rule 118 and Bureau of Land Management 43 CFR 3160 Onshore Order No. 6.

All personnel shall receive proper H2S training in accordance with Onshore Order III.C.3.a

This plan shall require the full cooperation and efforts of all individuals participating in the production of potential H_2S wells.

Each individual is required to know their assigned responsibilities and duties in regard to normal production operations and emergency procedures.

Each person should thoroughly understand and be able to use all safety related equipment on the production facility.

Each person should become familiar with the location of all safety equipment and become involved in ensuring that all equipment is properly stored, easily accessible, and routinely maintained.

An ongoing training program will remain in effect with regular training, equipment inspections, and annual certifications for all personnel.

Centennial Resource Development, Inc. shall make every reasonable effort to provide all possible safeguards to protect all personnel, both on this location and in the immediate vicinity, from the harmful effects of H_2S exposure, if a release to the atmosphere should occur.

DIRECTIONS TO LOCATION

PROCEED IN A WESTERLY, THEN NORTHWESTERLY, THEN WESTERLY DIRECTION FROM EUNICE, NEW MEXICO ALONG NM-176 APPROXIMATELY 28.4 MILES TO THE JUNCTION OF THIS ROAD AND BOOTLEG LANE TO THE SOUTH; TURN LEFT AND PROCEED IN A SOUTHERLY, THEN SOUTHWESTERLY, THEN SOUTHEASTERLY, THEN NORTHEASTERLY DIRECTION APPROXIMATELY 3.9 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD "A" TO THE NORTHWEST; FOLLOW ROAD FLAGS IN A NORTHWESTERLY, THEN NORTHEASTERLY, THEN EASTERLY, THEN NORTHERLY, THEN EASTERLY, THEN NORTHERLY DIRECTION APPROXIMATELY 4,443' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM EUNICE, NEW MEXICO TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 33.1 MILES.

SAFE BRIEFING AREAS

Two areas will be designated as "SAFE BRIEFING AREAS".

The Primary Safe Briefing Area

If the Primary Safe Briefing Area cannot be used due to wind conditions; the designated secondary safe briefing area will be used.

These two areas are so designated for accessibility reasons related to self-contained safe breathing air device locations, evacuation muster point utility, and for ease of overall communication, organizational support, as well as the all-important prevailing wind directions. Drawings of the facility denoting these locations are included on Page 15.

If H_2S is detected in concentrations equal to or in excess of 15 PPM, all personnel not assigned emergency duties are to assemble in the appropriate "SAFE BRIEFING AREA" for instructions.

Wind Direction Indicators: A windsock, shall be positioned, allowing the wind direction to be observed from anywhere on the charted facility location.

Warning-DANGER SIGNS for Approaching Traffic: All signs shall also be illuminated under conditions of poor visibility.

DANGER
POISONOUS GAS
HYDROGEN SULFIDE
DO NOT APPROACH IF AMBER LIGHTS ARE FLASHING

An amber strobe light system will be activated for H_2S concentrations of 10 PPM or greater and an audible alarm will sound when H_2S exceeds 15 ppm, and. This condition will exist until the all clear is given.

DRILL SITE LOCATION:

1. The drilling rig should be situated on location such that the prevailing winds blow across the rig toward the reserve pit or at right angles to a line from the rig to the reserve pit.

2. The entrance to the location should be designated so that it can be barricaded if Hydrogen Sulfide emergency conditions arise. An auxiliary exit (or entrance) should be available in case of a catastrophe; a shift in wind direction would not preclude escape from the location. Appropriate warning signs and flags should be placed at all location entrances.

3. Once H2S safety procedures are established on location, no beards or facial hair, which will interfere with face seal or mask, will be allowed on location.

4. A minimum of two BRIEFING AREAS will be established, no less than 250 feet from the wellhead and in such location that at least one area will be up-wind from the well at all times. Upon recognition of an emergency situation, all personnel should assemble at the designated briefing areas for instructions.

5. A safety equipment trailer will be station at one of the briefing areas.

6. Windsocks will be installed and wind streamers (6 to 8 feet above ground level) placed at the location entrance. Windsocks shall be illuminated for nighttime operations. Personnel should develop wind direction consciousness.

7. The mud-logging trailer will be located so as to minimize the danger from the gas that breaks out of the drilling fluid.

8. Shale shaker mud tanks will be located so as to minimize the danger from gas that breaks out of the drilling fluid.

9. Electric power plant(s) will be located as far from the well bore as practical so that it may be used under conditions where it otherwise would have to be shut down.

10. When approaching depth where Hydrogen Sulfide may be encountered, appropriate warning signs will be posted on all access roads to the location and at the foot of all stairways to the derrick floor.

11. Appropriate smoking areas will be designated, and smoking will be prohibited elsewhere.

The table below lists various poisonous gases and the concentrations at which they become dangerous.

TOXICITY OF VARIOUS GASES

TOXICITY OF GASES (Taken from API RP-49 September 1974 – Re-issued August 1978)					
Common Name	**Chemical Formula**	**Gravity (Air = 1)**	**Threshold 1 Limit**	**Hazardous 2 Limit**	**Lethal 3 Limit**
Hydrogen Sulfide	H_2S	1.18	10 ppm	250 ppm/1hr	600 ppm
Sulfur Dioxide	SO_2	2.21	20 ppm	---	1000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/1hr	1000 ppm
Carbon Dioxide	CO_2	1.52	5000 ppm	5%	10%
Methane	CH_4	0.55	90000 ppm	Combustible Above 5% in Air	

1. Threshold concentration at which it is believed that all workers may repeatedly be exposed day after day, without adverse effect	2. Hazardous concentration that may cause death	3. Lethal concentration that will cause death with short-term exposure

Properties of Gases

The produced gas will probably be a mixture of Carbon Dioxide, Hydrogen Sulfide, and Methane.

Carbon Dioxide

Carbon Dioxide (CO_2) is usually considered inert and is commonly used to extinguish fires.

It is heavier than air (1.52 times) and it will concentrate in low areas of still air.

Humans cannot breathe air containing more than 10% CO_2 without losing consciousness. Air containing 5% CO_2 will cause disorientation in a few minutes.

Continued exposures to CO_2 after being affected will cause convulsions, coma, and respiratory failure.

The threshold limit of CO_2 is 5000 ppm.

Short-term exposure to 50,000 PPM (5%) is reasonable. This gas is colorless and odorless and can be tolerated in relatively high concentrations.

Hydrogen Sulfide

Hydrogen Sulfide (H_2S) itself is a colorless, transparent gas and is flammable. It is heavier than air and, hence, may accumulate in low places.

Although the slightest presence of H_2S in the air is normally detectable by its characteristic "rotten egg" odor, it is dangerous to rely on the odor as a means of detecting excessive concentrations because the sense of smell is rapidly lost, allowing lethal concentrations to be accumulated without warning. The following table indicates the poisonous nature of Hydrogen Sulfide.

HYDROGEN SULFIDE TOXICITY			
Concentration			Effects
$\%H_2S$	PPM	GR/100 SCF 1	
0.001	10	0.65	Safe for 8 hours without respirator. Obvious and unpleasant odor.
0.002	20	1.30	Burning in eyes and irritation of respiratory tract after on hour.
0.01	100	6.48	Kills smell in 3 to 15 minutes; may sting eyes and throat.
0.02	200	12.96	Kills smell shortly; stings eyes and throat.
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; need prompt artificial respiration.
0.07	700	45.92	Unconscious quickly; death will result if not rescued promptly
0.10	1000	64.80	DEATH!
Note: 1 grain per 100 cubic feet			

Sulfur Dioxide

Sulfur Dioxide is a colorless, transparent gas and is non-flammable.

Sulfur Dioxide (SO_2) is produced during the burning of H_2S. Although SO_2 is heavier than air, it will be picked up by a breeze and carried downwind at elevated temperatures. Since Sulfur Dioxide is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect. The following table indicates the toxic nature of the gas.

SULFUR DIOXIDE TOXICITY		
Concentration		Effects
$\%SO_2$	PPM	
0.0005	3 to 5	Pungent odor-normally a person can detect SO_2 in this range.
0.0012	12	Throat irritation, coughing, and constriction of the chest tearing and smarting of eyes.
0.15	150	So irritating that it can only be endured for a few minutes.
0.05	500	Causes a sense of suffocation, even with first breath.

H_2S REQUIRED EQUIPMENT LIST

RESPIRATORY SAFETY SYSTEMS
- Working cascade system available on rig floor and pit system & 750' of air line hose
- Four (4) breathing air manifolds
- Four (4) 30-minute rescue packs
- Five (5) work/Escape units
- Five (5) escape units
- One (1) filler hose for the work/escape/rescue units

DETECTION AND ALARM SYSTEM
- 4 channel H2S monitor
- 4 wireless H2S monitors
- H2S alarm system (Audible/Red strobe)
- Personal gas monitor for each person on location
- Gas sample tubes

WELL CONTROL EQUIPMENT
- Flare line with remote ignitor and backup flare gun, placed 150' from wellhead
- Choke manifold with remotely operated choke
- Mud gas separator

VISUAL WARNING SYSTEMS
- One color code condition sign will be placed at each entrance reflecting possible conditions at the site
- A colored condition flag will be on display, reflecting current condition at the site at the time
- At least 4 wind socks placed on location, visible at all angles and locations

MUD PROGRAM
- Mud will contain sufficient weight and additives to control and minimize H2S

METALLURGY
- All drill strings, casing, tubing, wellhead, BOP, spools, kill lines, choke manifold and lines, and valves shall be suitable for anticipated H2S volume and pressure

COMMUNICATION
- Cell phones, intercoms, and satellite phones will be available on location

ADDITIONAL SAFETY RELATED ITEMS
- Stretcher
- 2 OSHA full body harness
- 20# class ABC fire extinguisher

DETERMINATION OF RADIUS OF EXPOSURE

Potentially hazardous volume means a volume of gas of such H2S concentration and flow rate that it may result in radius of exposure-calculated ambient concentrations of 100 ppm H2S at any occupied residence, school, church, park, school bus stop, place of business or other area where the public could reasonably be expected to frequent, or 500 ppm H2S at any Federal, State, County or municipal road or highway.

Currently there are no residence located within the ROE

Radius of exposure means the calculation resulting from using the Pasquill -Gifford derived equation, or by such other method(s) that may be approved by the authorized officer.
Advanced Fire and Safety has provided the Pasquill-Gifford formula in excel format for simple calculations.

NEW MEXICO OIL & GAS CONSERVATION DIVISION 118

[redacted]

H2S Concentration- [redacted] PPM

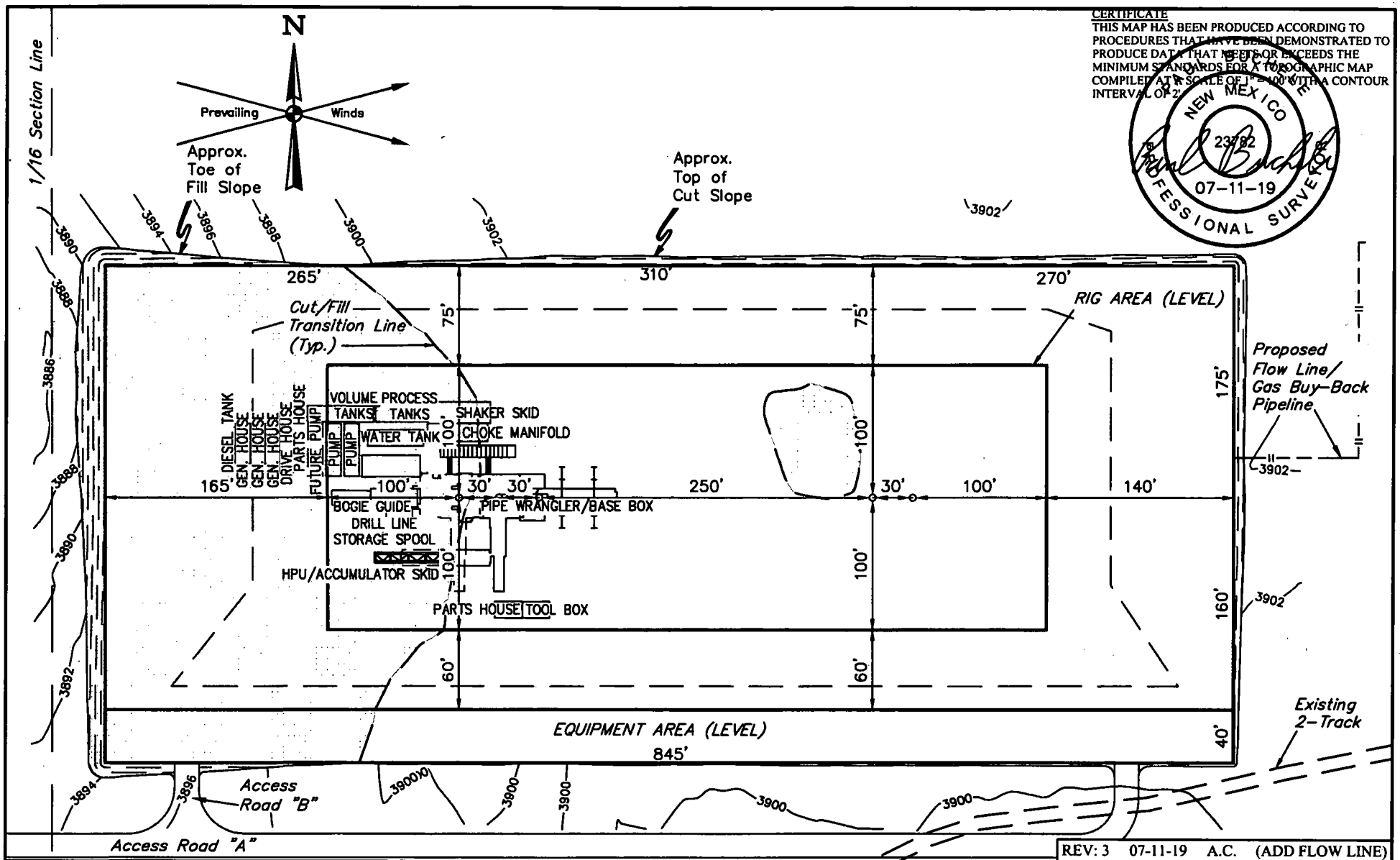
Maximum Escape Volume- [redacted] MCF/Day

100 PPM Radius of Exposure - [redacted]
(Formula= 1.589 x ([redacted]/1000000) x ([redacted] x 1000) x .6258

500 PPM Radius of Exposure (Block 16)- [redacted]
Formula= .4546 x ([redacted]/1000000) x ([redacted] x 1000) x .6258

EMERGENCY CONTACT LIST

911 is available in the area			
NAME	**POSITION**	**COMPANY**	**NUMBER**
Centennial Contacts			
Dennis Hartwig	Drilling Engineer	CDEV	720-499-1528
Wayne Miller/John Helm	Superintendent	CDEV	432-305-1068
Mike Ponder/Zach Gavin	Field Superintendent	CDEV	432-287-3003
Brett Thompson	Drilling Manager	CDEV	720-656-7027
Reggie Phillips	HSE Manager	CDEV	432-638-3380
H&P 650 Drilling Office	Drilling Supervisor	CDEV	432-538-3343
Local Emergency Response			
Fire Department			575-395-2511
Jal Community Hospital			505-395-2511
State Police			505-827-9000
Lea County Sheriff			575-396-3611
Safety Contractor			
Advanced Safety	Office	Advanced Safety	833-296-3913
Joe Gadway	Permian Supervisor	Advanced Safety	318-446-3716
Clint Hudson	Operations Manager	Advanced Safety	337-552-8330
Well Control Company			
Wild Well Control			866-404-9564
Contractors			
Tommy E Lee	Pump Trucks		432-813-7140
Paul Smith	Drilling Fluids	Momentum	307-258-6254
Compass Coordinators	Cement	Compass	432-561-5970



CERTIFICATE
THIS MAP HAS BEEN PRODUCED ACCORDING TO PROCEDURES THAT HAVE BEEN DEMONSTRATED TO PRODUCE DATA THAT MEETS OR EXCEEDS THE MINIMUM STANDARDS FOR A TOPOGRAPHIC MAP COMPILED AT A SCALE OF 1" = 100' WITH A CONTOUR INTERVAL OF 2'.

STATE OF NEW MEXICO 23782 Basham 07-11-19 PROFESSIONAL SURVEYOR

REV: 3 07-11-19 A.C. (ADD FLOW LINE)

NOTES:
- Contours shown at 2' intervals.

CENTENNIAL RESOURCE PRODUCTION, LLC

SOMBRERO FED COM 201H, 702H, 301H, 703H & 401H
SE 1/4 SW 1/4, SECTION 7, T21S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	03-25-19	SCALE
DRAWN BY	J.N.	03-28-19	1" = 100'

TYPICAL RIG LAYOUT FIGURE #3

UINTAH ENGINEERING & LAND SURVEYING

CENTENNIAL
RESOURCE DEVELOPMENT, INC

NEW MEXICO

LEA
SOMBRERO
SOMBRERO FED COM 401H

SOMBRERO FED COM 401H

Plan: MAGVAR - PWP0

Standard Planning Report

06 May, 2019

CENTENNIAL
RESOURCE DEVELOPMENT, INC

Project: SOMBRERO
Site: SOMBRERO
Wells: 201H-301H-401H-702H-703H
Design: MAGVAR - PWP0
RKB: 3901.50

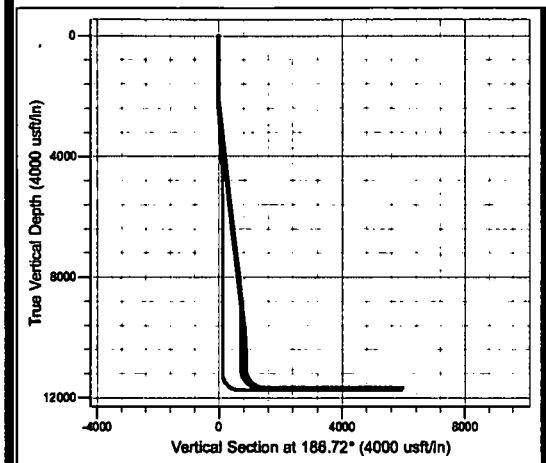
PROJECT DETAILS: LEA COUNTY

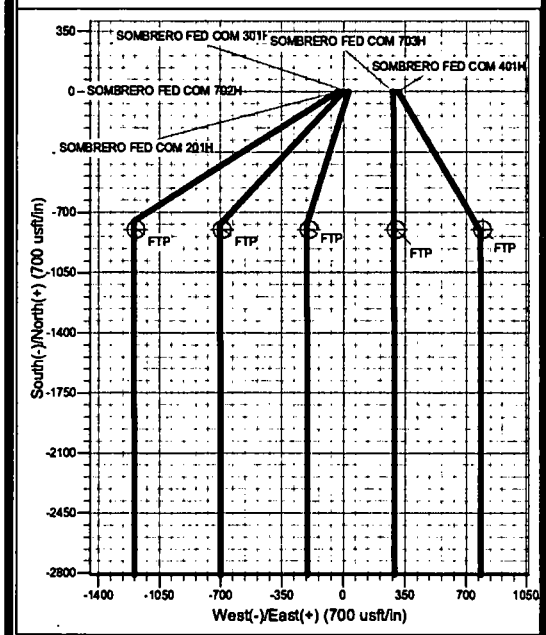
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Zone 13N (108 W to 102 W)

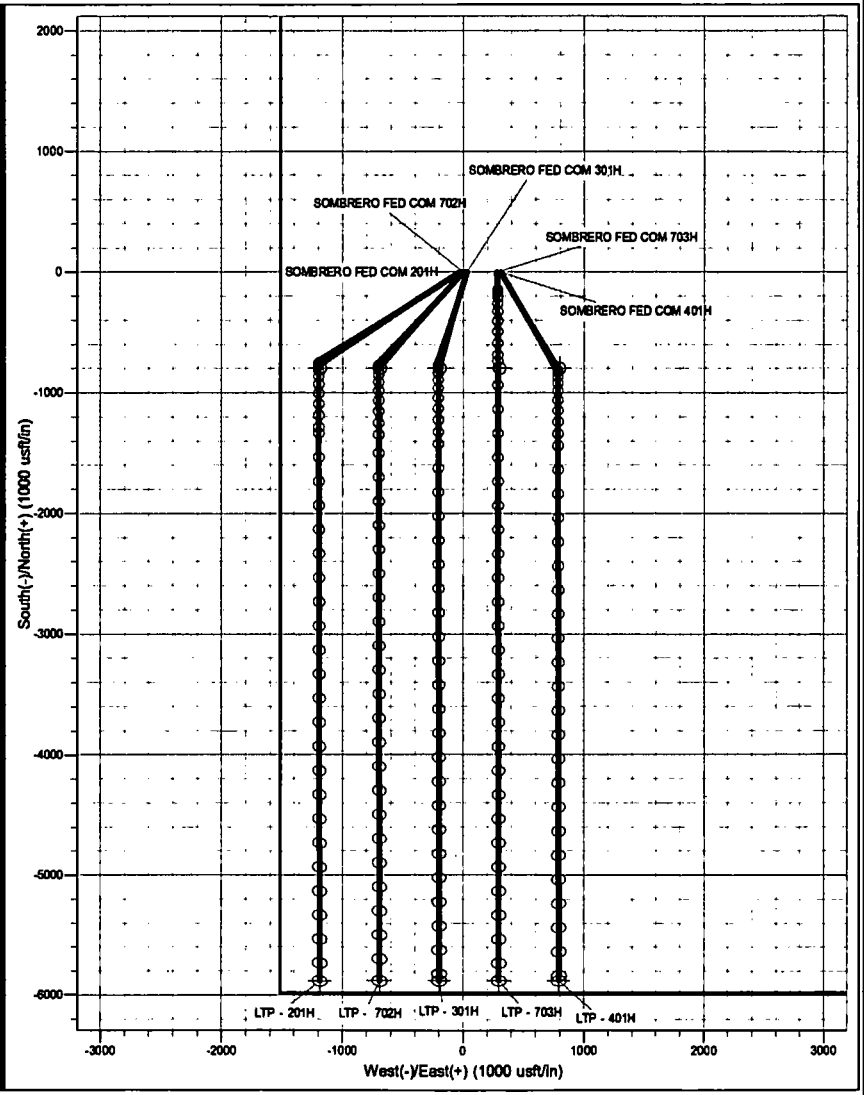
System Datum: Mean Sea Level

Azimuths to True North
Magnetic North: 6.79°

Magnetic Field
Strength: 47893.7snT
Dip Angle: 60.27°
Date: 5/1/2019
Model: IGRF2015







Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well SOMBRERO FED COM 401H
Company:	NEW MEXICO	**TVD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Project:	LEA	**MD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Site:	SOMBRERO	**North Reference:**	True
Well:	SOMBRERO FED COM 401H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	SOMBRERO FED COM 401H		
Design:	MAGVAR - PWP0		

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	SOMBRERO				
Site Position:		**Northing:**	11,795,859.52 usft	**Latitude:**	32° 29' 17.131 N
From:	Map	**Easting:**	2,067,647.05 usft	**Longitude:**	103° 36' 50.483 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.74 °

Well	SOMBRERO FED COM 401H					
Well Position	**+N/-S**	-0.02 usft	**Northing:**	11,795,859.89 usft	**Latitude:**	32° 29' 17.131 N
	+E/-W	29.99 usft	**Easting:**	2,067,677.04 usft	**Longitude:**	103° 36' 50.133 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,901.20 usft

Wellbore	SOMBRERO FED COM 401H				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	5/1/2019	6.79	60.27	47,893.78706016

Design	MAGVAR - PWP0				
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	175.32	

Plan Survey Tool Program **Date** 5/1/2019

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,540.07	MAGVAR - PWP0 (SOMBRERO	MWD+IFR1+MS OWSG MWD + IFR1 + Multi-St	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,900.00	9.00	149.83	2,896.30	-60.99	35.45	1.00	1.00	0.00	149.83	
8,000.00	9.00	149.83	7,933.51	-750.73	436.41	0.00	0.00	0.00	0.00	
8,900.00	0.00	0.00	8,829.82	-811.71	471.86	1.00	-1.00	0.00	180.00	
11,147.50	0.00	0.00	11,077.32	-811.71	471.86	0.00	0.00	0.00	0.00	
12,047.07	90.00	179.89	11,650.00	-1,384.39	472.96	10.00	10.00	0.00	179.89	
16,540.24	90.00	179.89	11,650.00	-5,877.56	481.58	0.00	0.00	0.00	0.00	LTP - SOMBRERO FI

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well SOMBRERO FED COM 401H
Company:	NEW MEXICO	**TVD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Project:	LEA	**MD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Site:	SOMBRERO	**North Reference:**	True
Well:	SOMBRERO FED COM 401H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	SOMBRERO FED COM 401H		
Design:	MAGVAR - PWP0		

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	1.00	149.83	2,099.99	-0.75	0.44	0.79	1.00	1.00	0.00
2,200.00	2.00	149.83	2,199.96	-3.02	1.75	3.15	1.00	1.00	0.00
2,300.00	3.00	149.83	2,299.86	-6.79	3.95	7.09	1.00	1.00	0.00
2,400.00	4.00	149.83	2,399.68	-12.07	7.01	12.60	1.00	1.00	0.00
2,500.00	5.00	149.83	2,499.37	-18.85	10.96	19.68	1.00	1.00	0.00
2,600.00	6.00	149.83	2,598.90	-27.14	15.77	28.33	1.00	1.00	0.00
2,700.00	7.00	149.83	2,698.26	-36.92	21.46	38.55	1.00	1.00	0.00
2,800.00	8.00	149.83	2,797.40	-48.21	28.02	50.33	1.00	1.00	0.00
2,900.00	9.00	149.83	2,896.30	-60.99	35.45	63.68	1.00	1.00	0.00
3,000.00	9.00	149.83	2,995.07	-74.51	43.31	77.80	0.00	0.00	0.00
3,100.00	9.00	149.83	3,093.84	-88.03	51.18	91.92	0.00	0.00	0.00
3,200.00	9.00	149.83	3,192.61	-101.56	59.04	106.04	0.00	0.00	0.00
3,300.00	9.00	149.83	3,291.38	-115.08	66.90	120.16	0.00	0.00	0.00
3,400.00	9.00	149.83	3,390.15	-128.61	74.76	134.28	0.00	0.00	0.00
3,500.00	9.00	149.83	3,488.92	-142.13	82.62	148.40	0.00	0.00	0.00
3,600.00	9.00	149.83	3,587.69	-155.66	90.48	162.52	0.00	0.00	0.00
3,700.00	9.00	149.83	3,686.45	-169.18	98.35	176.65	0.00	0.00	0.00
3,800.00	9.00	149.83	3,785.22	-182.70	106.21	190.77	0.00	0.00	0.00
3,900.00	9.00	149.83	3,883.99	-196.23	114.07	204.89	0.00	0.00	0.00
4,000.00	9.00	149.83	3,982.76	-209.75	121.93	219.01	0.00	0.00	0.00
4,100.00	9.00	149.83	4,081.53	-223.28	129.79	233.13	0.00	0.00	0.00
4,200.00	9.00	149.83	4,180.30	-236.80	137.66	247.25	0.00	0.00	0.00
4,300.00	9.00	149.83	4,279.07	-250.33	145.52	261.37	0.00	0.00	0.00
4,400.00	9.00	149.83	4,377.84	-263.85	153.38	275.49	0.00	0.00	0.00
4,500.00	9.00	149.83	4,476.60	-277.37	161.24	289.62	0.00	0.00	0.00
4,600.00	9.00	149.83	4,575.37	-290.90	169.10	303.74	0.00	0.00	0.00
4,700.00	9.00	149.83	4,674.14	-304.42	176.97	317.86	0.00	0.00	0.00
4,800.00	9.00	149.83	4,772.91	-317.95	184.83	331.98	0.00	0.00	0.00
4,900.00	9.00	149.83	4,871.68	-331.47	192.69	346.10	0.00	0.00	0.00
5,000.00	9.00	149.83	4,970.45	-345.00	200.55	360.22	0.00	0.00	0.00
5,100.00	9.00	149.83	5,069.22	-358.52	208.41	374.34	0.00	0.00	0.00
5,200.00	9.00	149.83	5,167.99	-372.05	216.27	388.46	0.00	0.00	0.00
5,300.00	9.00	149.83	5,266.76	-385.57	224.14	402.59	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well SOMBRERO FED COM 401H
Company:	NEW MEXICO	**TVD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Project:	LEA	**MD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Site:	SOMBRERO	**North Reference:**	True
Well:	SOMBRERO FED COM 401H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	SOMBRERO FED COM 401H		
Design:	MAGVAR - PWP0		

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)
5,400.00	9.00	149.83	5,365.52	-399.09	232.00	416.71	0.00	0.00	0.00
5,500.00	9.00	149.83	5,464.29	-412.62	239.86	430.83	0.00	0.00	0.00
5,600.00	9.00	149.83	5,563.06	-426.14	247.72	444.95	0.00	0.00	0.00
5,700.00	9.00	149.83	5,661.83	-439.67	255.58	459.07	0.00	0.00	0.00
5,800.00	9.00	149.83	5,760.60	-453.19	263.45	473.19	0.00	0.00	0.00
5,900.00	9.00	149.83	5,859.37	-466.72	271.31	487.31	0.00	0.00	0.00
6,000.00	9.00	149.83	5,958.14	-480.24	279.17	501.43	0.00	0.00	0.00
6,100.00	9.00	149.83	6,056.91	-493.76	287.03	515.55	0.00	0.00	0.00
6,200.00	9.00	149.83	6,155.68	-507.29	294.89	529.68	0.00	0.00	0.00
6,300.00	9.00	149.83	6,254.44	-520.81	302.76	543.80	0.00	0.00	0.00
6,400.00	9.00	149.83	6,353.21	-534.34	310.62	557.92	0.00	0.00	0.00
6,500.00	9.00	149.83	6,451.98	-547.86	318.48	572.04	0.00	0.00	0.00
6,600.00	9.00	149.83	6,550.75	-561.39	326.34	586.16	0.00	0.00	0.00
6,700.00	9.00	149.83	6,649.52	-574.91	334.20	600.28	0.00	0.00	0.00
6,800.00	9.00	149.83	6,748.29	-588.43	342.06	614.40	0.00	0.00	0.00
6,900.00	9.00	149.83	6,847.06	-601.96	349.93	628.52	0.00	0.00	0.00
7,000.00	9.00	149.83	6,945.83	-615.48	357.79	642.65	0.00	0.00	0.00
7,100.00	9.00	149.83	7,044.59	-629.01	365.65	656.77	0.00	0.00	0.00
7,200.00	9.00	149.83	7,143.36	-642.53	373.51	670.89	0.00	0.00	0.00
7,300.00	9.00	149.83	7,242.13	-656.06	381.37	685.01	0.00	0.00	0.00
7,400.00	9.00	149.83	7,340.90	-669.58	389.24	699.13	0.00	0.00	0.00
7,500.00	9.00	149.83	7,439.67	-683.11	397.10	713.25	0.00	0.00	0.00
7,600.00	9.00	149.83	7,538.44	-696.63	404.96	727.37	0.00	0.00	0.00
7,700.00	9.00	149.83	7,637.21	-710.15	412.82	741.49	0.00	0.00	0.00
7,800.00	9.00	149.83	7,735.98	-723.68	420.68	755.62	0.00	0.00	0.00
7,900.00	9.00	149.83	7,834.75	-737.20	428.55	769.74	0.00	0.00	0.00
8,000.00	9.00	149.83	7,933.51	-750.73	436.41	783.86	0.00	0.00	0.00
8,100.00	8.00	149.83	8,032.41	-763.51	443.84	797.20	1.00	-1.00	0.00
8,200.00	7.00	149.83	8,131.56	-774.79	450.40	808.98	1.00	-1.00	0.00
8,300.00	6.00	149.83	8,230.91	-784.58	456.08	819.20	1.00	-1.00	0.00
8,400.00	5.00	149.83	8,330.45	-792.86	460.90	827.85	1.00	-1.00	0.00
8,500.00	4.00	149.83	8,430.14	-799.65	464.84	834.94	1.00	-1.00	0.00
8,600.00	3.00	149.83	8,529.95	-804.92	467.91	840.45	1.00	-1.00	0.00
8,700.00	2.00	149.83	8,629.86	-808.69	470.10	844.38	1.00	-1.00	0.00
8,800.00	1.00	149.83	8,729.82	-810.96	471.42	846.75	1.00	-1.00	0.00
8,900.00	0.00	0.00	8,829.82	-811.71	471.86	847.53	1.00	-1.00	0.00
9,000.00	0.00	0.00	8,929.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,100.00	0.00	0.00	9,029.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,200.00	0.00	0.00	9,129.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,300.00	0.00	0.00	9,229.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,400.00	0.00	0.00	9,329.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,500.00	0.00	0.00	9,429.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,600.00	0.00	0.00	9,529.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,700.00	0.00	0.00	9,629.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,800.00	0.00	0.00	9,729.82	-811.71	471.86	847.53	0.00	0.00	0.00
9,900.00	0.00	0.00	9,829.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,000.00	0.00	0.00	9,929.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,100.00	0.00	0.00	10,029.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,200.00	0.00	0.00	10,129.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,300.00	0.00	0.00	10,229.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,400.00	0.00	0.00	10,329.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,500.00	0.00	0.00	10,429.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,600.00	0.00	0.00	10,529.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,700.00	0.00	0.00	10,629.82	-811.71	471.86	847.53	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well SOMBRERO FED COM 401H
Company:	NEW MEXICO	**TVD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Project:	LEA	**MD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Site:	SOMBRERO	**North Reference:**	True
Well:	SOMBRERO FED COM 401H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	SOMBRERO FED COM 401H		
Design:	MAGVAR - PWP0		

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)
10,800.00	0.00	0.00	10,729.82	-811.71	471.86	847.53	0.00	0.00	0.00
10,900.00	0.00	0.00	10,829.82	-811.71	471.86	847.53	0.00	0.00	0.00
11,000.00	0.00	0.00	10,929.82	-811.71	471.86	847.53	0.00	0.00	0.00
11,100.00	0.00	0.00	11,029.82	-811.71	471.86	847.53	0.00	0.00	0.00
11,147.50	0.00	0.00	11,077.32	-811.71	471.86	847.53	0.00	0.00	0.00
11,200.00	5.25	179.89	11,129.74	-814.12	471.86	849.93	10.00	10.00	0.00
11,300.00	15.26	179.89	11,228.02	-831.90	471.90	867.65	10.00	10.00	0.00
11,400.00	25.26	179.89	11,321.72	-866.48	471.96	902.13	10.00	10.00	0.00
11,500.00	35.27	179.89	11,407.98	-916.82	472.06	952.30	10.00	10.00	0.00
11,600.00	45.27	179.89	11,484.18	-981.37	472.18	1,016.65	10.00	10.00	0.00
FTP - SOMBRERO FED COM 401H									
11,700.00	55.28	179.89	11,548.01	-1,058.19	472.33	1,093.22	10.00	10.00	0.00
11,800.00	65.28	179.89	11,597.53	-1,144.92	472.50	1,179.68	10.00	10.00	0.00
11,900.00	75.29	179.89	11,631.22	-1,238.94	472.68	1,273.40	10.00	10.00	0.00
12,000.00	85.29	179.89	11,648.07	-1,337.38	472.87	1,371.53	10.00	10.00	0.00
12,047.07	90.00	179.89	11,650.00	-1,384.39	472.96	1,418.39	10.00	10.00	0.00
12,100.00	90.00	179.89	11,650.00	-1,437.33	473.06	1,471.16	0.00	0.00	0.00
12,200.00	90.00	179.89	11,650.00	-1,537.33	473.25	1,570.84	0.00	0.00	0.00
12,300.00	90.00	179.89	11,650.00	-1,637.33	473.44	1,670.52	0.00	0.00	0.00
12,400.00	90.00	179.89	11,650.00	-1,737.33	473.64	1,770.20	0.00	0.00	0.00
12,500.00	90.00	179.89	11,650.00	-1,837.33	473.83	1,869.88	0.00	0.00	0.00
12,600.00	90.00	179.89	11,650.00	-1,937.33	474.02	1,969.56	0.00	0.00	0.00
12,700.00	90.00	179.89	11,650.00	-2,037.32	474.21	2,069.25	0.00	0.00	0.00
12,800.00	90.00	179.89	11,650.00	-2,137.32	474.40	2,168.93	0.00	0.00	0.00
12,900.00	90.00	179.89	11,650.00	-2,237.32	474.60	2,268.61	0.00	0.00	0.00
13,000.00	90.00	179.89	11,650.00	-2,337.32	474.79	2,368.29	0.00	0.00	0.00
13,100.00	90.00	179.89	11,650.00	-2,437.32	474.98	2,467.97	0.00	0.00	0.00
13,200.00	90.00	179.89	11,650.00	-2,537.32	475.17	2,567.65	0.00	0.00	0.00
13,300.00	90.00	179.89	11,650.00	-2,637.32	475.36	2,667.33	0.00	0.00	0.00
13,400.00	90.00	179.89	11,650.00	-2,737.32	475.56	2,767.02	0.00	0.00	0.00
13,500.00	90.00	179.89	11,650.00	-2,837.32	475.75	2,866.70	0.00	0.00	0.00
13,600.00	90.00	179.89	11,650.00	-2,937.32	475.94	2,966.38	0.00	0.00	0.00
13,700.00	90.00	179.89	11,650.00	-3,037.32	476.13	3,066.06	0.00	0.00	0.00
13,800.00	90.00	179.89	11,650.00	-3,137.32	476.32	3,165.74	0.00	0.00	0.00
13,900.00	90.00	179.89	11,650.00	-3,237.32	476.52	3,265.42	0.00	0.00	0.00
14,000.00	90.00	179.89	11,650.00	-3,337.32	476.71	3,365.11	0.00	0.00	0.00
14,100.00	90.00	179.89	11,650.00	-3,437.32	476.90	3,464.79	0.00	0.00	0.00
14,200.00	90.00	179.89	11,650.00	-3,537.32	477.09	3,564.47	0.00	0.00	0.00
14,300.00	90.00	179.89	11,650.00	-3,637.32	477.28	3,664.15	0.00	0.00	0.00
14,400.00	90.00	179.89	11,650.00	-3,737.32	477.48	3,763.83	0.00	0.00	0.00
14,500.00	90.00	179.89	11,650.00	-3,837.32	477.67	3,863.51	0.00	0.00	0.00
14,600.00	90.00	179.89	11,650.00	-3,937.32	477.86	3,963.19	0.00	0.00	0.00
14,700.00	90.00	179.89	11,650.00	-4,037.32	478.05	4,062.88	0.00	0.00	0.00
14,800.00	90.00	179.89	11,650.00	-4,137.32	478.24	4,162.56	0.00	0.00	0.00
14,900.00	90.00	179.89	11,650.00	-4,237.32	478.44	4,262.24	0.00	0.00	0.00
15,000.00	90.00	179.89	11,650.00	-4,337.32	478.63	4,361.92	0.00	0.00	0.00
15,100.00	90.00	179.89	11,650.00	-4,437.32	478.82	4,461.60	0.00	0.00	0.00
15,200.00	90.00	179.89	11,650.00	-4,537.32	479.01	4,561.28	0.00	0.00	0.00
15,300.00	90.00	179.89	11,650.00	-4,637.32	479.20	4,660.96	0.00	0.00	0.00
15,400.00	90.00	179.89	11,650.00	-4,737.32	479.40	4,760.65	0.00	0.00	0.00
15,500.00	90.00	179.89	11,650.00	-4,837.32	479.59	4,860.33	0.00	0.00	0.00
15,600.00	90.00	179.89	11,650.00	-4,937.32	479.78	4,960.01	0.00	0.00	0.00
15,700.00	90.00	179.89	11,650.00	-5,037.32	479.97	5,059.69	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well SOMBRERO FED COM 401H
Company:	NEW MEXICO	**TVD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Project:	LEA	**MD Reference:**	RKB = 3901.2 + 25 @ 3926.20usft
Site:	SOMBRERO	**North Reference:**	True
Well:	SOMBRERO FED COM 401H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	SOMBRERO FED COM 401H		
Design:	MAGVAR - PWP0		

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)
15,800.00	90.00	179.89	11,650.00	-5,137.32	480.16	5,159.37	0.00	0.00	0.00
15,900.00	90.00	179.89	11,650.00	-5,237.32	480.36	5,259.05	0.00	0.00	0.00
16,000.00	90.00	179.89	11,650.00	-5,337.32	480.55	5,358.74	0.00	0.00	0.00
16,100.00	90.00	179.89	11,650.00	-5,437.32	480.74	5,458.42	0.00	0.00	0.00
16,200.00	90.00	179.89	11,650.00	-5,537.32	480.93	5,558.10	0.00	0.00	0.00
16,300.00	90.00	179.89	11,650.00	-5,637.32	481.12	5,657.78	0.00	0.00	0.00
16,400.00	90.00	179.89	11,650.00	-5,737.32	481.32	5,757.46	0.00	0.00	0.00
16,500.00	90.00	179.89	11,650.00	-5,837.32	481.51	5,857.14	0.00	0.00	0.00
16,540.24	90.00	179.89	11,650.00	-5,877.56	481.58	5,897.25	0.00	0.00	0.00
LTP - SOMBRERO FED COM 401H									

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 - SOMBRERO FED - plan misses target center by 246.27usft at 11600.00usft MD (11484.18 TVD, -981.37 N, 472.18 E) - Circle (radius 50.00)	0.00	0.00	11,650.00	-799.74	484.93	11,795,066.52	2,068,172.32	32° 29' 9.216 N	103° 36' 44.471 W
LTP - SOMBRERO FED - plan hits target center - Point	0.00	0.00	11,650.00	-5,877.56	481.58	11,789,989.09	2,068,234.97	32° 28' 18.963 N	103° 36' 44.511 W

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

PWD Data Report

01/06/2020

APD ID: 10400031543 **Submission Date:** 06/25/2018

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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

01/06/2020

APD ID: 10400031543 **Submission Date:** 06/25/2018

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOMBRERO FED COM **Well Number:** 401H

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

[redacted]

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001496

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: