Form 3160-3
(June 2015)

OCD – HOBBS
04/22/2020
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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.
NMNM017440

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.
HALLE BERRY 7 FEDERAL COM [328145]
601H

2. Name of Operator
CENTENNIAL RESOURCE PRODUCTION LLC [372165]

9. API Well No.
30-025-47118

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 [28432]
3RD BONE SPRING/GRAMA RIDGE BOI

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface LOT 4 / 217 FSL / 790 FWL / LAT 32.399559 / LONG -103.514972
At proposed prod. zone LOT 4 / 100 FNL / 330 FWL / LAT 32.427719 / LONG -103.516467

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 7/T22S/R34E/NMP

14. Distance in miles and direction from nearest town or post office*
29 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)
217 feet

16. No of acres in lease
1794.49

17. Spacing Unit dedicated to this well
631.0

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

19. Proposed Depth
11800 feet / 21936 feet

20. BLM/BIA Bond No. in file
FED: NMB001471

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3509 feet

22. Approximate date work will start*
07/08/2020

23. Estimated duration
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) | Kanicia Schlichting / Ph: (720) 499-1537 | 08/09/2019 |

Title
Sr. Regulatory Analyst

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | Cody Layton / Ph: (575) 234-5959 | 03/31/2020 |

| Title | Office |
|---|---|
| Assistant Field Manager Lands & Minerals | Carlsbad Field Office |

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

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

GCP Rec 04/22/2020

SL

APPROVED WITH CONDITIONS

KZ 04/29/2020

**Approval Date: 03/31/2020**

(Continued on page 2)

*(Instructions on page 2)

**Seed Mixture 2, for Sandy Sites**

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

| Species | lb/acre |
|---|---|
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sand love grass (Eragrostis trichodes) | 1.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

# PECOS DISTRICT
# DRILLING CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **CENTENNIAL RESOURCES LLC** |
| **LEASE NO.:** | **NMNM017440** |
| **WELL NAME & NO.:** | **HALLE BERRY 7 FED COM 601H** |
| **SURFACE HOLE FOOTAGE:** | **217'/S & 790'/W** |
| **BOTTOM HOLE FOOTAGE** | **100'/N & 330'/W** |
| **LOCATION:** | **Section 7, T.22 S., R.34 E., NMPM** |
| **COUNTY:** | **Lea County, New Mexico** |

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 | [x] Capitan Reef | [ ] WIPP |
| Other | [ ] Fluid Filled | [ ] Cement Squeeze | [ ] Pilot Hole |
| Special Requirements | [ ] Water Disposal | [x] COM | [ ] Unit |

## A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Grama Ridge, Bone Spring** formation. 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

1. The **13-3/8** inch surface casing shall be set at approximately **1683** 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 **8**

**hours** 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 **3660** feet. The minimum required fill of cement behind the 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 cave/karst or potash.**

❖ In Capitan Reef Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

❖ **Special Capitan Reef requirements.** If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following:

- Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.

- Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.

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

- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

## C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **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 Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, 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.

# Operator Certification Data Report

04/21/2020

## 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: 08/09/2019

Title: Sr. Regulatory Analyst

Street Address: 1001 17th Street, Suite 1800

City: Denver State: CO Zip: 80202

Phone: (720)499-1537

Email address: Kanicia.schlichting@cdevinc.com

## Field Representative

Representative Name:

Street Address:

City: State: Zip:

Phone:

Email address:

APD ID: 10400044479 Submission Date: 08/09/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL 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: 10400044479 Tie to previous NOS? N Submission Date: 08/09/2019

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: NMNM017440 Lease Acres: 1794.49

Surface access agreement in place? Allotted? Reservation:

Agreement in place? NO Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? Y

Permitting Agent? NO 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: HALLE BERRY 7 FEDERAL COM Well Number: 601H Well API Number:

Field/Pool or Exploratory? Field and Pool Field Name: 3RD BONE SPRING Pool Name: GRAMA RIDGE BONE SPRING WEST

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL COM Well Number: 601H

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Is the proposed well in a Helium production area? N Use Existing Well Pad? N New surface disturbance?

Type of Well Pad: MULTIPLE WELL Multiple Well Pad Name: Halle Berry 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: 29 Miles Distance to nearest well: 30 FT Distance to lease line: 217 FT

Reservoir well spacing assigned acres Measurement: 631 Acres

**Well plat:** Halle_Berry_7_Fed_Com_601H_Revised_Lease_C102_20200306221637.pdf

Halle_Berry_7_Fed_Com_601H_Revised_C102_20200306221638.pdf

Well work start Date: 07/08/2020 Duration: 30 DAYS

## Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 Vertical Datum: NAVD88

Survey number: 23782 Reference Datum: GROUND LEVEL

| 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 | 217 | FSL | 790 | FWL | 22S | 34E | 7 | Lot 4 | 32.399559 | -103.514972 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 017440 | 3509 | 0 | 0 | Y |
| KOP Leg #1 | 217 | FSL | 790 | FWL | 22S | 34E | 7 | Lot 4 | 32.399559 | -103.514972 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 017440 | -7717 | 11234 | 11226 | Y |

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PPP Leg #1-1 | 100 | FSL | 330 | FWL | 22S | 34E | 7 | Lot 4 | 32.399237 | -103.516462 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 017440 | -8291 | 12147 | 11800 | Y |
| EXIT Leg #1 | 100 | FNL | 330 | FWL | 22S | 34E | 6 | Lot 4 | 32.427719 | -103.516467 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 129267 | -8291 | 21936 | 11800 | Y |
| BHL Leg #1 | 100 | FNL | 330 | FWL | 22S | 34E | 6 | Lot 4 | 32.427719 | -103.516467 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 129267 | -8291 | 21936 | 11800 | Y |

APD ID: 10400044479 Submission Date: 08/09/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL 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 |
|---|---|---|---|---|---|---|---|
| 502708 | RUSTLER | 3509 | 1641 | 1641 | SANDSTONE | NONE | N |
| 502709 | CAPITAN REEF | -420 | 3929 | 3929 | OTHER : Carbonate | USEABLE WATER | N |
| 694991 | BELL CANYON | -1763 | 5272 | 5272 | SANDSTONE | NATURAL GAS, OIL | N |
| 502710 | CHERRY CANYON | -2067 | 5576 | 5576 | SANDSTONE | NATURAL GAS, OIL | N |
| 502711 | BRUSHY CANYON | -2829 | 6338 | 6338 | SANDSTONE | CO2, NATURAL GAS, OIL | N |
| 502712 | BONE SPRING LIME | -5574 | 9083 | 9083 | OTHER, SANDSTONE : Carbonate | NATURAL GAS, OIL | N |
| 502713 | AVALON SAND | -5761 | 9270 | 9270 | OTHER, SHALE | CO2, NATURAL GAS, OIL | N |
| 502714 | BONE SPRING 1ST | -6657 | 10166 | 10166 | SANDSTONE, SHALE | CO2, NATURAL GAS, OIL | N |
| 502715 | BONE SPRING 2ND | -6899 | 10408 | 10408 | OTHER, SANDSTONE : Carbonate | NATURAL GAS, OIL | N |
| 502716 | BONE SPRING 3RD | -8050 | 11559 | 11559 | OTHER, SANDSTONE, SHALE | NATURAL GAS, OIL | Y |
| 504839 | WOLFCAMP | -8401 | 11910 | 11910 | OTHER, SHALE : Carbonate | NATURAL GAS, OIL | N |

## Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M Rating Depth: 11800

Equipment: The BOP and related equipment will meet or exceed the requirements of a 5M-psi system as set forth in On Shore Order No. 2. See attached BOP Schematic. 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 the choke maifold for this well. Please see attached multi-bowl procedure.
Testing Procedure: The BOP test shall be performed before drilling out of the surface 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 3500 psi. 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_20190729153656.pdf

CDEV_Multi_Bowl_Wellhead_Running_Procedure_3_String_Bonesprings_20190808175143.pdf

**BOP Diagram Attachment:**

HP650_BOP_Schematic_CoFlex_Choke_5K_2019_1_29_20190729153707.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 | 26 | 20.0 | NEW | API | N | 0 | 120 | 0 | 120 | 3509 | 3389 | 120 | H-40 | 94 | OTHER - WELD | | | | | | |
| 2 | SURFACE | 17.5 | 13.375 | NEW | API | N | 0 | 1650 | 0 | 1650 | 3509 | 1859 | 1650 | J-55 | 54.5 | OTHER - BTC | 1.39 | 3.35 | DRY | 9.49 | DRY | 9.49 |
| 3 | INTERMEDIATE | 12.25 | 9.625 | NEW | API | N | 0 | 5150 | 0 | 5130 | 3386 | -1621 | 5150 | J-55 | 40 | LT&C | 1.37 | 1.49 | DRY | 2.55 | BUOY | 3.09 |
| 4 | PRODUCTION | 8.75 | 5.5 | NEW | API | N | 0 | 11234 | 0 | 11226 | 3386 | -7717 | 11234 | P-110 | 20 | OTHER - TCBC-HT | 1.9 | 2.17 | DRY | 2.85 | DRY | 2.85 |
| 5 | PRODUCTION | 8.5 | 5.5 | NEW | API | N | 11234 | 21935 | 11226 | 11800 | -7717 | -8291 | 10701 | P-110 | 20 | OTHER - TCBC-HT | 1.81 | 2.06 | DRY | 55.84 | DRY | 55.84 |

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL COM Well Number: 601H

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CASING_ASSUMPTIONS_WORKSHEET_20181217132208.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CASING_ASSUMPTIONS_WORKSHEET_20190618111636.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CASING_ASSUMPTIONS_WORKSHEET_20181217132216.pdf

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL COM Well Number: 601H

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CASING_ASSUMPTIONS_WORKSHEET_20181217132222.pdf

Technical_Data_Sheet_HIS_TCBCHT_5_5_20_P110RY_20200305125039.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CASING_ASSUMPTIONS_WORKSHEET_20181217132228.pdf

Technical_Data_Sheet_HIS_TCBCHT_5_5_20_P110RY_20200305125151.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 | 0 | 0 | 0 | 0 | 0 | 0 | TXI Lightweight | Salt 8.98#/sk, STE 6.00%, Citric acid 0.20%, CSA-1000 0.23%, C47B 0.10%, C-503P 0.30% |

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL COM Well Number: 601H

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDUCTOR | Lead | | 0 | 120 | 121 | 1.49 | 12.9 | 181 | | Grout | Bentonite 4% BWOC, Cellophane #/sx, CaCl2 2% BWOC. |
| SURFACE | Lead | | 0 | 1150 | 918 | 1.74 | 13.5 | 1598 | 100 | Class C Premium | Premium Gel Bentonite 4%, C-45 Econolite 0.25%, Phenoseal 0.25#/sk, CaCl 1%, Defoamer C-41P 0.75% |
| SURFACE | Tail | | 1150 | 1650 | 518 | 1.34 | 14.8 | 695 | 100 | Class C Premium | C-45 Econolite 0.10%, CaCl 1.0% |
| INTERMEDIATE | Lead | | 0 | 4603 | 1107 | 3.44 | 10.7 | 3808 | 150 | TXI Lightweight | Salt 1.77/sk, C-45 Econolite 2.25%, STE 6.00%, Citric Acid 0.18%, C-19 0.10%, CSA-1000 0.20%, C-530P 0.30%, CTB-15 LCM 7#/sk, Gyp Seal 8#/sk |
| INTERMEDIATE | Tail | | 4603 | 5150 | 141 | 1.33 | 14.8 | 188 | 20 | Class C Premium | C-45 Econolite 0.10%, Citric acid 0.05%, C503P 0.25% |
| PRODUCTION | Lead | | 0 | 11234 | 1098 | 3.41 | 10.6 | 3743 | 30 | TXI Lightweight | Salt 8.98#/sk, STE 6.00%, Citric acid 0.20%, CSA-1000 0.23%, C47B 0.10%, C-503P 0.30% |
| PRODUCTION | Tail | | 11234 | 21935 | 2468 | 1.24 | 14.2 | 3060 | 25 | 50:25:25 Class H: Poz: CPO18 | Citric acid 0.03%, CSA-1000 0.05%, C47B 0.25%, C-503P 0.30% |

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL COM Well Number: 601H

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 21935 | OTHER : Brine/OBM | 8.8 | 10 | | | | | | | |
| 0 | 1650 | WATER-BASED MUD | 8.6 | 9.5 | | | | | | | |
| 1650 | 5150 | OTHER : Brine | 9 | 10 | | | | | | | |

## 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:**

OTHER,

**Other log type(s):**

Gama Ray

**Coring operation description for the well:**

n/a

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: HALLE BERRY 7 FEDERAL COM Well Number: 601H

## Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6136 Anticipated Surface Pressure: 3539

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:**

H2S_Plan_Halle_Berry_7_Fed_Com_601H_20190730070835.docx

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

601H___SURVEY_REPORT_20191219132913.pdf

**Other proposed operations facets description:**

Centennial Resource Development – New Mexico Multi-Well Pad Drilling
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.

Gas Capture Plan attached.
OCD is considering this a preapproved DHC. We are staying in the same field just two state pools.

**Other proposed operations facets attachment:**

Halle_Berry_Gas_Capture_Plan_20190809072822.docx

**Other Variance attachment:**

Flex_Hose_Specs_20181219152357.pdf
CDEV_Multi_Bowl_Wellhead_Running_Procedure_3_String_Bonesprings_20200123133832.pdf
CDEV_Well_Control_Plan_Bonesprings_20200123133832.pdf

# Centennial Wellhead Running Procedure 3 String Bone Springs Design

1. Drill 17-1/2" surface hole to Total Depth and perform wellbore cleanup cycles.
2. Remove wear bushing then Run and land 13-3/8" casing with mandrel hanger in wellhead.
3. Cement 13-3/8" casing – cement to surface.
4. Dress Conductor and 13-3/8" casing as needed, weld on Cameron Multi-bowl system with baseplate supported by 20" conductor.
5. Test Weld to 70% of 13-3/8" casing collapse.
6. Nipple up and test BOPE with test plug per Onshore Order 2..
7. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst.
8. Install wear bushing then drillout 13-3/8" shoetrack plus 20' and conduct FIT to minimum of the MW equivalent anticipated to control the formation pressure to the next casing point.
9. Drill 12-1/4" Intermediate hole to 9-5/8" casing point. (Base Capitan Reef).
10. Remove wear bushing then Run and land 9-5/8" Intermediate with mandrel hanger in wellhead.
11. Cement 9-5/8 casing – cement to surface.
12. Washout stack, Run wash tool in wellhead and wash hanger and packoff setting area.
13. Install packoff and test to 5000 psi for 15 minutes.
    a. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst.
14. Install wear bushing then drillout 9-5/8" shoetrack plus 20' and conduct FIT to minimum MW equivalent to control the formation pressure to TD of well.
15. Drill 8-3/4" Vertical hole to KOP – Trip out for Curve BHA.
16. Drill 8-3/4" Curve, landing in production interval – Trip for Lateral BHA.
17. Drill 8-1/2" Lateral to Permitted BHL, perform cleanup cycles and trip out to run 5-1/2" Production Casing.
18. Remove wear bushing then run 5-1/2" production casing to TD landing casing mandrel in wellhead.
19. Cement 5-1/2" Production string to surface.
20. Run in with wash tool and wash wellhead area – install packoff and test to 5000psi for 15 minutes.
21. Install BPV in 5-1/2" mandrel hanger – Nipple down BOPE and install nightcap.
22. Test nightcap void to 5000psi for 30 minutes.

CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

Surface: - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)
- No Cement baskets will be run

Production: - 1 welded bow spring centralizer on a stop ring 6' above float shoe
- 1 centralizer every other joint to the top of the tail cement
- 1 centralizer every 4 joints to 500' below the top of the lead cement
- The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

  No freshly hard banded pipe will be rotated in the surface casing

  - CENTENNIAL RESOURCE DEVELOPOMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

CASING ASSUMPTIONS WORKSHEET:

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  - CENTENNIAL RESOURCE DEVELOPOMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

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- 1 centralizer every 4 joints to 500' below the top of the lead cement
- The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

  No freshly hard banded pipe will be rotated in the surface casing

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CENTENNIAL
RESOURCE DEVELOPMENT, INC

# HYDROGEN SULFIDE CONTINGENCY PLAN

## Halle Berry 7 Fed Com 601H

## Section 7

## T 22S R 34E

## Lea County, NM

**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

**Halle Berry 7 Fed Com 601H**

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**

**Halle Berry 7 Fed Com 601H**

**Section 7**

**T 22S R 34E**

**Lea County, NM**

BEGINNING AT THE JUNCTION OF MAIN ST. & NM-176 IN EUNICE, NEW MEXICO PROCEED IN A WESTERLY, THEN NORTHWESTERLY, THEN WESTERLY DIRECTION ALONG NM-176 APPROXIMATELY 20.1 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTHWEST; TURN LEFT AND PROCEED IN A SOUTHWESTERLY, THEN SOUTHERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 3.8 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTHWEST; TURN RIGHT AND PROCEED IN A SOUTHWESTERLY DIRECTION APPROXIMATELY 0.1 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTHWEST; TURN LEFT AND PROCEED IN A SOUTHWESTERLY, THEN SOUTHERLY DIRECTION APPROXIMATELY 4.0 MILES TO THE JUNCTION OF THIS ROAD AND WILSON CAMP LANE TO THE SOUTHWEST; TURN RIGHT AND PROCEED IN A SOUTHWESTERLY DIRECTION APPROXIMATELY 0.9 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD TO THE SOUTH; FOLLOW ROAD FLAGS IN A SOUTHERLY DIRECTION APPROXIMATELY 350' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM EUNICE, NEW MEXICO TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 29.0 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**

**Halle Berry 7 Fed Com 601H**

H2S Concentration- 100 PPM

Maximum Escape Volume- 5000 MCF/Day

100 PPM Radius of Exposure - 65
(Formula= 1.589 x (100/1000000) x (5000 x 1000) x .6258

500 PPM Radius of Exposure (Block 16)- 53
Formula= .4546 x (100/1000000) x (5000 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 |

CENTENNIAL
RESOURCE DEVELOPMENT, INC

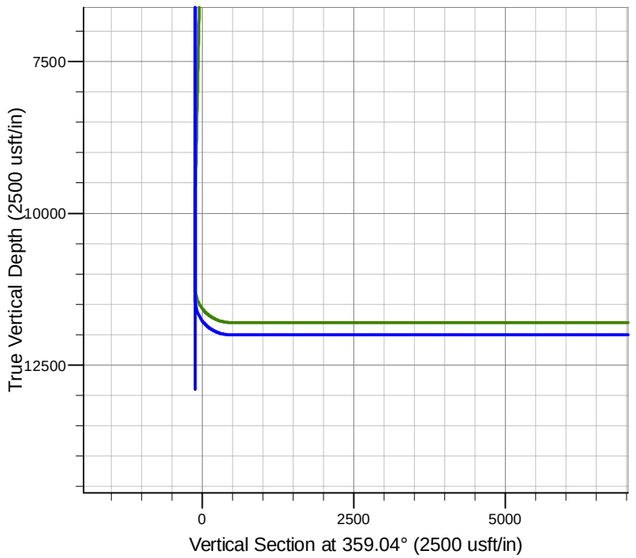
# HALLE BERRY DEVELOPMENT
# HALLE BERRY 7 FED COM 601H_701H

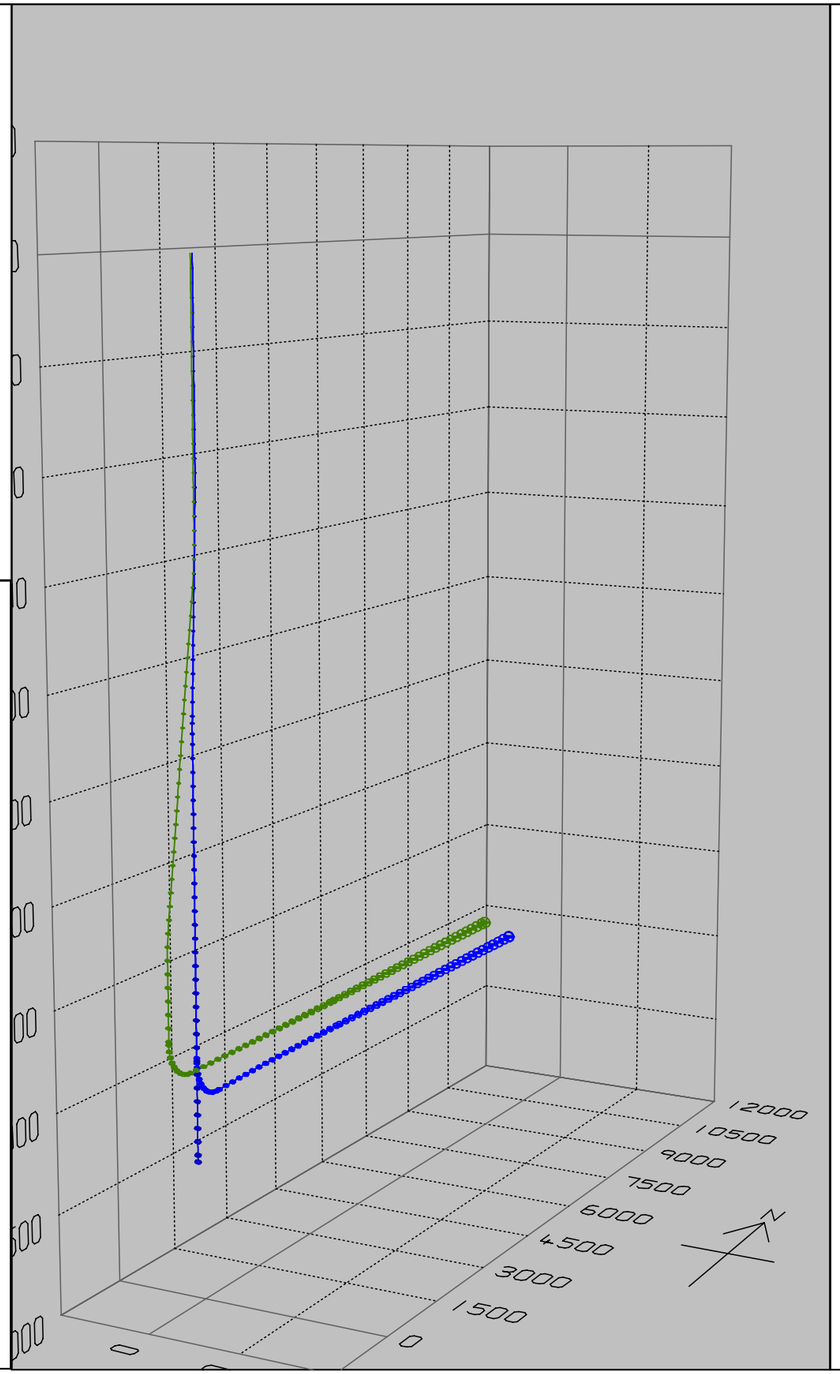
| PROJECT DETAILS: LEA COUNTY | |
|---|---|
| Geodetic System: | Universal Transverse Mercator (US Survey Feet) |
| Datum: | North American Datum 1983 |
| Ellipsoid: | GRS 1980 |
| Zone: | Zone 13N (108 W to 102 W) |
| System Datum: | Mean Sea Level |

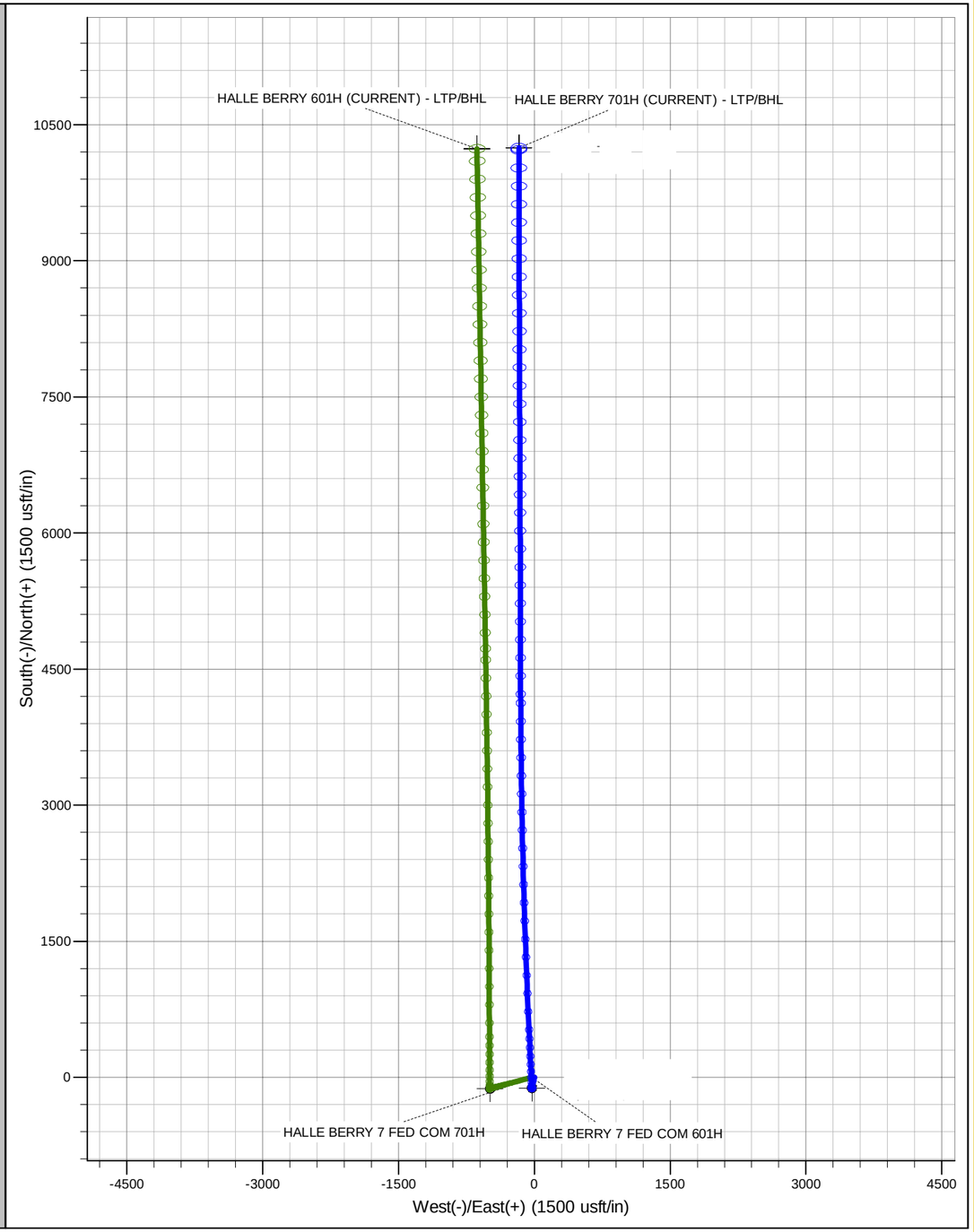
G
T M

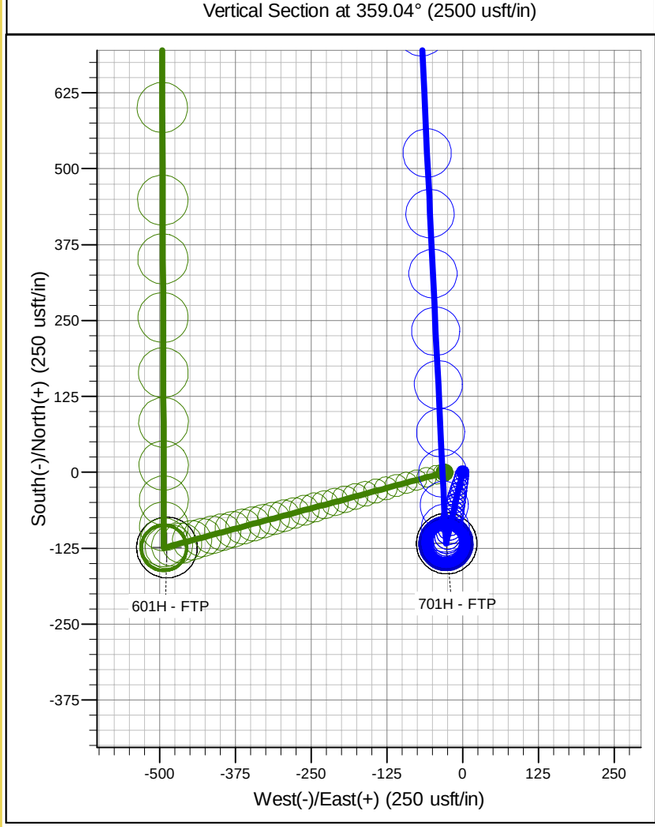
Azimuths to Grid North
True North: -0.80°
Magnetic North: 6.94°

Magnetic Field
Strength: 48904.6nT
Dip Angle: 60.41°
Date: 11/6/2018
Model: IGRF200510



# NEW MEXICO

**LEA**
**HALLE BERRY**
**HALLE BERRY 7 FED COM 601H**

**HALLE BERRY 7 FED COM 601H**

**Plan: PWP1**

# Survey Report - Geographic

**17 December, 2019**

# Centennial Resource Dev

## Survey Report - Geographic

| | | | |
|---|---|---|---|
| **Company:** | NEW MEXICO | **Local Co-ordinate Reference:** | Well HALLE BERRY 7 FED COM 601H |
| **Project:** | LEA | **TVD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Site:** | HALLE BERRY | **MD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Well:** | HALLE BERRY 7 FED COM 601H | **North Reference:** | Grid |
| **Wellbore:** | HALLE BERRY 7 FED COM 601H | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | Compass |

**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** HALLE BERRY

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 11,764,110.56 usft | **Latitude:** | 32° 23' 58.887 N |
| **From:** | Map | **Easting:** | 2,098,229.90 usft | **Longitude:** | 103° 30' 58.565 W |
| **Position Uncertainty:** | 0.0 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.80 ° |

**Well** HALLE BERRY 7 FED COM 601H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.0 usft | **Northing:** | 11,764,068.18 usft | **Latitude:** | 32° 23' 58.413 N |
| | **+E/-W** | 0.0 usft | **Easting:** | 2,098,630.40 usft | **Longitude:** | 103° 30' 53.900 W |
| **Position Uncertainty** | | 0.0 usft | **Wellhead Elevation:** | usft | **Ground Level:** | 3,508.3 usft |

**Wellbore** HALLE BERRY 7 FED COM 601H

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF200510 | 12/31/2009 | 7.74 | 60.41 | 48,904.58409496 |

**Design** PWP1

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.0 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 |

**Survey Tool Program** **Date** 12/17/2019

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.0 | 21,935.9 | PWP1 (HALLE BERRY 7 FED COM 601H | MWD+IFR1+MS | OWSG_Rev2_ MWD + IFR1 + Multi-Station Correction |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 4,000.0 | 0.00 | 0.00 | 4,000.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 4,500.0 | 5.00 | 255.00 | 4,499.4 | -5.6 | -21.1 | 11,764,062.54 | 2,098,609.34 | 32° 23' 58.360 N | 103° 30' 54.147 W |
| 9,500.0 | 5.00 | 255.00 | 9,480.3 | -118.4 | -442.0 | 11,763,949.75 | 2,098,188.41 | 32° 23' 57.302 N | 103° 30' 59.074 W |
| 10,000.0 | 0.00 | 0.00 | 9,979.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 11,247.5 | 0.00 | 0.00 | 11,227.2 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 12,147.2 | 90.00 | 359.80 | 11,800.0 | 448.7 | -465.0 | 11,764,516.90 | 2,098,165.35 | 32° 24' 2.917 N | 103° 30' 59.252 W |
| 16,425.8 | 90.00 | 359.02 | 11,800.0 | 4,727.0 | -509.1 | 11,768,795.15 | 2,098,121.27 | 32° 24' 45.259 N | 103° 30' 59.073 W |
| 21,935.9 | 90.00 | 359.02 | 11,800.0 | 10,236.3 | -603.4 | 11,774,304.45 | 2,098,026.96 | 32° 25' 39.789 N | 103° 30' 59.281 W |

# Centennial Resource Dev

## Survey Report - Geographic

| | | | |
|---|---|---|---|
| **Company:** | NEW MEXICO | **Local Co-ordinate Reference:** | Well HALLE BERRY 7 FED COM 601H |
| **Project:** | LEA | **TVD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Site:** | HALLE BERRY | **MD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Well:** | HALLE BERRY 7 FED COM 601H | **North Reference:** | Grid |
| **Wellbore:** | HALLE BERRY 7 FED COM 601H | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | Compass |

**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** HALLE BERRY

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 11,764,110.56 usft | **Latitude:** | 32° 23' 58.887 N |
| **From:** | Map | **Easting:** | 2,098,229.90 usft | **Longitude:** | 103° 30' 58.565 W |
| **Position Uncertainty:** | 0.0 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.80 ° |

**Well** HALLE BERRY 7 FED COM 601H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.0 usft | **Northing:** | 11,764,068.18 usft | **Latitude:** | 32° 23' 58.413 N |
| | **+E/-W** | 0.0 usft | **Easting:** | 2,098,630.40 usft | **Longitude:** | 103° 30' 53.900 W |
| **Position Uncertainty** | | 0.0 usft | **Wellhead Elevation:** | usft | **Ground Level:** | 3,508.3 usft |

**Wellbore** HALLE BERRY 7 FED COM 601H

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF200510 | 12/31/2009 | 7.74 | 60.41 | 48,904.58409496 |

**Design** PWP1

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.0 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 |

**Survey Tool Program** **Date** 12/17/2019

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.0 | 21,935.9 | PWP1 (HALLE BERRY 7 FED COM 601H | MWD+IFR1+MS | OWSG_Rev2_ MWD + IFR1 + Multi-Station Correction |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 900.0 | 0.00 | 0.00 | 900.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,000.0 | 0.00 | 0.00 | 1,000.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,100.0 | 0.00 | 0.00 | 1,100.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |

# Centennial Resource Dev

## Survey Report - Geographic

| | | | |
|---|---|---|---|
| **Company:** | NEW MEXICO | **Local Co-ordinate Reference:** | Well HALLE BERRY 7 FED COM 601H |
| **Project:** | LEA | **TVD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Site:** | HALLE BERRY | **MD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Well:** | HALLE BERRY 7 FED COM 601H | **North Reference:** | Grid |
| **Wellbore:** | HALLE BERRY 7 FED COM 601H | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | Compass |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 1,200.0 | 0.00 | 0.00 | 1,200.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,300.0 | 0.00 | 0.00 | 1,300.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,400.0 | 0.00 | 0.00 | 1,400.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,500.0 | 0.00 | 0.00 | 1,500.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,600.0 | 0.00 | 0.00 | 1,600.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,700.0 | 0.00 | 0.00 | 1,700.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,800.0 | 0.00 | 0.00 | 1,800.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 1,900.0 | 0.00 | 0.00 | 1,900.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,000.0 | 0.00 | 0.00 | 2,000.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,100.0 | 0.00 | 0.00 | 2,100.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,200.0 | 0.00 | 0.00 | 2,200.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,300.0 | 0.00 | 0.00 | 2,300.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,400.0 | 0.00 | 0.00 | 2,400.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,500.0 | 0.00 | 0.00 | 2,500.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,600.0 | 0.00 | 0.00 | 2,600.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,700.0 | 0.00 | 0.00 | 2,700.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,800.0 | 0.00 | 0.00 | 2,800.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 2,900.0 | 0.00 | 0.00 | 2,900.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,000.0 | 0.00 | 0.00 | 3,000.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,100.0 | 0.00 | 0.00 | 3,100.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,200.0 | 0.00 | 0.00 | 3,200.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,300.0 | 0.00 | 0.00 | 3,300.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,400.0 | 0.00 | 0.00 | 3,400.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,500.0 | 0.00 | 0.00 | 3,500.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,600.0 | 0.00 | 0.00 | 3,600.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,700.0 | 0.00 | 0.00 | 3,700.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,800.0 | 0.00 | 0.00 | 3,800.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 3,900.0 | 0.00 | 0.00 | 3,900.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 4,000.0 | 0.00 | 0.00 | 4,000.0 | 0.0 | 0.0 | 11,764,068.18 | 2,098,630.40 | 32° 23' 58.413 N | 103° 30' 53.900 W |
| 4,100.0 | 1.00 | 255.00 | 4,100.0 | -0.2 | -0.8 | 11,764,067.96 | 2,098,629.55 | 32° 23' 58.411 N | 103° 30' 53.910 W |
| 4,200.0 | 2.00 | 255.00 | 4,200.0 | -0.9 | -3.4 | 11,764,067.28 | 2,098,627.03 | 32° 23' 58.405 N | 103° 30' 53.939 W |
| 4,300.0 | 3.00 | 255.00 | 4,299.9 | -2.0 | -7.6 | 11,764,066.15 | 2,098,622.81 | 32° 23' 58.394 N | 103° 30' 53.989 W |
| 4,400.0 | 4.00 | 255.00 | 4,399.7 | -3.6 | -13.5 | 11,764,064.57 | 2,098,616.92 | 32° 23' 58.379 N | 103° 30' 54.058 W |
| 4,500.0 | 5.00 | 255.00 | 4,499.4 | -5.6 | -21.1 | 11,764,062.54 | 2,098,609.34 | 32° 23' 58.360 N | 103° 30' 54.147 W |
| 4,600.0 | 5.00 | 255.00 | 4,599.0 | -7.9 | -29.5 | 11,764,060.28 | 2,098,600.92 | 32° 23' 58.339 N | 103° 30' 54.245 W |
| 4,700.0 | 5.00 | 255.00 | 4,698.6 | -10.2 | -37.9 | 11,764,058.03 | 2,098,592.50 | 32° 23' 58.318 N | 103° 30' 54.344 W |
| 4,800.0 | 5.00 | 255.00 | 4,798.2 | -12.4 | -46.3 | 11,764,055.77 | 2,098,584.08 | 32° 23' 58.297 N | 103° 30' 54.442 W |
| 4,900.0 | 5.00 | 255.00 | 4,897.8 | -14.7 | -54.7 | 11,764,053.52 | 2,098,575.66 | 32° 23' 58.275 N | 103° 30' 54.541 W |
| 5,000.0 | 5.00 | 255.00 | 4,997.5 | -16.9 | -63.2 | 11,764,051.26 | 2,098,567.24 | 32° 23' 58.254 N | 103° 30' 54.639 W |
| 5,100.0 | 5.00 | 255.00 | 5,097.1 | -19.2 | -71.6 | 11,764,049.01 | 2,098,558.83 | 32° 23' 58.233 N | 103° 30' 54.738 W |
| 5,200.0 | 5.00 | 255.00 | 5,196.7 | -21.4 | -80.0 | 11,764,046.75 | 2,098,550.41 | 32° 23' 58.212 N | 103° 30' 54.836 W |
| 5,300.0 | 5.00 | 255.00 | 5,296.3 | -23.7 | -88.4 | 11,764,044.49 | 2,098,541.99 | 32° 23' 58.191 N | 103° 30' 54.935 W |
| 5,400.0 | 5.00 | 255.00 | 5,395.9 | -25.9 | -96.8 | 11,764,042.24 | 2,098,533.57 | 32° 23' 58.170 N | 103° 30' 55.034 W |
| 5,500.0 | 5.00 | 255.00 | 5,495.6 | -28.2 | -105.2 | 11,764,039.98 | 2,098,525.15 | 32° 23' 58.148 N | 103° 30' 55.132 W |
| 5,600.0 | 5.00 | 255.00 | 5,595.2 | -30.5 | -113.7 | 11,764,037.73 | 2,098,516.73 | 32° 23' 58.127 N | 103° 30' 55.231 W |
| 5,700.0 | 5.00 | 255.00 | 5,694.8 | -32.7 | -122.1 | 11,764,035.47 | 2,098,508.31 | 32° 23' 58.106 N | 103° 30' 55.329 W |
| 5,800.0 | 5.00 | 255.00 | 5,794.4 | -35.0 | -130.5 | 11,764,033.22 | 2,098,499.90 | 32° 23' 58.085 N | 103° 30' 55.428 W |
| 5,900.0 | 5.00 | 255.00 | 5,894.0 | -37.2 | -138.9 | 11,764,030.96 | 2,098,491.48 | 32° 23' 58.064 N | 103° 30' 55.526 W |
| 6,000.0 | 5.00 | 255.00 | 5,993.7 | -39.5 | -147.3 | 11,764,028.70 | 2,098,483.06 | 32° 23' 58.043 N | 103° 30' 55.625 W |
| 6,100.0 | 5.00 | 255.00 | 6,093.3 | -41.7 | -155.8 | 11,764,026.45 | 2,098,474.64 | 32° 23' 58.021 N | 103° 30' 55.723 W |
| 6,200.0 | 5.00 | 255.00 | 6,192.9 | -44.0 | -164.2 | 11,764,024.19 | 2,098,466.22 | 32° 23' 58.000 N | 103° 30' 55.822 W |
| 6,300.0 | 5.00 | 255.00 | 6,292.5 | -46.2 | -172.6 | 11,764,021.94 | 2,098,457.80 | 32° 23' 57.979 N | 103° 30' 55.921 W |
| 6,400.0 | 5.00 | 255.00 | 6,392.1 | -48.5 | -181.0 | 11,764,019.68 | 2,098,449.38 | 32° 23' 57.958 N | 103° 30' 56.019 W |
| 6,500.0 | 5.00 | 255.00 | 6,491.8 | -50.8 | -189.4 | 11,764,017.42 | 2,098,440.97 | 32° 23' 57.937 N | 103° 30' 56.118 W |
| 6,600.0 | 5.00 | 255.00 | 6,591.4 | -53.0 | -197.9 | 11,764,015.17 | 2,098,432.55 | 32° 23' 57.916 N | 103° 30' 56.216 W |

| | | | |
|---|---|---|---|
| **Company:** | NEW MEXICO | **Local Co-ordinate Reference:** | Well HALLE BERRY 7 FED COM 601H |
| **Project:** | LEA | **TVD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Site:** | HALLE BERRY | **MD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Well:** | HALLE BERRY 7 FED COM 601H | **North Reference:** | Grid |
| **Wellbore:** | HALLE BERRY 7 FED COM 601H | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | Compass |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 6,700.0 | 5.00 | 255.00 | 6,691.0 | -55.3 | -206.3 | 11,764,012.91 | 2,098,424.13 | 32° 23' 57.894 N | 103° 30' 56.315 W |
| 6,800.0 | 5.00 | 255.00 | 6,790.6 | -57.5 | -214.7 | 11,764,010.66 | 2,098,415.71 | 32° 23' 57.873 N | 103° 30' 56.413 W |
| 6,900.0 | 5.00 | 255.00 | 6,890.2 | -59.8 | -223.1 | 11,764,008.40 | 2,098,407.29 | 32° 23' 57.852 N | 103° 30' 56.512 W |
| 7,000.0 | 5.00 | 255.00 | 6,989.9 | -62.0 | -231.5 | 11,764,006.15 | 2,098,398.87 | 32° 23' 57.831 N | 103° 30' 56.611 W |
| 7,100.0 | 5.00 | 255.00 | 7,089.5 | -64.3 | -239.9 | 11,764,003.89 | 2,098,390.45 | 32° 23' 57.810 N | 103° 30' 56.709 W |
| 7,200.0 | 5.00 | 255.00 | 7,189.1 | -66.5 | -248.4 | 11,764,001.63 | 2,098,382.03 | 32° 23' 57.789 N | 103° 30' 56.808 W |
| 7,300.0 | 5.00 | 255.00 | 7,288.7 | -68.8 | -256.8 | 11,763,999.38 | 2,098,373.62 | 32° 23' 57.767 N | 103° 30' 56.906 W |
| 7,400.0 | 5.00 | 255.00 | 7,388.3 | -71.1 | -265.2 | 11,763,997.12 | 2,098,365.20 | 32° 23' 57.746 N | 103° 30' 57.005 W |
| 7,500.0 | 5.00 | 255.00 | 7,487.9 | -73.3 | -273.6 | 11,763,994.87 | 2,098,356.78 | 32° 23' 57.725 N | 103° 30' 57.103 W |
| 7,600.0 | 5.00 | 255.00 | 7,587.6 | -75.6 | -282.0 | 11,763,992.61 | 2,098,348.36 | 32° 23' 57.704 N | 103° 30' 57.202 W |
| 7,700.0 | 5.00 | 255.00 | 7,687.2 | -77.8 | -290.5 | 11,763,990.36 | 2,098,339.94 | 32° 23' 57.683 N | 103° 30' 57.300 W |
| 7,800.0 | 5.00 | 255.00 | 7,786.8 | -80.1 | -298.9 | 11,763,988.10 | 2,098,331.52 | 32° 23' 57.662 N | 103° 30' 57.399 W |
| 7,900.0 | 5.00 | 255.00 | 7,886.4 | -82.3 | -307.3 | 11,763,985.84 | 2,098,323.10 | 32° 23' 57.640 N | 103° 30' 57.498 W |
| 8,000.0 | 5.00 | 255.00 | 7,986.0 | -84.6 | -315.7 | 11,763,983.59 | 2,098,314.69 | 32° 23' 57.619 N | 103° 30' 57.596 W |
| 8,100.0 | 5.00 | 255.00 | 8,085.7 | -86.9 | -324.1 | 11,763,981.33 | 2,098,306.27 | 32° 23' 57.598 N | 103° 30' 57.695 W |
| 8,200.0 | 5.00 | 255.00 | 8,185.3 | -89.1 | -332.5 | 11,763,979.08 | 2,098,297.85 | 32° 23' 57.577 N | 103° 30' 57.793 W |
| 8,300.0 | 5.00 | 255.00 | 8,284.9 | -91.4 | -341.0 | 11,763,976.82 | 2,098,289.43 | 32° 23' 57.556 N | 103° 30' 57.892 W |
| 8,400.0 | 5.00 | 255.00 | 8,384.5 | -93.6 | -349.4 | 11,763,974.57 | 2,098,281.01 | 32° 23' 57.535 N | 103° 30' 57.990 W |
| 8,500.0 | 5.00 | 255.00 | 8,484.1 | -95.9 | -357.8 | 11,763,972.31 | 2,098,272.59 | 32° 23' 57.513 N | 103° 30' 58.089 W |
| 8,600.0 | 5.00 | 255.00 | 8,583.8 | -98.1 | -366.2 | 11,763,970.05 | 2,098,264.17 | 32° 23' 57.492 N | 103° 30' 58.187 W |
| 8,700.0 | 5.00 | 255.00 | 8,683.4 | -100.4 | -374.6 | 11,763,967.80 | 2,098,255.76 | 32° 23' 57.471 N | 103° 30' 58.286 W |
| 8,800.0 | 5.00 | 255.00 | 8,783.0 | -102.6 | -383.1 | 11,763,965.54 | 2,098,247.34 | 32° 23' 57.450 N | 103° 30' 58.385 W |
| 8,900.0 | 5.00 | 255.00 | 8,882.6 | -104.9 | -391.5 | 11,763,963.29 | 2,098,238.92 | 32° 23' 57.429 N | 103° 30' 58.483 W |
| 9,000.0 | 5.00 | 255.00 | 8,982.2 | -107.2 | -399.9 | 11,763,961.03 | 2,098,230.50 | 32° 23' 57.408 N | 103° 30' 58.582 W |
| 9,100.0 | 5.00 | 255.00 | 9,081.9 | -109.4 | -408.3 | 11,763,958.78 | 2,098,222.08 | 32° 23' 57.387 N | 103° 30' 58.680 W |
| 9,200.0 | 5.00 | 255.00 | 9,181.5 | -111.7 | -416.7 | 11,763,956.52 | 2,098,213.66 | 32° 23' 57.365 N | 103° 30' 58.779 W |
| 9,300.0 | 5.00 | 255.00 | 9,281.1 | -113.9 | -425.2 | 11,763,954.26 | 2,098,205.24 | 32° 23' 57.344 N | 103° 30' 58.877 W |
| 9,400.0 | 5.00 | 255.00 | 9,380.7 | -116.2 | -433.6 | 11,763,952.01 | 2,098,196.83 | 32° 23' 57.323 N | 103° 30' 58.976 W |
| 9,500.0 | 5.00 | 255.00 | 9,480.3 | -118.4 | -442.0 | 11,763,949.75 | 2,098,188.41 | 32° 23' 57.302 N | 103° 30' 59.074 W |
| 9,600.0 | 4.00 | 255.00 | 9,580.0 | -120.5 | -449.6 | 11,763,947.72 | 2,098,180.83 | 32° 23' 57.283 N | 103° 30' 59.163 W |
| 9,700.0 | 3.00 | 255.00 | 9,679.8 | -122.0 | -455.5 | 11,763,946.14 | 2,098,174.93 | 32° 23' 57.268 N | 103° 30' 59.232 W |
| 9,800.0 | 2.00 | 255.00 | 9,779.7 | -123.2 | -459.7 | 11,763,945.01 | 2,098,170.72 | 32° 23' 57.257 N | 103° 30' 59.282 W |
| 9,900.0 | 1.00 | 255.00 | 9,879.7 | -123.8 | -462.2 | 11,763,944.34 | 2,098,168.19 | 32° 23' 57.251 N | 103° 30' 59.311 W |
| 10,000.0 | 0.00 | 0.00 | 9,979.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,100.0 | 0.00 | 0.00 | 10,079.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,200.0 | 0.00 | 0.00 | 10,179.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,300.0 | 0.00 | 0.00 | 10,279.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,400.0 | 0.00 | 0.00 | 10,379.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,500.0 | 0.00 | 0.00 | 10,479.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,600.0 | 0.00 | 0.00 | 10,579.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,700.0 | 0.00 | 0.00 | 10,679.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,800.0 | 0.00 | 0.00 | 10,779.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 10,900.0 | 0.00 | 0.00 | 10,879.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 11,000.0 | 0.00 | 0.00 | 10,979.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 11,100.0 | 0.00 | 0.00 | 11,079.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 11,200.0 | 0.00 | 0.00 | 11,179.7 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 11,247.5 | 0.00 | 0.00 | 11,227.2 | -124.1 | -463.0 | 11,763,944.11 | 2,098,167.35 | 32° 23' 57.249 N | 103° 30' 59.321 W |
| 11,300.0 | 5.25 | 359.80 | 11,279.6 | -121.7 | -463.1 | 11,763,946.51 | 2,098,167.34 | 32° 23' 57.273 N | 103° 30' 59.321 W |
| 11,400.0 | 15.25 | 359.80 | 11,377.9 | -103.9 | -463.1 | 11,763,964.29 | 2,098,167.28 | 32° 23' 57.449 N | 103° 30' 59.319 W |
| 11,500.0 | 25.26 | 359.80 | 11,471.6 | -69.3 | -463.2 | 11,763,998.87 | 2,098,167.16 | 32° 23' 57.791 N | 103° 30' 59.314 W |
| 11,600.0 | 35.26 | 359.80 | 11,557.9 | -19.0 | -463.4 | 11,764,049.19 | 2,098,166.98 | 32° 23' 58.289 N | 103° 30' 59.308 W |
| 11,700.0 | 45.26 | 359.80 | 11,634.1 | 45.6 | -463.6 | 11,764,113.74 | 2,098,166.76 | 32° 23' 58.928 N | 103° 30' 59.300 W |
| 11,800.0 | 55.27 | 359.80 | 11,697.9 | 122.4 | -463.9 | 11,764,190.54 | 2,098,166.49 | 32° 23' 59.688 N | 103° 30' 59.291 W |
| 11,900.0 | 65.27 | 359.80 | 11,747.5 | 209.1 | -464.2 | 11,764,277.26 | 2,098,166.18 | 32° 24' 0.546 N | 103° 30' 59.281 W |
| 12,000.0 | 75.27 | 359.80 | 11,781.2 | 303.1 | -464.5 | 11,764,371.27 | 2,098,165.86 | 32° 24' 1.476 N | 103° 30' 59.269 W |

| | | | |
|---|---|---|---|
| **Company:** | NEW MEXICO | **Local Co-ordinate Reference:** | Well HALLE BERRY 7 FED COM 601H |
| **Project:** | LEA | **TVD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Site:** | HALLE BERRY | **MD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Well:** | HALLE BERRY 7 FED COM 601H | **North Reference:** | Grid |
| **Wellbore:** | HALLE BERRY 7 FED COM 601H | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | Compass |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 12,100.0 | 85.27 | 359.80 | 11,798.1 | 401.5 | -464.9 | 11,764,469.71 | 2,098,165.51 | 32° 24' 2.450 N | 103° 30' 59.257 W |
| 12,147.2 | 90.00 | 359.80 | 11,800.0 | 448.7 | -465.0 | 11,764,516.90 | 2,098,165.35 | 32° 24' 2.917 N | 103° 30' 59.252 W |
| 12,200.0 | 90.00 | 359.79 | 11,800.0 | 501.5 | -465.2 | 11,764,569.66 | 2,098,165.16 | 32° 24' 3.439 N | 103° 30' 59.245 W |
| 12,300.0 | 90.00 | 359.77 | 11,800.0 | 601.5 | -465.6 | 11,764,669.66 | 2,098,164.78 | 32° 24' 4.429 N | 103° 30' 59.234 W |
| 12,400.0 | 90.00 | 359.75 | 11,800.0 | 701.5 | -466.0 | 11,764,769.65 | 2,098,164.36 | 32° 24' 5.419 N | 103° 30' 59.222 W |
| 12,500.0 | 90.00 | 359.74 | 11,800.0 | 801.5 | -466.5 | 11,764,869.65 | 2,098,163.92 | 32° 24' 6.408 N | 103° 30' 59.211 W |
| 12,600.0 | 90.00 | 359.72 | 11,800.0 | 901.5 | -467.0 | 11,764,969.65 | 2,098,163.44 | 32° 24' 7.398 N | 103° 30' 59.201 W |
| 12,700.0 | 90.00 | 359.70 | 11,800.0 | 1,001.5 | -467.5 | 11,765,069.65 | 2,098,162.93 | 32° 24' 8.387 N | 103° 30' 59.190 W |
| 12,800.0 | 90.00 | 359.68 | 11,800.0 | 1,101.5 | -468.0 | 11,765,169.65 | 2,098,162.39 | 32° 24' 9.377 N | 103° 30' 59.180 W |
| 12,900.0 | 90.00 | 359.66 | 11,800.0 | 1,201.5 | -468.6 | 11,765,269.65 | 2,098,161.82 | 32° 24' 10.367 N | 103° 30' 59.171 W |
| 13,000.0 | 90.00 | 359.64 | 11,800.0 | 1,301.5 | -469.2 | 11,765,369.65 | 2,098,161.21 | 32° 24' 11.356 N | 103° 30' 59.162 W |
| 13,100.0 | 90.00 | 359.63 | 11,800.0 | 1,401.5 | -469.8 | 11,765,469.64 | 2,098,160.58 | 32° 24' 12.346 N | 103° 30' 59.153 W |
| 13,200.0 | 90.00 | 359.61 | 11,800.0 | 1,501.5 | -470.5 | 11,765,569.64 | 2,098,159.91 | 32° 24' 13.335 N | 103° 30' 59.145 W |
| 13,300.0 | 90.00 | 359.59 | 11,800.0 | 1,601.5 | -471.2 | 11,765,669.64 | 2,098,159.21 | 32° 24' 14.325 N | 103° 30' 59.137 W |
| 13,400.0 | 90.00 | 359.57 | 11,800.0 | 1,701.5 | -471.9 | 11,765,769.64 | 2,098,158.48 | 32° 24' 15.315 N | 103° 30' 59.129 W |
| 13,500.0 | 90.00 | 359.55 | 11,800.0 | 1,801.5 | -472.7 | 11,765,869.63 | 2,098,157.71 | 32° 24' 16.304 N | 103° 30' 59.122 W |
| 13,600.0 | 90.00 | 359.53 | 11,800.0 | 1,901.4 | -473.5 | 11,765,969.63 | 2,098,156.92 | 32° 24' 17.294 N | 103° 30' 59.115 W |
| 13,700.0 | 90.00 | 359.52 | 11,800.0 | 2,001.4 | -474.3 | 11,766,069.63 | 2,098,156.09 | 32° 24' 18.284 N | 103° 30' 59.108 W |
| 13,800.0 | 90.00 | 359.50 | 11,800.0 | 2,101.4 | -475.2 | 11,766,169.62 | 2,098,155.23 | 32° 24' 19.273 N | 103° 30' 59.102 W |
| 13,900.0 | 90.00 | 359.48 | 11,800.0 | 2,201.4 | -476.1 | 11,766,269.62 | 2,098,154.34 | 32° 24' 20.263 N | 103° 30' 59.096 W |
| 14,000.0 | 90.00 | 359.46 | 11,800.0 | 2,301.4 | -477.0 | 11,766,369.62 | 2,098,153.41 | 32° 24' 21.252 N | 103° 30' 59.091 W |
| 14,100.0 | 90.00 | 359.44 | 11,800.0 | 2,401.4 | -477.9 | 11,766,469.61 | 2,098,152.46 | 32° 24' 22.242 N | 103° 30' 59.086 W |
| 14,200.0 | 90.00 | 359.43 | 11,800.0 | 2,501.4 | -478.9 | 11,766,569.61 | 2,098,151.47 | 32° 24' 23.232 N | 103° 30' 59.081 W |
| 14,300.0 | 90.00 | 359.41 | 11,800.0 | 2,601.4 | -479.9 | 11,766,669.60 | 2,098,150.45 | 32° 24' 24.221 N | 103° 30' 59.077 W |
| 14,400.0 | 90.00 | 359.39 | 11,800.0 | 2,701.4 | -481.0 | 11,766,769.60 | 2,098,149.40 | 32° 24' 25.211 N | 103° 30' 59.073 W |
| 14,500.0 | 90.00 | 359.37 | 11,800.0 | 2,801.4 | -482.1 | 11,766,869.59 | 2,098,148.32 | 32° 24' 26.201 N | 103° 30' 59.069 W |
| 14,600.0 | 90.00 | 359.35 | 11,800.0 | 2,901.4 | -483.2 | 11,766,969.58 | 2,098,147.21 | 32° 24' 27.190 N | 103° 30' 59.066 W |
| 14,700.0 | 90.00 | 359.33 | 11,800.0 | 3,001.4 | -484.3 | 11,767,069.58 | 2,098,146.06 | 32° 24' 28.180 N | 103° 30' 59.063 W |
| 14,800.0 | 90.00 | 359.32 | 11,800.0 | 3,101.4 | -485.5 | 11,767,169.57 | 2,098,144.88 | 32° 24' 29.170 N | 103° 30' 59.061 W |
| 14,900.0 | 90.00 | 359.30 | 11,800.0 | 3,201.4 | -486.7 | 11,767,269.56 | 2,098,143.67 | 32° 24' 30.159 N | 103° 30' 59.059 W |
| 15,000.0 | 90.00 | 359.28 | 11,800.0 | 3,301.4 | -488.0 | 11,767,369.55 | 2,098,142.43 | 32° 24' 31.149 N | 103° 30' 59.057 W |
| 15,100.0 | 90.00 | 359.26 | 11,800.0 | 3,401.4 | -489.2 | 11,767,469.55 | 2,098,141.16 | 32° 24' 32.139 N | 103° 30' 59.056 W |
| 15,200.0 | 90.00 | 359.24 | 11,800.0 | 3,501.4 | -490.5 | 11,767,569.54 | 2,098,139.85 | 32° 24' 33.128 N | 103° 30' 59.055 W |
| 15,300.0 | 90.00 | 359.22 | 11,800.0 | 3,601.3 | -491.9 | 11,767,669.53 | 2,098,138.52 | 32° 24' 34.118 N | 103° 30' 59.054 W |
| 15,400.0 | 90.00 | 359.21 | 11,800.0 | 3,701.3 | -493.3 | 11,767,769.52 | 2,098,137.15 | 32° 24' 35.107 N | 103° 30' 59.054 W |
| 15,500.0 | 90.00 | 359.19 | 11,800.0 | 3,801.3 | -494.7 | 11,767,869.51 | 2,098,135.75 | 32° 24' 36.097 N | 103° 30' 59.054 W |
| 15,600.0 | 90.00 | 359.17 | 11,800.0 | 3,901.3 | -496.1 | 11,767,969.50 | 2,098,134.31 | 32° 24' 37.087 N | 103° 30' 59.055 W |
| 15,700.0 | 90.00 | 359.15 | 11,800.0 | 4,001.3 | -497.5 | 11,768,069.49 | 2,098,132.85 | 32° 24' 38.076 N | 103° 30' 59.056 W |
| 15,800.0 | 90.00 | 359.13 | 11,800.0 | 4,101.3 | -499.0 | 11,768,169.48 | 2,098,131.35 | 32° 24' 39.066 N | 103° 30' 59.057 W |
| 15,900.0 | 90.00 | 359.12 | 11,800.0 | 4,201.3 | -500.6 | 11,768,269.47 | 2,098,129.82 | 32° 24' 40.056 N | 103° 30' 59.058 W |
| 16,000.0 | 90.00 | 359.10 | 11,800.0 | 4,301.3 | -502.1 | 11,768,369.45 | 2,098,128.26 | 32° 24' 41.045 N | 103° 30' 59.060 W |
| 16,100.0 | 90.00 | 359.08 | 11,800.0 | 4,401.3 | -503.7 | 11,768,469.44 | 2,098,126.67 | 32° 24' 42.035 N | 103° 30' 59.063 W |
| 16,200.0 | 90.00 | 359.06 | 11,800.0 | 4,501.2 | -505.3 | 11,768,569.43 | 2,098,125.05 | 32° 24' 43.025 N | 103° 30' 59.066 W |
| 16,300.0 | 90.00 | 359.04 | 11,800.0 | 4,601.2 | -507.0 | 11,768,669.41 | 2,098,123.39 | 32° 24' 44.014 N | 103° 30' 59.069 W |
| 16,400.0 | 90.00 | 359.02 | 11,800.0 | 4,701.2 | -508.7 | 11,768,769.40 | 2,098,121.71 | 32° 24' 45.004 N | 103° 30' 59.072 W |
| 16,425.8 | 90.00 | 359.02 | 11,800.0 | 4,727.0 | -509.1 | 11,768,795.15 | 2,098,121.27 | 32° 24' 45.259 N | 103° 30' 59.073 W |
| 16,500.0 | 90.00 | 359.02 | 11,800.0 | 4,801.2 | -510.4 | 11,768,869.39 | 2,098,119.99 | 32° 24' 45.994 N | 103° 30' 59.076 W |
| 16,600.0 | 90.00 | 359.02 | 11,800.0 | 4,901.2 | -512.1 | 11,768,969.37 | 2,098,118.28 | 32° 24' 46.983 N | 103° 30' 59.080 W |
| 16,700.0 | 90.00 | 359.02 | 11,800.0 | 5,001.2 | -513.8 | 11,769,069.36 | 2,098,116.57 | 32° 24' 47.973 N | 103° 30' 59.084 W |
| 16,800.0 | 90.00 | 359.02 | 11,800.0 | 5,101.2 | -515.5 | 11,769,169.34 | 2,098,114.86 | 32° 24' 48.962 N | 103° 30' 59.087 W |
| 16,900.0 | 90.00 | 359.02 | 11,800.0 | 5,201.1 | -517.2 | 11,769,269.33 | 2,098,113.15 | 32° 24' 49.952 N | 103° 30' 59.091 W |
| 17,000.0 | 90.00 | 359.02 | 11,800.0 | 5,301.1 | -519.0 | 11,769,369.31 | 2,098,111.44 | 32° 24' 50.942 N | 103° 30' 59.095 W |
| 17,100.0 | 90.00 | 359.02 | 11,800.0 | 5,401.1 | -520.7 | 11,769,469.30 | 2,098,109.73 | 32° 24' 51.931 N | 103° 30' 59.099 W |
| 17,200.0 | 90.00 | 359.02 | 11,800.0 | 5,501.1 | -522.4 | 11,769,569.28 | 2,098,108.01 | 32° 24' 52.921 N | 103° 30' 59.102 W |
| 17,300.0 | 90.00 | 359.02 | 11,800.0 | 5,601.1 | -524.1 | 11,769,669.27 | 2,098,106.30 | 32° 24' 53.911 N | 103° 30' 59.106 W |

| | | | |
|---|---|---|---|
| **Company:** | NEW MEXICO | **Local Co-ordinate Reference:** | Well HALLE BERRY 7 FED COM 601H |
| **Project:** | LEA | **TVD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Site:** | HALLE BERRY | **MD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Well:** | HALLE BERRY 7 FED COM 601H | **North Reference:** | Grid |
| **Wellbore:** | HALLE BERRY 7 FED COM 601H | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | Compass |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 17,400.0 | 90.00 | 359.02 | 11,800.0 | 5,701.1 | -525.8 | 11,769,769.25 | 2,098,104.59 | 32° 24' 54.900 N | 103° 30' 59.110 W |
| 17,500.0 | 90.00 | 359.02 | 11,800.0 | 5,801.1 | -527.5 | 11,769,869.24 | 2,098,102.88 | 32° 24' 55.890 N | 103° 30' 59.114 W |
| 17,600.0 | 90.00 | 359.02 | 11,800.0 | 5,901.0 | -529.2 | 11,769,969.22 | 2,098,101.17 | 32° 24' 56.880 N | 103° 30' 59.117 W |
| 17,700.0 | 90.00 | 359.02 | 11,800.0 | 6,001.0 | -530.9 | 11,770,069.21 | 2,098,099.46 | 32° 24' 57.869 N | 103° 30' 59.121 W |
| 17,800.0 | 90.00 | 359.02 | 11,800.0 | 6,101.0 | -532.7 | 11,770,169.19 | 2,098,097.74 | 32° 24' 58.859 N | 103° 30' 59.125 W |
| 17,900.0 | 90.00 | 359.02 | 11,800.0 | 6,201.0 | -534.4 | 11,770,269.18 | 2,098,096.03 | 32° 24' 59.848 N | 103° 30' 59.129 W |
| 18,000.0 | 90.00 | 359.02 | 11,800.0 | 6,301.0 | -536.1 | 11,770,369.17 | 2,098,094.32 | 32° 25' 0.838 N | 103° 30' 59.133 W |
| 18,100.0 | 90.00 | 359.02 | 11,800.0 | 6,401.0 | -537.8 | 11,770,469.15 | 2,098,092.61 | 32° 25' 1.828 N | 103° 30' 59.136 W |
| 18,200.0 | 90.00 | 359.02 | 11,800.0 | 6,501.0 | -539.5 | 11,770,569.14 | 2,098,090.90 | 32° 25' 2.817 N | 103° 30' 59.140 W |
| 18,300.0 | 90.00 | 359.02 | 11,800.0 | 6,600.9 | -541.2 | 11,770,669.12 | 2,098,089.19 | 32° 25' 3.807 N | 103° 30' 59.144 W |
| 18,400.0 | 90.00 | 359.02 | 11,800.0 | 6,700.9 | -542.9 | 11,770,769.11 | 2,098,087.48 | 32° 25' 4.797 N | 103° 30' 59.148 W |
| 18,500.0 | 90.00 | 359.02 | 11,800.0 | 6,800.9 | -544.6 | 11,770,869.09 | 2,098,085.76 | 32° 25' 5.786 N | 103° 30' 59.151 W |
| 18,600.0 | 90.00 | 359.02 | 11,800.0 | 6,900.9 | -546.3 | 11,770,969.08 | 2,098,084.05 | 32° 25' 6.776 N | 103° 30' 59.155 W |
| 18,700.0 | 90.00 | 359.02 | 11,800.0 | 7,000.9 | -548.1 | 11,771,069.06 | 2,098,082.34 | 32° 25' 7.766 N | 103° 30' 59.159 W |
| 18,800.0 | 90.00 | 359.02 | 11,800.0 | 7,100.9 | -549.8 | 11,771,169.05 | 2,098,080.63 | 32° 25' 8.755 N | 103° 30' 59.163 W |
| 18,900.0 | 90.00 | 359.02 | 11,800.0 | 7,200.9 | -551.5 | 11,771,269.03 | 2,098,078.92 | 32° 25' 9.745 N | 103° 30' 59.167 W |
| 19,000.0 | 90.00 | 359.02 | 11,800.0 | 7,300.8 | -553.2 | 11,771,369.02 | 2,098,077.21 | 32° 25' 10.735 N | 103° 30' 59.170 W |
| 19,100.0 | 90.00 | 359.02 | 11,800.0 | 7,400.8 | -554.9 | 11,771,469.00 | 2,098,075.49 | 32° 25' 11.724 N | 103° 30' 59.174 W |
| 19,200.0 | 90.00 | 359.02 | 11,800.0 | 7,500.8 | -556.6 | 11,771,568.99 | 2,098,073.78 | 32° 25' 12.714 N | 103° 30' 59.178 W |
| 19,300.0 | 90.00 | 359.02 | 11,800.0 | 7,600.8 | -558.3 | 11,771,668.98 | 2,098,072.07 | 32° 25' 13.703 N | 103° 30' 59.182 W |
| 19,400.0 | 90.00 | 359.02 | 11,800.0 | 7,700.8 | -560.0 | 11,771,768.96 | 2,098,070.36 | 32° 25' 14.693 N | 103° 30' 59.185 W |
| 19,500.0 | 90.00 | 359.02 | 11,800.0 | 7,800.8 | -561.7 | 11,771,868.95 | 2,098,068.65 | 32° 25' 15.683 N | 103° 30' 59.189 W |
| 19,600.0 | 90.00 | 359.02 | 11,800.0 | 7,900.7 | -563.5 | 11,771,968.93 | 2,098,066.94 | 32° 25' 16.672 N | 103° 30' 59.193 W |
| 19,700.0 | 90.00 | 359.02 | 11,800.0 | 8,000.7 | -565.2 | 11,772,068.92 | 2,098,065.22 | 32° 25' 17.662 N | 103° 30' 59.197 W |
| 19,800.0 | 90.00 | 359.02 | 11,800.0 | 8,100.7 | -566.9 | 11,772,168.90 | 2,098,063.51 | 32° 25' 18.652 N | 103° 30' 59.200 W |
| 19,900.0 | 90.00 | 359.02 | 11,800.0 | 8,200.7 | -568.6 | 11,772,268.89 | 2,098,061.80 | 32° 25' 19.641 N | 103° 30' 59.204 W |
| 20,000.0 | 90.00 | 359.02 | 11,800.0 | 8,300.7 | -570.3 | 11,772,368.87 | 2,098,060.09 | 32° 25' 20.631 N | 103° 30' 59.208 W |
| 20,100.0 | 90.00 | 359.02 | 11,800.0 | 8,400.7 | -572.0 | 11,772,468.86 | 2,098,058.38 | 32° 25' 21.621 N | 103° 30' 59.212 W |
| 20,200.0 | 90.00 | 359.02 | 11,800.0 | 8,500.7 | -573.7 | 11,772,568.84 | 2,098,056.67 | 32° 25' 22.610 N | 103° 30' 59.216 W |
| 20,300.0 | 90.00 | 359.02 | 11,800.0 | 8,600.6 | -575.4 | 11,772,668.83 | 2,098,054.96 | 32° 25' 23.600 N | 103° 30' 59.219 W |
| 20,400.0 | 90.00 | 359.02 | 11,800.0 | 8,700.6 | -577.2 | 11,772,768.81 | 2,098,053.24 | 32° 25' 24.589 N | 103° 30' 59.223 W |
| 20,500.0 | 90.00 | 359.02 | 11,800.0 | 8,800.6 | -578.9 | 11,772,868.80 | 2,098,051.53 | 32° 25' 25.579 N | 103° 30' 59.227 W |
| 20,600.0 | 90.00 | 359.02 | 11,800.0 | 8,900.6 | -580.6 | 11,772,968.78 | 2,098,049.82 | 32° 25' 26.569 N | 103° 30' 59.231 W |
| 20,700.0 | 90.00 | 359.02 | 11,800.0 | 9,000.6 | -582.3 | 11,773,068.77 | 2,098,048.11 | 32° 25' 27.558 N | 103° 30' 59.234 W |
| 20,800.0 | 90.00 | 359.02 | 11,800.0 | 9,100.6 | -584.0 | 11,773,168.76 | 2,098,046.40 | 32° 25' 28.548 N | 103° 30' 59.238 W |
| 20,900.0 | 90.00 | 359.02 | 11,800.0 | 9,200.6 | -585.7 | 11,773,268.74 | 2,098,044.69 | 32° 25' 29.538 N | 103° 30' 59.242 W |
| 21,000.0 | 90.00 | 359.02 | 11,800.0 | 9,300.5 | -587.4 | 11,773,368.73 | 2,098,042.97 | 32° 25' 30.527 N | 103° 30' 59.246 W |
| 21,100.0 | 90.00 | 359.02 | 11,800.0 | 9,400.5 | -589.1 | 11,773,468.71 | 2,098,041.26 | 32° 25' 31.517 N | 103° 30' 59.249 W |
| 21,200.0 | 90.00 | 359.02 | 11,800.0 | 9,500.5 | -590.8 | 11,773,568.70 | 2,098,039.55 | 32° 25' 32.507 N | 103° 30' 59.253 W |
| 21,300.0 | 90.00 | 359.02 | 11,800.0 | 9,600.5 | -592.6 | 11,773,668.68 | 2,098,037.84 | 32° 25' 33.496 N | 103° 30' 59.257 W |
| 21,400.0 | 90.00 | 359.02 | 11,800.0 | 9,700.5 | -594.3 | 11,773,768.67 | 2,098,036.13 | 32° 25' 34.486 N | 103° 30' 59.261 W |
| 21,500.0 | 90.00 | 359.02 | 11,800.0 | 9,800.5 | -596.0 | 11,773,868.65 | 2,098,034.42 | 32° 25' 35.475 N | 103° 30' 59.265 W |
| 21,600.0 | 90.00 | 359.02 | 11,800.0 | 9,900.5 | -597.7 | 11,773,968.64 | 2,098,032.71 | 32° 25' 36.465 N | 103° 30' 59.268 W |
| 21,700.0 | 90.00 | 359.02 | 11,800.0 | 10,000.4 | -599.4 | 11,774,068.62 | 2,098,030.99 | 32° 25' 37.455 N | 103° 30' 59.272 W |
| 21,800.0 | 90.00 | 359.02 | 11,800.0 | 10,100.4 | -601.1 | 11,774,168.61 | 2,098,029.28 | 32° 25' 38.444 N | 103° 30' 59.276 W |
| 21,900.0 | 90.00 | 359.02 | 11,800.0 | 10,200.4 | -602.8 | 11,774,268.59 | 2,098,027.57 | 32° 25' 39.434 N | 103° 30' 59.280 W |
| 21,935.9 | 90.00 | 359.02 | 11,800.0 | 10,236.3 | -603.4 | 11,774,304.45 | 2,098,026.96 | 32° 25' 39.789 N | 103° 30' 59.281 W |

| | | | |
|---|---|---|---|
| **Company:** | NEW MEXICO | **Local Co-ordinate Reference:** | Well HALLE BERRY 7 FED COM 601H |
| **Project:** | LEA | **TVD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Site:** | HALLE BERRY | **MD Reference:** | PROD KB @ 3535.6usft (HP650 26.5+3509.1) |
| **Well:** | HALLE BERRY 7 FED COM 601H | **North Reference:** | Grid |
| **Wellbore:** | HALLE BERRY 7 FED COM 601H | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | Compass |

**Design Targets**

| Target Name<br>- hit/miss target<br>- Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| HALLE BERRY 7 FED C<br>- plan hits target center<br>- Point | 0.00 | 359.16 | 11,800.0 | 10,236.3 | -603.4 | 11,774,304.45 | 2,098,026.96 | 32° 25' 39.789 N | 103° 30' 59.281 W |
| HALLE BERRY 601H (C<br>- plan misses target center by 236.9usft at 11700.0usft MD (11634.1 TVD, 45.6 N, -463.6 E)<br>- Circle (radius 50.0) | 0.00 | 0.00 | 11,800.0 | -123.5 | -458.1 | 11,763,944.72 | 2,098,172.28 | 32° 23' 57.254 N | 103° 30' 59.263 W |
| HALLE BERRY 601H (C<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 11,800.0 | 10,236.3 | -603.4 | 11,774,304.45 | 2,098,026.96 | 32° 25' 39.789 N | 103° 30' 59.281 W |
| HALLE BERRY 7 FED C<br>- plan misses target center by 503.3usft at 21935.7usft MD (11800.0 TVD, 10236.1 N, -603.4 E)<br>- Point | 0.00 | 359.16 | 12,000.0 | 10,244.0 | -141.6 | 11,774,312.20 | 2,098,488.76 | 32° 25' 39.802 N | 103° 30' 53.892 W |

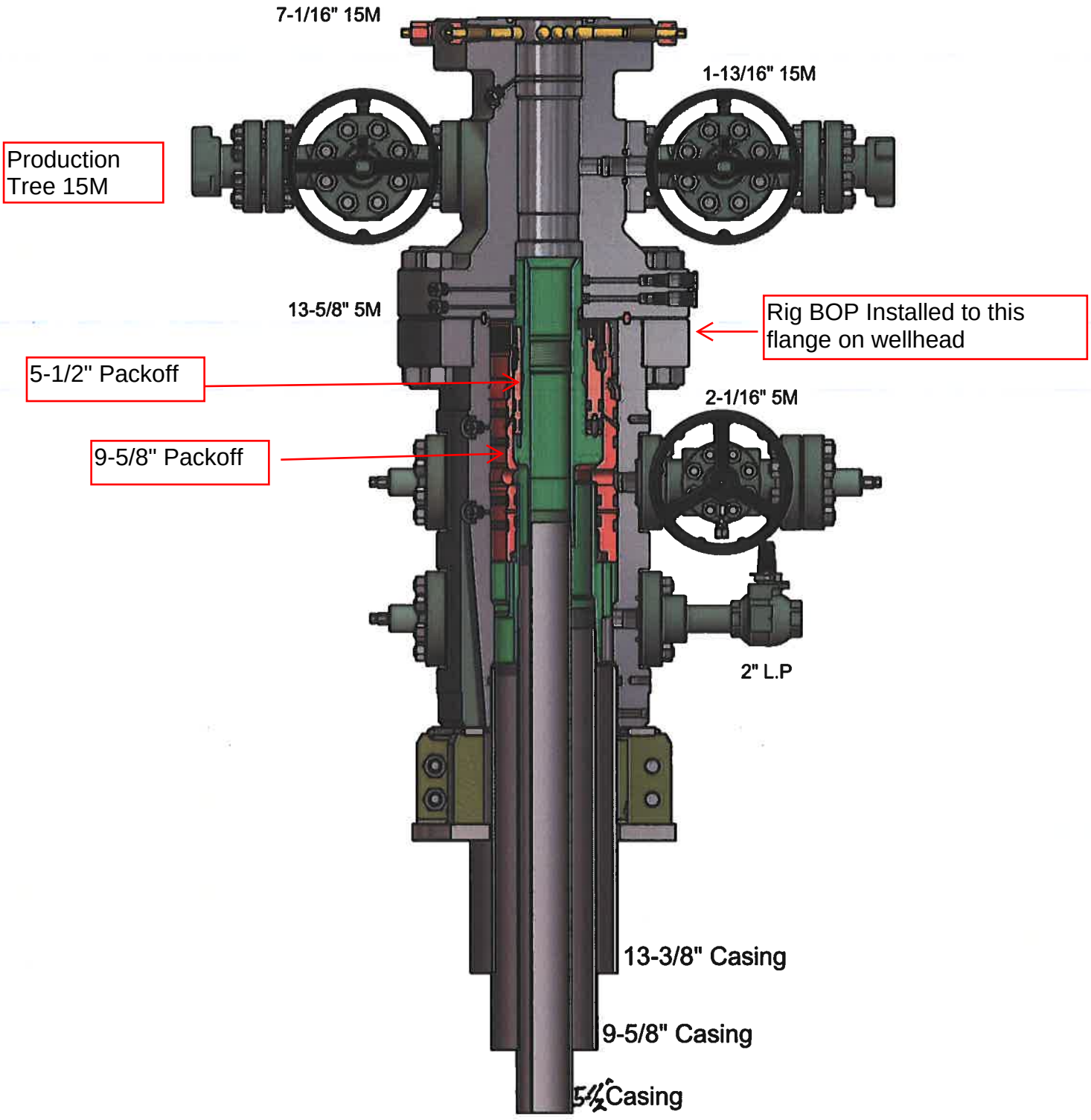
**Casing Points**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|---|---|---|---|---|
| 1,650.0 | 1,650.0 | 13 3/8" | 13-3/8 | 17-1/2 |
| 5,102.9 | 5,100.0 | 9 5/8" | 9-5/8 | 12-1/4 |
| 21,921.5 | 11,800.0 | 5 1/2" | 5-1/2 | 8-3/4 |

Checked By: _____ Approved By: _____ Date: _____

# Centennial Wellhead Running Procedure 3 String Bone Springs Design

1. Drill 17-1/2" surface hole to Total Depth and perform wellbore cleanup cycles.
2. Remove wear bushing then Run and land 13-3/8" casing with mandrel hanger in wellhead.
3. Cement 13-3/8" casing – cement to surface.
4. Dress Conductor and 13-3/8" casing as needed, weld on Cameron Multi-bowl system with baseplate supported by 20" conductor.
5. Test Weld to 70% of 13-3/8" casing collapse.
6. Nipple up and test BOPE with test plug per Onshore Order 2..
7. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst.
8. Install wear bushing then drillout 13-3/8" shoetrack plus 20' and conduct FIT to minimum of the MW equivalent anticipated to control the formation pressure to the next casing point.
9. Drill 12-1/4" Intermediate hole to 9-5/8" casing point. (Base Capitan Reef).
10. Remove wear bushing then Run and land 9-5/8" Intermediate with mandrel hanger in wellhead.
11. Cement 9-5/8 casing – cement to surface.
12. Washout stack, Run wash tool in wellhead and wash hanger and packoff setting area.
13. Install packoff and test to 5000 psi for 15 minutes.
    a. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst.
14. Install wear bushing then drillout 9-5/8" shoetrack plus 20' and conduct FIT to minimum MW equivalent to control the formation pressure to TD of well.
15. Drill 8-3/4" Vertical hole to KOP – Trip out for Curve BHA.
16. Drill 8-3/4" Curve, landing in production interval – Trip for Lateral BHA.
17. Drill 8-1/2" Lateral to Permitted BHL, perform cleanup cycles and trip out to run 5-1/2" Production Casing.
18. Remove wear bushing then run 5-1/2" production casing to TD landing casing mandrel in wellhead.
19. Cement 5-1/2" Production string to surface.
20. Run in with wash tool and wash wellhead area – install packoff and test to 5000psi for 15 minutes.
21. Install BPV in 5-1/2" mandrel hanger – Nipple down BOPE and install nightcap.
22. Test nightcap void to 5000psi for 30 minutes.




# Centennial

13-5/8" 10M MN-DS Wellhead

CAMERON
A Schlumberger Company

| Note: Dimensional information reflected on this drawing are estimated measurements only. | REV: | Drawing #: 1655807-A | Date: 12/20/18 | Drawn By: C. Moore |
|---|---|---|---|---|

# Centennial Resource Development - Well Control Plan

## A. Component and Preventer Compatibility Table

| Component | OD (inches) | Preventer | RWP |
|---|---|---|---|
| Drillpipe | 5 | Upper VBR: 3.5 – 5.5<br>Lower VBR: 3.5 – 5.5 | 10M |
| Heavyweight Drillpipe | 5 | Upper VBR: 3.5 – 5.5<br>Lower VBR: 3.5 – 5.5 | 10M |
| Drill collars and MWD tools | 6 ¾ | Annular | 5M |
| Mud Motor | 6 ¾ | Annular | 5M |
| Production Casing | 5-1/2 | Upper VBR: 3.5 – 5.5<br>Lower VBR: 3.5 – 5.5 | 10M |
| All | 0 – 13 5/8 | Annular | 5M |
| Open-hole | - | Blind rams | 10M |

VBR = Variable Bore Rams

RWP = Rated Working Pressure

MWD = Measurement While Drilling (directional tools)

## B. Well Control Procedures

### I. General Procedures While Drilling:

1. Sound alarm (alert crew).
2. Space out drill-string.
3. Shut down pumps and stop rotary.
4. Open HCR
5. Shut-in well – utilizing upper VBRs.
6. Close choke
7. Confirm shut-in.
8. Notify rig manager and Centennial company representative.
9. Call Centennial drilling engineer
10. Read and record
    I. Shut-in drillpipe pressure (SIDPP) and shut-in casing pressure (SCIP).
    II. Pit gain
    III. Time
11. Regroup, identify forward plan

## II. General Procedure While Tripping

1. Sound alarm (alert crew).
2. Stab full opening safety valve and close
3. Space out drillstring.
4. Open HCR
5. Shut-in well – utilizing upper VBRs
6. Close choke
7. Confirm shut-in.
8. Notify rig manager and Centennial company representative.
9. Call Centennial drilling engineer
10. Read and record:
    I. SIDPP AND SICP
    II. Pit gain
    III. Time
11. Regroup and identify forward plan.

## III. General Procedure While Running Casing

1. Sound alarm (alert crew)
2. Stab full opening safety valve and close
3. Space out string.
4. Open HCR
5. Shut-in well – utilizing upper VBRs.
6. Close choke
7. Confirm shut-in.
8. Notify rig manager and Centennial company representative.
9. Call Centennial drilling engineer
10. Read and record:
    I. SIDPP AND SICP
    II. Pit gain
    III. Time
11. Regroup and identify forward plan.

## IV. General Procedure With No Pipe In Hole (Open Hole)

1. Sound alarm (alert crew)
2. Open HCR
3. Shut-in with blind rams
4. Close choke
5. Confirm shut-in
6. Notify rig manager and Centennial company representative.
7. Call Centennial drilling engineer
8. Read and record:
    I. SIDPP AND SICP
    II. Pit gain
    III. Time
9. Regroup and identify forward plan.

## V. General Procedures While Pulling BHA Thru BOP Stack

1. **Prior to pulling last joint of drillpipe thru stack**:
   - I. Perform flow check, if flowing
     - a. Sound alarm, alert crew
     - b. Stab full opening safety valve and close
     - c. Space out drillstring with tool joint just beneath the upper pipe ram.
     - d. Open HCR
     - e. Shut-in utilizing upper VBRs
     - f. Close choke
     - g. Confirm shut-in
     - h. Notify rig manager and Centennial company representative.
     - i. Call Centennial drilling engineer
     - j. Read and record:
       - i. SIDPP and SICP
       - ii. Pit gain
       - iii. Time
   - II. Regroup and identify forward plan

2. **With BHA in the BOP stack and compatible ram preventer and pipe combo immediately available**:
   - a. Sound alarm, alert crew
   - b. Stab full opening safety valve and close
   - c. Space out drillstring with tool joint just beneath the upper pipe ram.
   - d. Open HCR
   - e. Shut-in utilizing upper VBRs
   - f. Close choke
   - g. Confirm shut-in
   - h. Notify rig manager and Centennial company representative.
   - i. Call Centennial drilling engineer
   - j. Read and record:
     - i. SIDPP and SICP
     - ii. Pit gain
     - iii. Time
   - II. Regroup and identify forward plan

3. **With BHA in the BOP stack and no compatible ram preventer and pipe combo immediately availiable**:
    I. Sound alarm, alert crew.
    II. If possible to pick up high enough, pull string clear of the stack and follow Open Hole (III) scenario.
    III. If impossible to pick up high enough to pull the string clear of the stack:
        a. Stab crossover, make up one joint/stand of drill pipe and full opening safety valve and close.
        b. Space out drillstring with tool joint just beneath the upper pipe ram.
        c. Open HCR
        d. Shut-in utilizing upper VBRs.
        e. Close choke
        f. Confirm shut-in
        g. Notify rig manager and Centennial company representative.
        h. Call Centennial drilling engineer
        i. Read and record:
            i. SIDPP and SICP
            ii. Pit gain
            iii. Time
    IV. Regroup and identify forward plan.

** **If annular is used to shut-in well and pressure builds to OR is expected to get to 50% of RWP, confirm space-out and swap to upper VBRs for shut-in.**