Form 3160-3
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD – HOBBS
08/04/2020
RECEIVED

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM126971

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.
PIRATE FEDERAL COM
104H [328936]

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

9. API Well No.
30-025-47527

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 [96434]
AVALON A / RED HILLS; BONE SPRING

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWNE / 300 FNL / 1680 FEL / LAT 32.223979 / LONG -103.47181
At proposed prod. zone SWSE / 100 FSL / 2310 FEL / LAT 32.196071 / LONG -103.473838

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 16 / T24S / R34E / NMP

14. Distance in miles and direction from nearest town or post office*
19.2 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)
300 feet

16. No of acres in lease
240

17. Spacing Unit dedicated to this well
320

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

19. Proposed Depth
9350 feet / 19501 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3539 feet

22. Approximate date work will start*
05/13/2020

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	04/04/2019

Title
Sr. Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	07/30/2020

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

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

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

GCP Rec 08/04/2020

SL

APPROVED WITH CONDITIONS

KZ
08/20/2020

Approval Date: 07/30/2020

(Continued on page 2)

*(Instructions on page 2)

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CENTENNIAL RESOURCE PRODUCTION**
LEASE NO.:	**NMNM126971**
WELL NAME & NO.:	**PIRATE FED COM 104H**
SURFACE HOLE FOOTAGE:	**300'/N & 1680'/E**
BOTTOM HOLE FOOTAGE	**100'/S & 2310'/E**
LOCATION:	**Section 16, T.24 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	☐ Capitan Reef	☐ WIPP
Other	☑ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

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

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1300** 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.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **9-5/8** inch 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.**

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.

JJP07282020

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.

AFMSS

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

Operator Certification Data Report

08/04/2020

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:** 04/04/2019

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: 10400040408 **Submission Date:** 04/04/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400040408 **Tie to previous NOS?** **Submission Date:** 04/04/2019

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: NMNM126971 **Lease Acres:** 240

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

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

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** 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? EXISTING **Master Development Plan name:** Pirate Federal Com Pad

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

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

Well Name: PIRATE FEDERAL COM **Well Number:** 104H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** AVALON A **Pool Name:** RED HILLS; BONE SPRING, NORTH

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

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

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

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** PIRATE FEDERAL COM **Number:** 102H

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: 19.2 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 300 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: PIRATE_FEDERAL_COM_104H_C102_20190328153334.pdf

PIRATE_FEDERAL_COM_104H_Lease_C102_20190328153334.pdf

Well work start Date: 05/13/2020 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 23782 **Reference Datum:**

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	300	FNL	1680	FEL	24S	34E	16	Aliquot NWNE	32.223979	-103.47181	LEA	NEW MEXICO	NEW MEXICO	S	STATE	3539	0	0	
KOP Leg #1	300	FNL	1680	FEL	24S	34E	16	Aliquot NWNE	32.223979	-103.471713	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-5238	8815	8777	

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
PPP Leg #1-1	100	FNL	2310	FEL	24S	34E	16	Aliquot NWNE	32.22453	-103.473846	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-5811	9716	9350	
EXIT Leg #1	100	FSL	2310	FEL	24S	34E	21	Aliquot SWSE	32.196071	-103.473838	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126971	-5811	19501	9350	
BHL Leg #1	100	FSL	2310	FEL	24S	34E	21	Aliquot SWSE	32.196071	-103.473838	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126971	-5811	19501	9350	

Drilling Plan Data Report

08/04/2020

APD ID: 10400040408 **Submission Date:** 04/04/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

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
429192	RUSTLER	3539	1215	1215	SANDSTONE	NONE	N
429200	CAPITAN REEF	-1847	5386	5386	OTHER : Carbonate	USEABLE WATER	N
429193	BELL CANYON	-1889	5428	5428	SANDSTONE	NATURAL GAS, OIL	N
429201	CHERRY CANYON	-2789	6328	6328	SANDSTONE	NATURAL GAS, OIL	N
429202	BRUSHY CANYON	-4188	7727	7727	SANDSTONE	NATURAL GAS, OIL	N
429203	BONE SPRING LIME	-5576	9115	9115	OTHER : Carbonate	NATURAL GAS, OIL	N
429194	AVALON SAND	-5664	9203	9203	SHALE	CO2, NATURAL GAS, OIL	Y
429195	FIRST BONE SPRING SAND	-6651	10190	10190	SANDSTONE	NATURAL GAS, OIL	N
429196	BONE SPRING 2ND	-6862	10401	10401	OTHER, SHALE : Carbonate	NATURAL GAS, OIL	N
429198	BONE SPRING 3RD	-8213	11752	11752	SANDSTONE	NATURAL GAS, OIL	N
429199	WOLFCAMP	-8573	12112	12112	OTHER, SHALE : Carbonate	NATURAL GAS, OIL	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 12250

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 is requesting to use a flex hose on the choke manifold. Please see section 8 for hose specs attachment. We would also like to request a variance to use a 5M Annular Preventer. 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 10,000 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 50% of its working pressure. 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 10,000 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_20190307150453.pdf

BOP Diagram Attachment:

HP650_BOP_Schematic_CoFlex_Choke_10K_2019_1_29_20190307150505.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	3539	3419	120	H-40	94	OTHER - Weld						
2	SURFACE	17.5	13.375	NEW	API	N	0	1300	0	1300	3539	2239	1300	J-55	54.5	OTHER - BTC	1.76	4.26	DRY	12.04	DRY	12.04
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5350	0	5350	3539	-1811	5350	J-55	40	LT&C	1.31	1.42	DRY	2.43	DRY	2.94
4	PRODUCTION	8.75	5.5	NEW	API	N	0	8815	0	8777	3539	-5238	8815	T-95	23	OTHER - VAroughneck AC	2.98	2.89	DRY	3.12	DRY	3.12

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

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
5	PRODUCTION	8.5	5.5	NEW	API	N	8815	19501	8777	9350	-5238	-5811	10686	T-95	23	OTHER - VAroughneck AC	2.8	2.72	DRY	2.93	DRY	2.93

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

TMK_UP_DQX_5_x_18_P110_HC_20181218100158.pdf

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20181213090542.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20190328113648.pdf

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

TMK_UP_DQX_5.5_x_20_P110_TAPERED_STRING_SPEC_20181213090012.pdf

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20181213090552.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20181213090612.pdf

Technical_Data_Sheet_VAroughneckAC_5.5in_23.00_T95_20200123112832.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20181213090602.pdf

Technical_Data_Sheet_VAroughneckAC_5.5in_23.00_T95_20200123112901.pdf

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

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	0
CONDUCTOR	Lead		0	120	121	1.49	12.9	181	0	Grout	Bentonite 4% BWOC, Cellophane #/sx, CaCl2 2% BWOC.
SURFACE	Lead		0	800	639	1.74	13.5	1111	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		800	1300	518	1.34	14.8	695	100	Class C Premium	C-45 Econolite 0.10%, CaCl 1.0%
INTERMEDIATE	Lead		0	4850	1151	3.44	10.7	3958	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		4850	5350	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	8815	865	3.41	10.6	2951	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		8815	19501	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: PIRATE FEDERAL COM **Well Number:** 104H

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
1300	5350	OTHER : Brine	9.8	10							
5350	19501	OIL-BASED MUD	8.8	9.5							
0	1300	OTHER : FW	8.6	9.5							

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:

OTH

Other log type(s):

GR

Coring operation description for the well:

N/A

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4336 **Anticipated Surface Pressure:** 2279

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:

Pirate_Federal_Com_104H_H2S_Plan_Template_20190329101127.docx

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

PIRATE_FEDERAL_COM_104H___CDEV_PLAN__1_20190329101146.pdf

Other proposed operations facets description:

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 is attached.

Other proposed operations facets attachment:

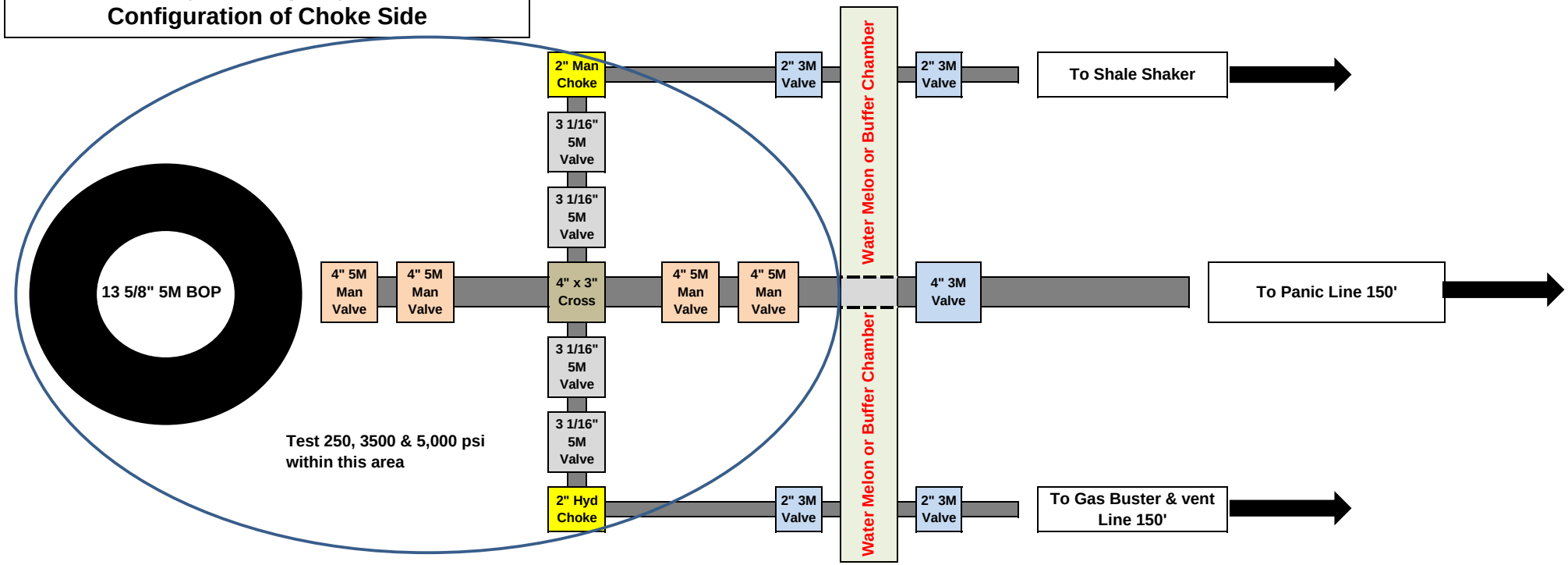
Pirate_Federal_Com_102H_103H_104H_Gas_Capture_Plan_20190328123110.docx

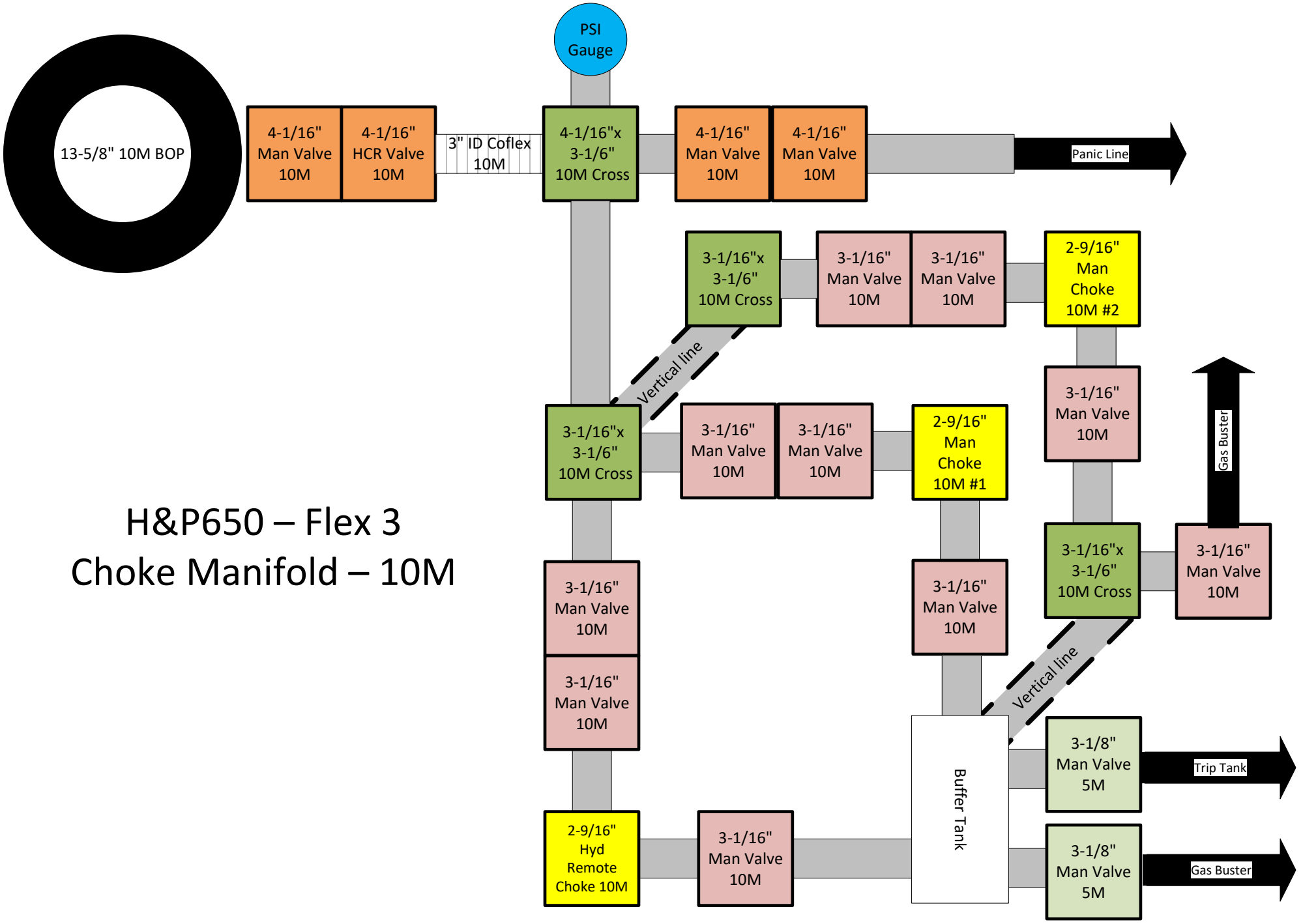
Other Variance attachment:

Flex_Hose_Specs_20181213093341.pdf

CDEV_Multi_Bowl_Procedure_Pirate_Federal_Com_104H_20200123112751.pdf

Centennial - Any Bone Spring Well: Minimum Configuration of Choke Side



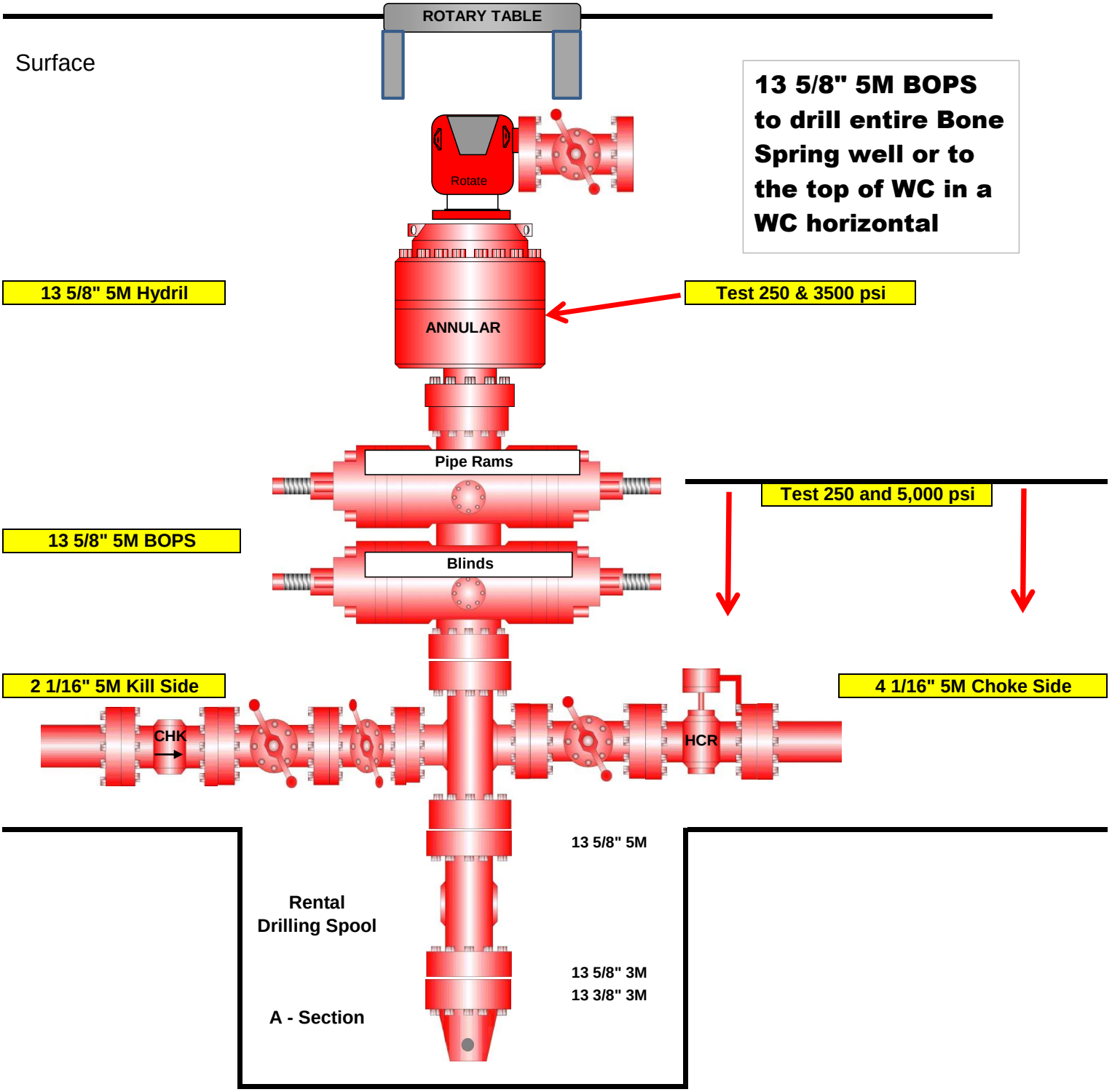


H&P650 – Flex 3
Choke Manifold – 10M

For Well Design	
Surface	13 3/8
Inter.	9 5/8
Prod.	5 1/2

Well Name: Raider Federal 501H

Surface



13 5/8" 5M BOPS to drill entire Bone Spring well or to the top of WC in a WC horizontal

13 5/8" 5M Hydril

Test 250 & 3500 psi

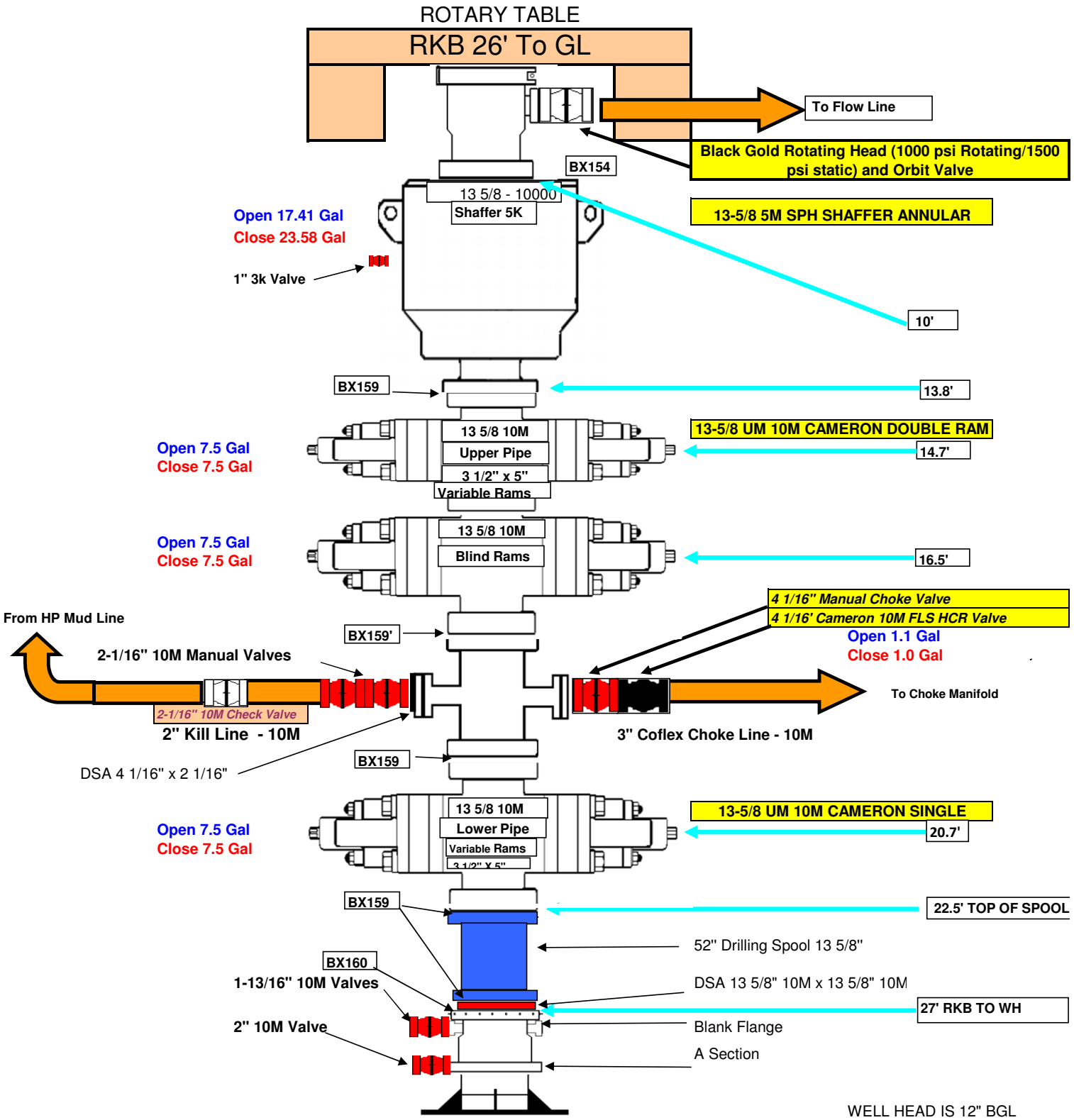
Test 250 and 5,000 psi

13 5/8" 5M BOPS

2 1/16" 5M Kill Side

4 1/16" 5M Choke Side

H&P 650

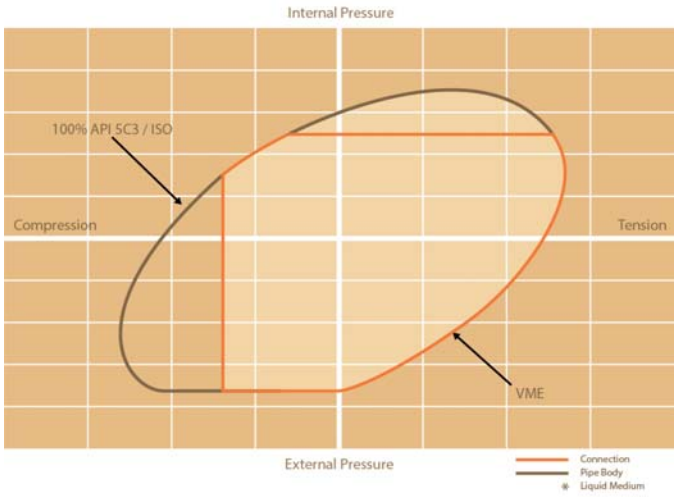

ROTARY TABLE
RKB 26' To GL
To Flow Line
Black Gold Rotating Head (1000 psi Rotating/1500 psi static) and Orbit Valve
BX154
13 5/8 - 10000
Shaffer 5K
13-5/8 5M SPH SHAFFER ANNULAR
Open 17.41 Gal
Close 23.58 Gal
1" 3k Valve
10'
BX159
13.8'
13 5/8 10M
Upper Pipe
3 1/2" x 5"
Variable Rams
13-5/8 UM 10M CAMERON DOUBLE RAM
14.7'
Open 7.5 Gal
Close 7.5 Gal
13 5/8 10M
Blind Rams
Open 7.5 Gal
Close 7.5 Gal
16.5'
4 1/16" Manual Choke Valve
4 1/16' Cameron 10M FLS HCR Valve
Open 1.1 Gal
Close 1.0 Gal
From HP Mud Line
BX159'
2-1/16" 10M Manual Valves
To Choke Manifold
2-1/16" 10M Check Valve
2" Kill Line - 10M
3" Coflex Choke Line - 10M
DSA 4 1/16" x 2 1/16"
BX159
13 5/8 10M
Lower Pipe
Variable Rams
13-5/8 UM 10M CAMERON SINGLE
20.7'
Open 7.5 Gal
Close 7.5 Gal
BX159
22.5' TOP OF SPOOL
52" Drilling Spool 13 5/8"
BX160
1-13/16" 10M Valves
DSA 13 5/8" 10M x 13 5/8" 10M
27' RKB TO WH
2" 10M Valve
Blank Flange
A Section
WELL HEAD IS 12" BGL

TECHNICAL DATA SHEET TMK UP DQX 5.5 X 20 P110 HC

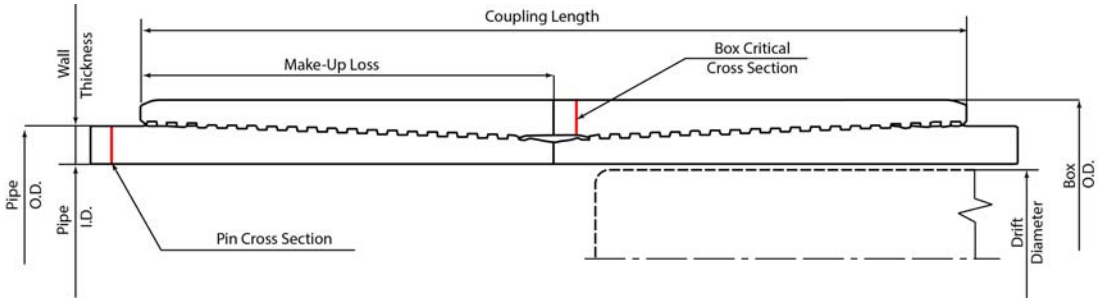
TUBULAR PARAMETERS	
Nominal OD, (inch)	5.500
Wall Thickness, (inch)	0.361
Pipe Grade	P110 HC
Coupling	Regular
Coupling Grade	P110 HC
Drift	Standard

PIPE BODY PROPERTIES	
PE Weight, (lbs/ft)	19.81
Nominal Weight, (lbs/ft)	20.00
Nominal ID, (inch)	4.778
Drift Diameter, (inch)	4.653
Nominal Pipe Body Area, (sq inch)	5.828
Yield Strength in Tension, (klbs)	641
Min. Internal Yield Pressure, (psi)	12 640
Collapse Pressure, (psi)	12 780

CONNECTION PARAMETERS	
Connection OD (inch)	6.05
Connection ID, (inch)	4.778
Make-Up Loss, (inch)	4.122
Connection Critical Area, (sq inch)	5.828
Yield Strength in Tension, (klbs)	641
Yeld Strength in Compression, (klbs)	641
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	12 640
Collapse Pressure, (psi)	12 780
Uniaxial Bending (deg/100ft)	91.7



MAKE-UP TORQUES	
Yield Torque, (ft-lb)	20 600
Minimum Make-Up Torque, (ft-lb)	11 600
Optimum Make-Up Torque, (ft-lb)	12 900
Maximum Make-Up Torque, (ft-lb)	14 100



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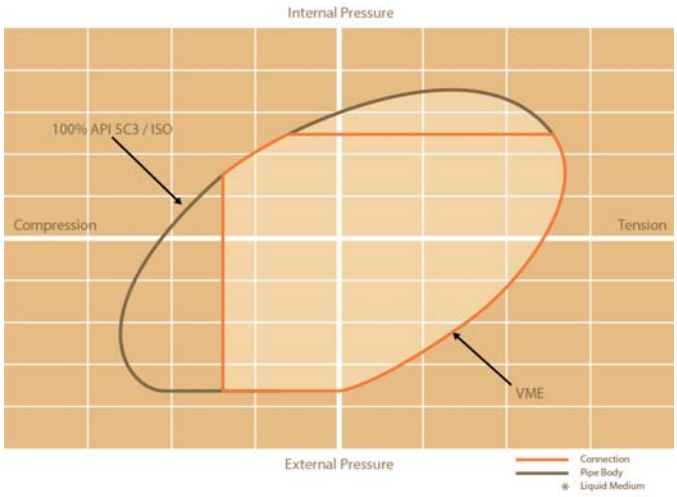
TECHNICAL DATA SHEET TMK UP DQX 5 X 18 P110 HC

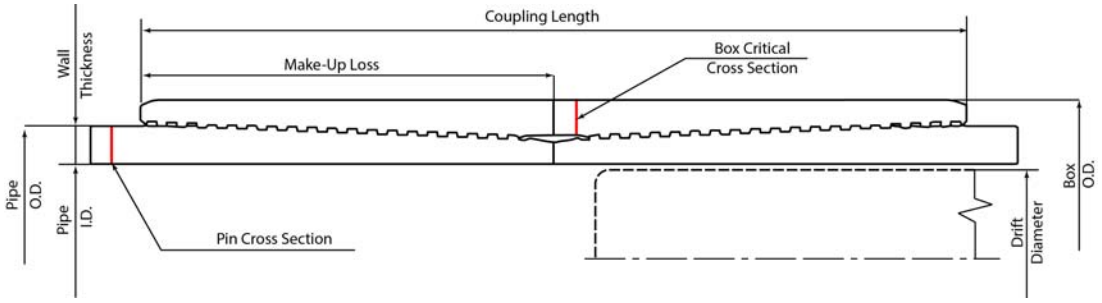
TUBULAR PARAMETERS	
Nominal OD, (inch)	5.000
Wall Thickness, (inch)	0.362
Pipe Grade	P110 HC
Coupling	Regular
Coupling Grade	P110 HC
Drift	Standard

CONNECTION PARAMETERS	
Connection OD (inch)	5.56
Connection ID, (inch)	4.276
Make-Up Loss, (inch)	4.097
Connection Critical Area, (sq inch)	5.275
Yield Strength in Tension, (klbs)	580
Yeld Strength in Compression, (klbs)	580
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	13 940
Collapse Pressure, (psi)	14 820
Uniaxial Bending (deg/100ft)	100.9

MAKE-UP TORQUES	
Yield Torque, (ft-lb)	17 500
Minimum Make-Up Torque, (ft-lb)	9 800
Optimum Make-Up Torque, (ft-lb)	10 900
Maximum Make-Up Torque, (ft-lb)	11 900

PIPE BODY PROPERTIES	
PE Weight, (lbs/ft)	17.93
Nominal Weight, (lbs/ft)	18.00
Nominal ID, (inch)	4.276
Drift Diameter, (inch)	4.151
Nominal Pipe Body Area, (sq inch)	5.275
Yield Strength in Tension, (klbs)	580
Min. Internal Yield Pressure, (psi)	13 940
Collapse Pressure, (psi)	14 820





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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.

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TECHNICAL DATA SHEET

Connection: **VAroughneckAC**
Size: **5 1/2 in X 23.00 lb/ft**
Drift: **standard**
Bevel: **standard**

Grade: **T95-1**

Material:

	US Customary	Metric
Yield Strength Min.	95,000 psi	655 Mpa
Yield Strength Max.	110,000 psi	758 Mpa
Tensile Strength Min.	105,000 psi	724 Mpa

Pipe:

	US Customary	Metric		US Customary	Metric
Nominal OD:	5.500 in	139.70 mm	Wall Thickness:	0.415 in	10.54 mm
Nominal ID:	4.670 in	118.62 mm	Standard Drift:	4.545 in	115.44 mm
Nominal Weight:	23.00 lb/ft	34.38 kg/m	Pipe Body Yield Strength:	630 klb	2,800 kN
Pipe Cross Section:	6.630 in²	4,277.41 mm²			

Connection:

	US Customary	Metric		
OD:	6.300 in	160.02 mm	Threads per inch:	5 Threads
ID:	4.669 in	118.60 mm		
Length:	8.976 in	228.00 mm		

Connection Performance (Uniaxial Load):

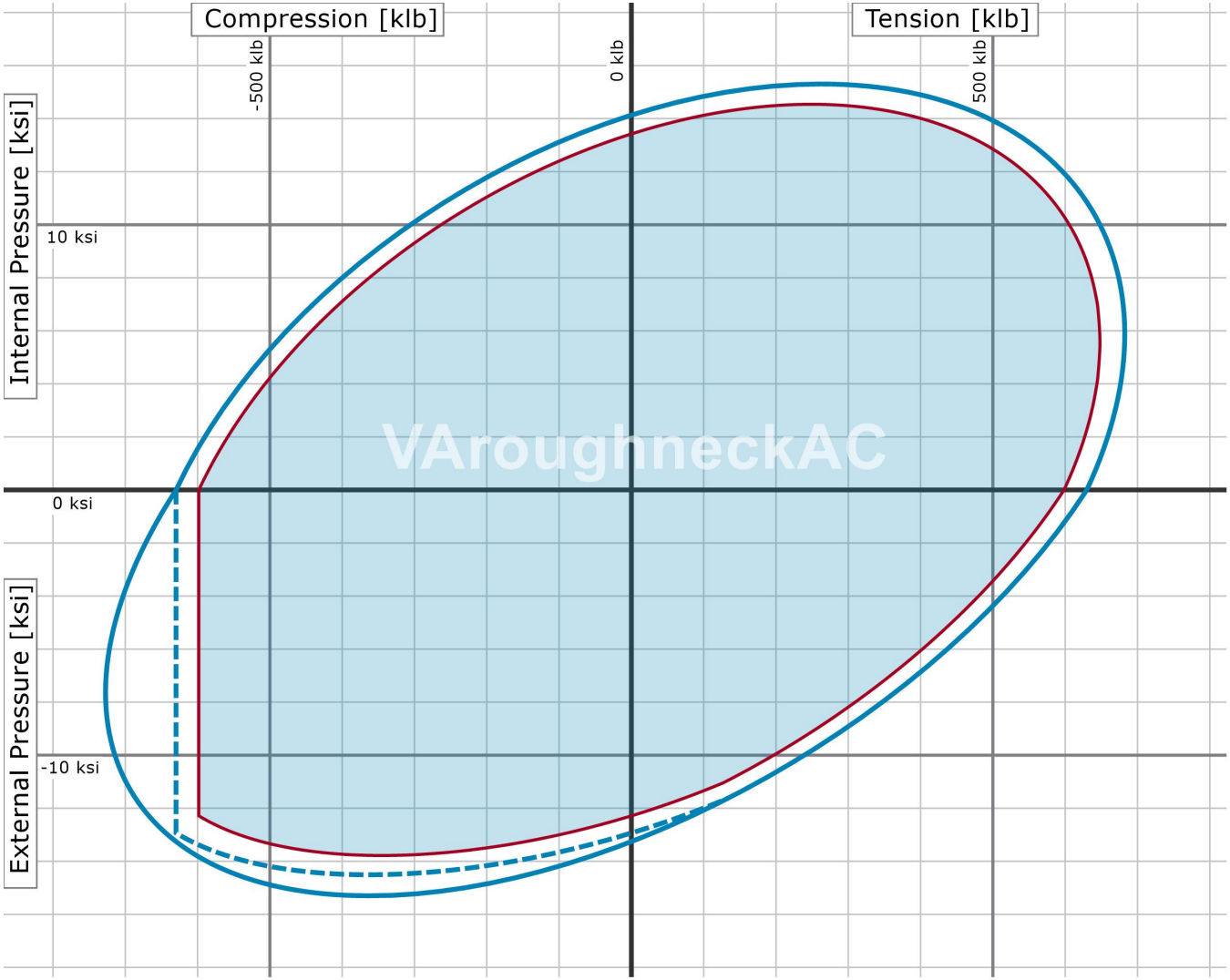
	US Customary	Metric		US Customary	Metric
Joint Strength:	630 klb	2,800 kN	Tension Efficiency:	> 100.0 %	
Collapse Resistance:.	12,940 psi	89.20 Mpa	Displacement:	1.242 gal/ft	15.43 l/m
Internal Yield Pressure:	12,550 psi	86.50 Mpa	Production:	0.890 gal/ft	11.05 l/m
Load on Coupling Face:	542 klb	2,410 kN			

Field Make Up (Friction Factor = 1.0):

	US Customary	Metric		US Customary	Metric
Minimum Torque:	16,150 ft.lb	21,890 Nm	Make-Up Loss:	4.370 in	111.00 mm
Optimum Torque:	17,940 ft.lb	24,320 Nm	Yield Torque:	22,420 ft.lb	30,400 Nm
Maximum Torque:	19,730 ft.lb	26,750 Nm			
Min. Torque on Shoulder:	%				

voestalpine
ONE STEP AHEAD.

LOAD ENVELOPE



Recommended Field of Application

Pipe Body Envelope

Pipe Body Collapse

Efficiency (% Pipe Body) under Uniaxial Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	100.0 %
External Pressure:	100.0 %

Sealability Rating (% Efficiency) under Combined Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	100.0 %
External Pressure:	100.0 %

Test Conditions	
Test Medium:	Fluid
Von Mises Envelope:	95.0 %
Bending:	20.00 °/100ft

The graph is calculated under consideration of the requirements of EN ISO 13679 and API 5C3. The combined loads are calculated without the consideration of wall thickness tolerances and differ from the values in the data sheet, which are calculated with tolerances determined by API. Any printout is NOT SUBJECT TO REGULAR REVISION. The generated performance envelope shall solely be used as a tool to facilitate the comparison of performance properties under combined loads, of different grades, sizes and connections of voestalpine Tubulars products. Field-specific safety/design factors as well as other loads are not considered. Thus the results shall by no means be used to replace the own string design engineering or to justify any warranty/guaranty cases.

voestalpine
ONE STEP AHEAD.

CASING ASSUMPTIONS WORKSHEET:

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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

  - 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:

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.

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TECHNICAL DATA SHEET

Connection: **VAroughneckAC**
Size: **5 1/2 in X 23.00 lb/ft**
Drift: **standard**
Bevel: **standard**

Grade: **T95-1**

Material:

	US Customary	Metric
Yield Strength Min.	95,000 psi	655 Mpa
Yield Strength Max.	110,000 psi	758 Mpa
Tensile Strength Min.	105,000 psi	724 Mpa

Pipe:

	US Customary	Metric		US Customary	Metric
Nominal OD:	5.500 in	139.70 mm	Wall Thickness:	0.415 in	10.54 mm
Nominal ID:	4.670 in	118.62 mm	Standard Drift:	4.545 in	115.44 mm
Nominal Weight:	23.00 lb/ft	34.38 kg/m	Pipe Body Yield Strength:	630 klb	2,800 kN
Pipe Cross Section:	6.630 in²	4,277.41 mm²			

Connection:

	US Customary	Metric		
OD:	6.300 in	160.02 mm	Threads per inch:	5 Threads
ID:	4.669 in	118.60 mm		
Length:	8.976 in	228.00 mm		

Connection Performance (Uniaxial Load):

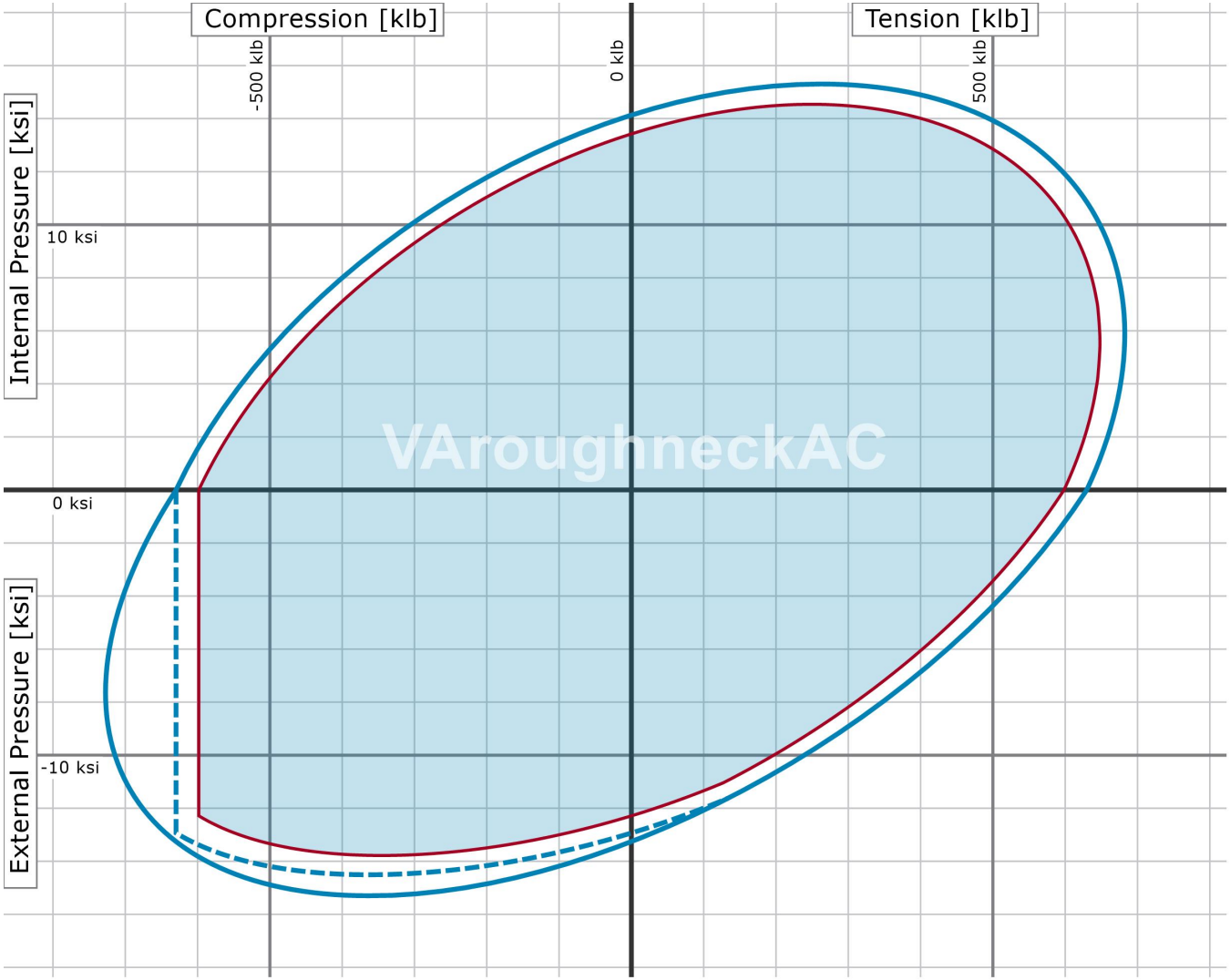
	US Customary	Metric		US Customary	Metric
Joint Strength:	630 klb	2,800 kN	Tension Efficiency:	> 100.0 %	
Collapse Resistance:.	12,940 psi	89.20 Mpa	Displacement:	1.242 gal/ft	15.43 l/m
Internal Yield Pressure:	12,550 psi	86.50 Mpa	Production:	0.890 gal/ft	11.05 l/m
Load on Coupling Face:	542 klb	2,410 kN			

Field Make Up (Friction Factor = 1.0):

	US Customary	Metric		US Customary	Metric
Minimum Torque:	16,150 ft.lb	21,890 Nm	Make-Up Loss:	4.370 in	111.00 mm
Optimum Torque:	17,940 ft.lb	24,320 Nm	Yield Torque:	22,420 ft.lb	30,400 Nm
Maximum Torque:	19,730 ft.lb	26,750 Nm			
Min. Torque on Shoulder:	%				

voestalpine
ONE STEP AHEAD.

LOAD ENVELOPE



Recommended Field of Application

Pipe Body Envelope

Pipe Body Collapse

Efficiency (% Pipe Body) under Uniaxial Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	100.0 %
External Pressure:	100.0 %

Sealability Rating (% Efficiency) under Combined Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	100.0 %
External Pressure:	100.0 %

Test Conditions	
Test Medium:	Fluid
Von Mises Envelope:	95.0 %
Bending:	20.00 °/100ft

The graph is calculated under consideration of the requirements of EN ISO 13679 and API 5C3. The combined loads are calculated without the consideration of wall thickness tolerances and differ from the values in the data sheet, which are calculated with tolerances determined by API. Any printout is NOT SUBJECT TO REGULAR REVISION. The generated performance envelope shall solely be used as a tool to facilitate the comparison of performance properties under combined loads, of different grades, sizes and connections of voestalpine Tubulars products. Field-specific safety/design factors as well as other loads are not considered. Thus the results shall by no means be used to replace the own string design engineering or to justify any warranty/guaranty cases.

voestalpine
ONE STEP AHEAD.

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)
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CENTENNIAL
RESOURCE DEVELOPMENT, INC

HYDROGEN SULFIDE CONTINGENCY PLAN

Pirate Federal Com 104H

Section 16

T 24S R 34E

Lea County, NM

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

Pirate Federal Com 104H

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

Pirate Federal Com 104H

Section 16

T 24S R 34E

Lea County, NM

PROCEED IN A WESTERLY, THEN NORTHWESTERLY, THEN WESTERLY DIRECTION FROM JAL, NEW MEXICO ALONG NM-128 APPROXIMATELY 18.0 MILES TO THE JUNCTION OF THIS ROAD AND COUNTY ROAD 2-B TO THE NORTH; TURN RIGHT AND PROCEED IN A NORTHERLY DIRECTION APPROXIMATELY 0.8 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE WEST; TURN LEFT AND PROCEED IN A WESTERLY DIRECTION APPROXIMATELY 0.3 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD TO THE NORTH; FOLLOW ROAD FLAGS IN A NORTHERLY DIRECTION APPROXIMATELY 346' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM JAL, NEW MEXICO TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 19.2 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

Pirate Federal Com 104H

H2S Concentration- 250 PPM

Maximum Escape Volume- 5000 MCF/Day

100 PPM Radius of Exposure- 116
(Formula= 1.589 x (B5/1000000) x (B6 x 1000) x .6258

500 PPM Radius of Exposure - 53
Formula= .4546 x (B5/1000000) x (B6 x 1000) x .6258

EMERGENCY CONTACT LIST

911 is available in the area			
NAME	**POSITION**	**COMPANY**	**NUMBER**
Centennial Contacts			
Jeremy Ray	Drilling Engineer	CDEV	303-263-7872
Ricky Mills/John Helm	Superintendent	CDEV	432-305-1068
Mike Ponder/Wayne Miller	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

NEW MEXICO

LEA
PIRATE FEDERAL
PIRATE FEDERAL COM 104H

PIRATE FEDERAL COM 104H

Plan: PWP0

Survey Report - Geographic

11 January, 2019

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well PIRATE FEDERAL COM 104H
Project:	LEA	**TVD Reference:**	RKB=3539+25 @ 3564.0usft
Site:	PIRATE FEDERAL	**MD Reference:**	RKB=3539+25 @ 3564.0usft
Well:	PIRATE FEDERAL COM 104H	**North Reference:**	Grid
Wellbore:	PIRATE FEDERAL COM 104H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Project LEA

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

Site PIRATE FEDERAL

Site Position:		**Northing:**	0.00 usft	**Latitude:**	0° 0' 0.000 N
From:	Map	**Easting:**	0.00 usft	**Longitude:**	109° 29' 19.478 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.00 °

Well PIRATE FEDERAL COM 104H

Well Position	**+N/-S**	0.0 usft	**Northing:**	11,700,392.13 usft	**Latitude:**	32° 13' 26.324 N
	+E/-W	0.0 usft	**Easting:**	2,112,860.38 usft	**Longitude:**	103° 28' 18.516 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,539.0 usft

Wellbore PIRATE FEDERAL COM 104H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	7.70	60.26	48,803.07589985

Design PWP0

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	182.72

Survey Tool Program **Date** 1/11/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	19,500.7	PWP0 (PIRATE FEDERAL COM 104H)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
100.0	0.00	0.00	100.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
200.0	0.00	0.00	200.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
300.0	0.00	0.00	300.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
400.0	0.00	0.00	400.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
500.0	0.00	0.00	500.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
600.0	0.00	0.00	600.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
700.0	0.00	0.00	700.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
800.0	0.00	0.00	800.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
900.0	0.00	0.00	900.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well PIRATE FEDERAL COM 104H
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Wellbore:	PIRATE FEDERAL COM 104H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,200.0	0.00	0.00	1,200.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	11,700,392.13	2,112,860.38	32° 13' 26.324 N	103° 28' 18.516 W
2,100.0	1.00	287.40	2,100.0	0.3	-0.8	11,700,392.39	2,112,859.54	32° 13' 26.326 N	103° 28' 18.526 W
2,200.0	2.00	287.40	2,200.0	1.0	-3.3	11,700,393.18	2,112,857.05	32° 13' 26.334 N	103° 28' 18.555 W
2,300.0	3.00	287.40	2,299.9	2.3	-7.5	11,700,394.48	2,112,852.88	32° 13' 26.348 N	103° 28' 18.603 W
2,400.0	4.00	287.40	2,399.7	4.2	-13.3	11,700,396.31	2,112,847.06	32° 13' 26.367 N	103° 28' 18.671 W
2,500.0	5.00	287.40	2,499.4	6.5	-20.8	11,700,398.65	2,112,839.57	32° 13' 26.391 N	103° 28' 18.757 W
2,600.0	6.00	287.40	2,598.9	9.4	-30.0	11,700,401.52	2,112,830.43	32° 13' 26.421 N	103° 28' 18.863 W
2,700.0	7.00	287.40	2,698.3	12.8	-40.8	11,700,404.90	2,112,819.62	32° 13' 26.456 N	103° 28' 18.989 W
2,800.0	7.00	287.40	2,797.5	16.4	-52.4	11,700,408.55	2,112,807.99	32° 13' 26.493 N	103° 28' 19.123 W
2,900.0	7.00	287.40	2,896.8	20.1	-64.0	11,700,412.19	2,112,796.37	32° 13' 26.531 N	103° 28' 19.258 W
3,000.0	7.00	287.40	2,996.0	23.7	-75.6	11,700,415.84	2,112,784.74	32° 13' 26.569 N	103° 28' 19.393 W
3,100.0	7.00	287.40	3,095.3	27.3	-87.3	11,700,419.48	2,112,773.11	32° 13' 26.607 N	103° 28' 19.528 W
3,200.0	7.00	287.40	3,194.5	31.0	-98.9	11,700,423.12	2,112,761.48	32° 13' 26.644 N	103° 28' 19.662 W
3,300.0	7.00	287.40	3,293.8	34.6	-110.5	11,700,426.77	2,112,749.85	32° 13' 26.682 N	103° 28' 19.797 W
3,400.0	7.00	287.40	3,393.0	38.3	-122.2	11,700,430.41	2,112,738.22	32° 13' 26.720 N	103° 28' 19.932 W
3,500.0	7.00	287.40	3,492.3	41.9	-133.8	11,700,434.06	2,112,726.59	32° 13' 26.757 N	103° 28' 20.067 W
3,600.0	7.00	287.40	3,591.6	45.6	-145.4	11,700,437.70	2,112,714.96	32° 13' 26.795 N	103° 28' 20.201 W
3,700.0	7.00	287.40	3,690.8	49.2	-157.0	11,700,441.35	2,112,703.33	32° 13' 26.833 N	103° 28' 20.336 W
3,800.0	7.00	287.40	3,790.1	52.9	-168.7	11,700,444.99	2,112,691.70	32° 13' 26.870 N	103° 28' 20.471 W
3,900.0	7.00	287.40	3,889.3	56.5	-180.3	11,700,448.64	2,112,680.07	32° 13' 26.908 N	103° 28' 20.606 W
4,000.0	7.00	287.40	3,988.6	60.1	-191.9	11,700,452.28	2,112,668.44	32° 13' 26.946 N	103° 28' 20.741 W
4,100.0	7.00	287.40	4,087.8	63.8	-203.6	11,700,455.92	2,112,656.81	32° 13' 26.984 N	103° 28' 20.875 W
4,200.0	7.00	287.40	4,187.1	67.4	-215.2	11,700,459.57	2,112,645.19	32° 13' 27.021 N	103° 28' 21.010 W
4,300.0	7.00	287.40	4,286.3	71.1	-226.8	11,700,463.21	2,112,633.56	32° 13' 27.059 N	103° 28' 21.145 W
4,400.0	7.00	287.40	4,385.6	74.7	-238.5	11,700,466.86	2,112,621.93	32° 13' 27.097 N	103° 28' 21.280 W
4,500.0	7.00	287.40	4,484.8	78.4	-250.1	11,700,470.50	2,112,610.30	32° 13' 27.134 N	103° 28' 21.414 W
4,600.0	7.00	287.40	4,584.1	82.0	-261.7	11,700,474.15	2,112,598.67	32° 13' 27.172 N	103° 28' 21.549 W
4,700.0	7.00	287.40	4,683.4	85.7	-273.3	11,700,477.79	2,112,587.04	32° 13' 27.210 N	103° 28' 21.684 W
4,800.0	7.00	287.40	4,782.6	89.3	-285.0	11,700,481.43	2,112,575.41	32° 13' 27.247 N	103° 28' 21.819 W
4,900.0	7.00	287.40	4,881.9	92.9	-296.6	11,700,485.08	2,112,563.78	32° 13' 27.285 N	103° 28' 21.954 W
5,000.0	7.00	287.40	4,981.1	96.6	-308.2	11,700,488.72	2,112,552.15	32° 13' 27.323 N	103° 28' 22.088 W
5,100.0	7.00	287.40	5,080.4	100.2	-319.9	11,700,492.37	2,112,540.52	32° 13' 27.361 N	103° 28' 22.223 W
5,200.0	7.00	287.40	5,179.6	103.9	-331.5	11,700,496.01	2,112,528.89	32° 13' 27.398 N	103° 28' 22.358 W
5,300.0	7.00	287.40	5,278.9	107.5	-343.1	11,700,499.66	2,112,517.26	32° 13' 27.436 N	103° 28' 22.493 W
5,400.0	7.00	287.40	5,378.1	111.2	-354.7	11,700,503.30	2,112,505.63	32° 13' 27.474 N	103° 28' 22.627 W
5,500.0	7.00	287.40	5,477.4	114.8	-366.4	11,700,506.95	2,112,494.00	32° 13' 27.511 N	103° 28' 22.762 W
5,600.0	7.00	287.40	5,576.6	118.5	-378.0	11,700,510.59	2,112,482.38	32° 13' 27.549 N	103° 28' 22.897 W
5,700.0	7.00	287.40	5,675.9	122.1	-389.6	11,700,514.23	2,112,470.75	32° 13' 27.587 N	103° 28' 23.032 W
5,800.0	7.00	287.40	5,775.2	125.7	-401.3	11,700,517.88	2,112,459.12	32° 13' 27.624 N	103° 28' 23.167 W
5,900.0	7.00	287.40	5,874.4	129.4	-412.9	11,700,521.52	2,112,447.49	32° 13' 27.662 N	103° 28' 23.301 W
6,000.0	7.00	287.40	5,973.7	133.0	-424.5	11,700,525.17	2,112,435.86	32° 13' 27.700 N	103° 28' 23.436 W
6,100.0	7.00	287.40	6,072.9	136.7	-436.1	11,700,528.81	2,112,424.23	32° 13' 27.738 N	103° 28' 23.571 W
6,200.0	7.00	287.40	6,172.2	140.3	-447.8	11,700,532.46	2,112,412.60	32° 13' 27.775 N	103° 28' 23.706 W
6,300.0	7.00	287.40	6,271.4	144.0	-459.4	11,700,536.10	2,112,400.97	32° 13' 27.813 N	103° 28' 23.840 W
6,400.0	7.00	287.40	6,370.7	147.6	-471.0	11,700,539.75	2,112,389.34	32° 13' 27.851 N	103° 28' 23.975 W
6,500.0	7.00	287.40	6,469.9	151.3	-482.7	11,700,543.39	2,112,377.71	32° 13' 27.888 N	103° 28' 24.110 W
6,600.0	7.00	287.40	6,569.2	154.9	-494.3	11,700,547.03	2,112,366.08	32° 13' 27.926 N	103° 28' 24.245 W

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well PIRATE FEDERAL COM 104H
Project:	LEA	**TVD Reference:**	RKB=3539+25 @ 3564.0usft
Site:	PIRATE FEDERAL	**MD Reference:**	RKB=3539+25 @ 3564.0usft
Well:	PIRATE FEDERAL COM 104H	**North Reference:**	Grid
Wellbore:	PIRATE FEDERAL COM 104H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,700.0	7.00	287.40	6,668.4	158.5	-505.9	11,700,550.68	2,112,354.45	32° 13' 27.964 N	103° 28' 24.380 W
6,800.0	7.00	287.40	6,767.7	162.2	-517.6	11,700,554.32	2,112,342.82	32° 13' 28.001 N	103° 28' 24.514 W
6,900.0	7.00	287.40	6,867.0	165.8	-529.2	11,700,557.97	2,112,331.19	32° 13' 28.039 N	103° 28' 24.649 W
7,000.0	7.00	287.40	6,966.2	169.5	-540.8	11,700,561.61	2,112,319.57	32° 13' 28.077 N	103° 28' 24.784 W
7,100.0	7.00	287.40	7,065.5	173.1	-552.4	11,700,565.26	2,112,307.94	32° 13' 28.115 N	103° 28' 24.919 W
7,200.0	7.00	287.40	7,164.7	176.8	-564.1	11,700,568.90	2,112,296.31	32° 13' 28.152 N	103° 28' 25.053 W
7,300.0	7.00	287.40	7,264.0	180.4	-575.7	11,700,572.54	2,112,284.68	32° 13' 28.190 N	103° 28' 25.188 W
7,400.0	7.00	287.40	7,363.2	184.1	-587.3	11,700,576.19	2,112,273.05	32° 13' 28.228 N	103° 28' 25.323 W
7,500.0	6.00	287.40	7,462.6	187.4	-598.1	11,700,579.57	2,112,262.25	32° 13' 28.263 N	103° 28' 25.448 W
7,600.0	5.00	287.40	7,562.1	190.3	-607.3	11,700,582.44	2,112,253.10	32° 13' 28.292 N	103° 28' 25.554 W
7,700.0	4.00	287.40	7,661.8	192.7	-614.8	11,700,584.79	2,112,245.61	32° 13' 28.317 N	103° 28' 25.641 W
7,800.0	3.00	287.40	7,761.6	194.5	-620.6	11,700,586.61	2,112,239.79	32° 13' 28.335 N	103° 28' 25.708 W
7,900.0	2.00	287.40	7,861.5	195.8	-624.8	11,700,587.92	2,112,235.63	32° 13' 28.349 N	103° 28' 25.757 W
8,000.0	1.00	287.40	7,961.5	196.6	-627.2	11,700,588.70	2,112,233.13	32° 13' 28.357 N	103° 28' 25.786 W
8,100.0	0.00	0.00	8,061.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,200.0	0.00	0.00	8,161.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,300.0	0.00	0.00	8,261.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,400.0	0.00	0.00	8,361.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,500.0	0.00	0.00	8,461.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,600.0	0.00	0.00	8,561.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,700.0	0.00	0.00	8,661.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,800.0	0.00	0.00	8,761.5	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,815.5	0.00	0.00	8,777.0	196.8	-628.1	11,700,588.96	2,112,232.30	32° 13' 28.360 N	103° 28' 25.795 W
8,900.0	8.45	179.76	8,861.2	190.6	-628.1	11,700,582.74	2,112,232.32	32° 13' 28.298 N	103° 28' 25.796 W
9,000.0	18.45	179.76	8,958.3	167.4	-628.0	11,700,559.51	2,112,232.42	32° 13' 28.068 N	103° 28' 25.799 W
9,100.0	28.45	179.76	9,049.9	127.6	-627.8	11,700,519.77	2,112,232.59	32° 13' 27.675 N	103° 28' 25.803 W
9,200.0	38.45	179.76	9,133.3	72.6	-627.6	11,700,464.73	2,112,232.82	32° 13' 27.130 N	103° 28' 25.810 W
9,300.0	48.45	179.76	9,205.8	3.9	-627.3	11,700,396.05	2,112,233.10	32° 13' 26.451 N	103° 28' 25.818 W
9,400.0	58.44	179.76	9,265.3	-76.3	-626.9	11,700,315.82	2,112,233.44	32° 13' 25.657 N	103° 28' 25.827 W
9,500.0	68.44	179.76	9,309.9	-165.6	-626.6	11,700,226.49	2,112,233.81	32° 13' 24.773 N	103° 28' 25.838 W
9,600.0	78.44	179.76	9,338.4	-261.4	-626.2	11,700,130.76	2,112,234.21	32° 13' 23.825 N	103° 28' 25.849 W
9,700.0	88.44	179.76	9,349.8	-360.6	-625.7	11,700,031.54	2,112,234.63	32° 13' 22.843 N	103° 28' 25.860 W
9,715.6	90.00	179.76	9,350.0	-376.2	-625.7	11,700,015.95	2,112,234.70	32° 13' 22.689 N	103° 28' 25.862 W
9,789.6	90.00	178.28	9,350.0	-450.2	-624.4	11,699,941.94	2,112,235.96	32° 13' 21.957 N	103° 28' 25.860 W
9,800.0	90.00	178.28	9,350.0	-460.6	-624.1	11,699,931.56	2,112,236.27	32° 13' 21.854 N	103° 28' 25.858 W
9,900.0	90.00	178.28	9,350.0	-560.5	-621.1	11,699,831.60	2,112,239.28	32° 13' 20.864 N	103° 28' 25.839 W
10,000.0	90.00	178.28	9,350.0	-660.5	-618.1	11,699,731.65	2,112,242.28	32° 13' 19.875 N	103° 28' 25.821 W
10,100.0	90.00	178.28	9,350.0	-760.4	-615.1	11,699,631.69	2,112,245.28	32° 13' 18.885 N	103° 28' 25.802 W
10,200.0	90.00	178.28	9,350.0	-860.4	-612.1	11,699,531.74	2,112,248.28	32° 13' 17.896 N	103° 28' 25.784 W
10,300.0	90.00	178.28	9,350.0	-960.3	-609.1	11,699,431.78	2,112,251.29	32° 13' 16.906 N	103° 28' 25.766 W
10,400.0	90.00	178.28	9,350.0	-1,060.3	-606.1	11,699,331.83	2,112,254.29	32° 13' 15.917 N	103° 28' 25.747 W
10,500.0	90.00	178.28	9,350.0	-1,160.3	-603.1	11,699,231.87	2,112,257.29	32° 13' 14.927 N	103° 28' 25.729 W
10,600.0	90.00	178.28	9,350.0	-1,260.2	-600.1	11,699,131.92	2,112,260.29	32° 13' 13.937 N	103° 28' 25.710 W
10,700.0	90.00	178.28	9,350.0	-1,360.2	-597.1	11,699,031.96	2,112,263.30	32° 13' 12.948 N	103° 28' 25.692 W
10,800.0	90.00	178.28	9,350.0	-1,460.1	-594.1	11,698,932.01	2,112,266.30	32° 13' 11.958 N	103° 28' 25.673 W
10,900.0	90.00	178.28	9,350.0	-1,560.1	-591.1	11,698,832.05	2,112,269.30	32° 13' 10.969 N	103° 28' 25.655 W
11,000.0	90.00	178.28	9,350.0	-1,660.0	-588.1	11,698,732.10	2,112,272.30	32° 13' 9.979 N	103° 28' 25.637 W
11,100.0	90.00	178.28	9,350.0	-1,760.0	-585.1	11,698,632.14	2,112,275.31	32° 13' 8.990 N	103° 28' 25.618 W
11,200.0	90.00	178.28	9,350.0	-1,859.9	-582.1	11,698,532.19	2,112,278.31	32° 13' 8.000 N	103° 28' 25.600 W
11,300.0	90.00	178.28	9,350.0	-1,959.9	-579.1	11,698,432.23	2,112,281.31	32° 13' 7.011 N	103° 28' 25.581 W
11,400.0	90.00	178.28	9,350.0	-2,059.9	-576.1	11,698,332.28	2,112,284.31	32° 13' 6.021 N	103° 28' 25.563 W
11,500.0	90.00	178.28	9,350.0	-2,159.8	-573.1	11,698,232.32	2,112,287.32	32° 13' 5.032 N	103° 28' 25.544 W
11,600.0	90.00	178.28	9,350.0	-2,259.8	-570.1	11,698,132.37	2,112,290.32	32° 13' 4.042 N	103° 28' 25.526 W
11,700.0	90.00	178.28	9,350.0	-2,359.7	-567.1	11,698,032.41	2,112,293.32	32° 13' 3.053 N	103° 28' 25.508 W
11,800.0	90.00	178.28	9,350.0	-2,459.7	-564.1	11,697,932.46	2,112,296.32	32° 13' 2.063 N	103° 28' 25.489 W

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well PIRATE FEDERAL COM 104H
Project:	LEA	**TVD Reference:**	RKB=3539+25 @ 3564.0usft
Site:	PIRATE FEDERAL	**MD Reference:**	RKB=3539+25 @ 3564.0usft
Well:	PIRATE FEDERAL COM 104H	**North Reference:**	Grid
Wellbore:	PIRATE FEDERAL COM 104H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,900.0	90.00	178.28	9,350.0	-2,559.6	-561.1	11,697,832.50	2,112,299.33	32° 13' 1.074 N	103° 28' 25.471 W
12,000.0	90.00	178.28	9,350.0	-2,659.6	-558.0	11,697,732.55	2,112,302.33	32° 13' 0.084 N	103° 28' 25.452 W
12,100.0	90.00	178.28	9,350.0	-2,759.5	-555.0	11,697,632.59	2,112,305.33	32° 12' 59.094 N	103° 28' 25.434 W
12,200.0	90.00	178.28	9,350.0	-2,859.5	-552.0	11,697,532.64	2,112,308.33	32° 12' 58.105 N	103° 28' 25.416 W
12,300.0	90.00	178.28	9,350.0	-2,959.4	-549.0	11,697,432.68	2,112,311.34	32° 12' 57.115 N	103° 28' 25.397 W
12,400.0	90.00	178.28	9,350.0	-3,059.4	-546.0	11,697,332.73	2,112,314.34	32° 12' 56.126 N	103° 28' 25.379 W
12,500.0	90.00	178.28	9,350.0	-3,159.4	-543.0	11,697,232.77	2,112,317.34	32° 12' 55.136 N	103° 28' 25.360 W
12,600.0	90.00	178.28	9,350.0	-3,259.3	-540.0	11,697,132.82	2,112,320.34	32° 12' 54.147 N	103° 28' 25.342 W
12,700.0	90.00	178.28	9,350.0	-3,359.3	-537.0	11,697,032.86	2,112,323.35	32° 12' 53.157 N	103° 28' 25.323 W
12,800.0	90.00	178.28	9,350.0	-3,459.2	-534.0	11,696,932.91	2,112,326.35	32° 12' 52.168 N	103° 28' 25.305 W
12,900.0	90.00	178.28	9,350.0	-3,559.2	-531.0	11,696,832.95	2,112,329.35	32° 12' 51.178 N	103° 28' 25.287 W
13,000.0	90.00	178.28	9,350.0	-3,659.1	-528.0	11,696,733.00	2,112,332.35	32° 12' 50.189 N	103° 28' 25.268 W
13,100.0	90.00	178.28	9,350.0	-3,759.1	-525.0	11,696,633.04	2,112,335.36	32° 12' 49.199 N	103° 28' 25.250 W
13,200.0	90.00	178.28	9,350.0	-3,859.0	-522.0	11,696,533.09	2,112,338.36	32° 12' 48.210 N	103° 28' 25.231 W
13,300.0	90.00	178.28	9,350.0	-3,959.0	-519.0	11,696,433.13	2,112,341.36	32° 12' 47.220 N	103° 28' 25.213 W
13,400.0	90.00	178.28	9,350.0	-4,059.0	-516.0	11,696,333.18	2,112,344.36	32° 12' 46.230 N	103° 28' 25.194 W
13,500.0	90.00	178.28	9,350.0	-4,158.9	-513.0	11,696,233.22	2,112,347.37	32° 12' 45.241 N	103° 28' 25.176 W
13,600.0	90.00	178.28	9,350.0	-4,258.9	-510.0	11,696,133.27	2,112,350.37	32° 12' 44.251 N	103° 28' 25.158 W
13,700.0	90.00	178.28	9,350.0	-4,358.8	-507.0	11,696,033.32	2,112,353.37	32° 12' 43.262 N	103° 28' 25.139 W
13,800.0	90.00	178.28	9,350.0	-4,458.8	-504.0	11,695,933.36	2,112,356.37	32° 12' 42.272 N	103° 28' 25.121 W
13,900.0	90.00	178.28	9,350.0	-4,558.7	-501.0	11,695,833.41	2,112,359.38	32° 12' 41.283 N	103° 28' 25.102 W
14,000.0	90.00	178.28	9,350.0	-4,658.7	-498.0	11,695,733.45	2,112,362.38	32° 12' 40.293 N	103° 28' 25.084 W
14,100.0	90.00	178.28	9,350.0	-4,758.6	-495.0	11,695,633.50	2,112,365.38	32° 12' 39.304 N	103° 28' 25.066 W
14,200.0	90.00	178.28	9,350.0	-4,858.6	-492.0	11,695,533.54	2,112,368.38	32° 12' 38.314 N	103° 28' 25.047 W
14,300.0	90.00	178.28	9,350.0	-4,958.5	-489.0	11,695,433.59	2,112,371.39	32° 12' 37.325 N	103° 28' 25.029 W
14,400.0	90.00	178.28	9,350.0	-5,058.5	-486.0	11,695,333.63	2,112,374.39	32° 12' 36.335 N	103° 28' 25.010 W
14,500.0	90.00	178.28	9,350.0	-5,158.5	-483.0	11,695,233.68	2,112,377.39	32° 12' 35.346 N	103° 28' 24.992 W
14,519.5	90.00	178.28	9,350.0	-5,178.0	-482.4	11,695,214.14	2,112,377.98	32° 12' 35.152 N	103° 28' 24.988 W
14,600.0	90.00	179.89	9,350.0	-5,258.4	-481.1	11,695,133.70	2,112,379.26	32° 12' 34.356 N	103° 28' 24.987 W
14,606.5	90.00	180.02	9,350.0	-5,264.9	-481.1	11,695,127.19	2,112,379.27	32° 12' 34.291 N	103° 28' 24.988 W
14,700.0	90.00	180.02	9,350.0	-5,358.4	-481.1	11,695,033.70	2,112,379.24	32° 12' 33.366 N	103° 28' 25.003 W
14,800.0	90.00	180.02	9,350.0	-5,458.4	-481.2	11,694,933.70	2,112,379.21	32° 12' 32.377 N	103° 28' 25.020 W
14,900.0	90.00	180.02	9,350.0	-5,558.4	-481.2	11,694,833.70	2,112,379.17	32° 12' 31.387 N	103° 28' 25.037 W
15,000.0	90.00	180.02	9,350.0	-5,658.4	-481.2	11,694,733.70	2,112,379.14	32° 12' 30.398 N	103° 28' 25.054 W
15,100.0	90.00	180.02	9,350.0	-5,758.4	-481.3	11,694,633.70	2,112,379.11	32° 12' 29.408 N	103° 28' 25.071 W
15,200.0	90.00	180.02	9,350.0	-5,858.4	-481.3	11,694,533.70	2,112,379.08	32° 12' 28.419 N	103° 28' 25.088 W
15,300.0	90.00	180.02	9,350.0	-5,958.4	-481.3	11,694,433.70	2,112,379.04	32° 12' 27.429 N	103° 28' 25.105 W
15,400.0	90.00	180.02	9,350.0	-6,058.4	-481.4	11,694,333.70	2,112,379.01	32° 12' 26.439 N	103° 28' 25.122 W
15,500.0	90.00	180.02	9,350.0	-6,158.4	-481.4	11,694,233.70	2,112,378.98	32° 12' 25.450 N	103° 28' 25.139 W
15,600.0	90.00	180.02	9,350.0	-6,258.4	-481.4	11,694,133.70	2,112,378.94	32° 12' 24.460 N	103° 28' 25.156 W
15,700.0	90.00	180.02	9,350.0	-6,358.4	-481.5	11,694,033.70	2,112,378.91	32° 12' 23.471 N	103° 28' 25.172 W
15,800.0	90.00	180.02	9,350.0	-6,458.4	-481.5	11,693,933.70	2,112,378.88	32° 12' 22.481 N	103° 28' 25.189 W
15,900.0	90.00	180.02	9,350.0	-6,558.4	-481.5	11,693,833.70	2,112,378.85	32° 12' 21.492 N	103° 28' 25.206 W
16,000.0	90.00	180.02	9,350.0	-6,658.4	-481.6	11,693,733.70	2,112,378.81	32° 12' 20.502 N	103° 28' 25.223 W
16,100.0	90.00	180.02	9,350.0	-6,758.4	-481.6	11,693,633.70	2,112,378.78	32° 12' 19.513 N	103° 28' 25.240 W
16,200.0	90.00	180.02	9,350.0	-6,858.4	-481.6	11,693,533.70	2,112,378.75	32° 12' 18.523 N	103° 28' 25.257 W
16,300.0	90.00	180.02	9,350.0	-6,958.4	-481.7	11,693,433.70	2,112,378.72	32° 12' 17.533 N	103° 28' 25.274 W
16,400.0	90.00	180.02	9,350.0	-7,058.4	-481.7	11,693,333.70	2,112,378.68	32° 12' 16.544 N	103° 28' 25.291 W
16,500.0	90.00	180.02	9,350.0	-7,158.4	-481.7	11,693,233.70	2,112,378.65	32° 12' 15.554 N	103° 28' 25.308 W
16,600.0	90.00	180.02	9,350.0	-7,258.4	-481.8	11,693,133.70	2,112,378.62	32° 12' 14.565 N	103° 28' 25.325 W
16,700.0	90.00	180.02	9,350.0	-7,358.4	-481.8	11,693,033.70	2,112,378.58	32° 12' 13.575 N	103° 28' 25.342 W
16,800.0	90.00	180.02	9,350.0	-7,458.4	-481.8	11,692,933.70	2,112,378.55	32° 12' 12.586 N	103° 28' 25.358 W
16,900.0	90.00	180.02	9,350.0	-7,558.4	-481.9	11,692,833.70	2,112,378.52	32° 12' 11.596 N	103° 28' 25.375 W
17,000.0	90.00	180.02	9,350.0	-7,658.4	-481.9	11,692,733.70	2,112,378.49	32° 12' 10.607 N	103° 28' 25.392 W
17,100.0	90.00	180.02	9,350.0	-7,758.4	-481.9	11,692,633.70	2,112,378.45	32° 12' 9.617 N	103° 28' 25.409 W

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well PIRATE FEDERAL COM 104H
Project:	LEA	**TVD Reference:**	RKB=3539+25 @ 3564.0usft
Site:	PIRATE FEDERAL	**MD Reference:**	RKB=3539+25 @ 3564.0usft
Well:	PIRATE FEDERAL COM 104H	**North Reference:**	Grid
Wellbore:	PIRATE FEDERAL COM 104H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
17,200.0	90.00	180.02	9,350.0	-7,858.4	-482.0	11,692,533.70	2,112,378.42	32° 12' 8.627 N	103° 28' 25.426 W
17,300.0	90.00	180.02	9,350.0	-7,958.4	-482.0	11,692,433.70	2,112,378.39	32° 12' 7.638 N	103° 28' 25.443 W
17,400.0	90.00	180.02	9,350.0	-8,058.4	-482.0	11,692,333.70	2,112,378.36	32° 12' 6.648 N	103° 28' 25.460 W
17,500.0	90.00	180.02	9,350.0	-8,158.4	-482.1	11,692,233.70	2,112,378.32	32° 12' 5.659 N	103° 28' 25.477 W
17,600.0	90.00	180.02	9,350.0	-8,258.4	-482.1	11,692,133.70	2,112,378.29	32° 12' 4.669 N	103° 28' 25.494 W
17,700.0	90.00	180.02	9,350.0	-8,358.4	-482.1	11,692,033.70	2,112,378.26	32° 12' 3.680 N	103° 28' 25.511 W
17,800.0	90.00	180.02	9,350.0	-8,458.4	-482.2	11,691,933.70	2,112,378.22	32° 12' 2.690 N	103° 28' 25.528 W
17,900.0	90.00	180.02	9,350.0	-8,558.4	-482.2	11,691,833.70	2,112,378.19	32° 12' 1.700 N	103° 28' 25.544 W
18,000.0	90.00	180.02	9,350.0	-8,658.4	-482.2	11,691,733.70	2,112,378.16	32° 12' 0.711 N	103° 28' 25.561 W
18,100.0	90.00	180.02	9,350.0	-8,758.4	-482.3	11,691,633.70	2,112,378.13	32° 11' 59.721 N	103° 28' 25.578 W
18,200.0	90.00	180.02	9,350.0	-8,858.4	-482.3	11,691,533.70	2,112,378.09	32° 11' 58.732 N	103° 28' 25.595 W
18,300.0	90.00	180.02	9,350.0	-8,958.4	-482.3	11,691,433.70	2,112,378.06	32° 11' 57.742 N	103° 28' 25.612 W
18,400.0	90.00	180.02	9,350.0	-9,058.4	-482.3	11,691,333.70	2,112,378.03	32° 11' 56.753 N	103° 28' 25.629 W
18,500.0	90.00	180.02	9,350.0	-9,158.4	-482.4	11,691,233.70	2,112,377.99	32° 11' 55.763 N	103° 28' 25.646 W
18,600.0	90.00	180.02	9,350.0	-9,258.4	-482.4	11,691,133.70	2,112,377.96	32° 11' 54.774 N	103° 28' 25.663 W
18,700.0	90.00	180.02	9,350.0	-9,358.4	-482.4	11,691,033.70	2,112,377.93	32° 11' 53.784 N	103° 28' 25.680 W
18,800.0	90.00	180.02	9,350.0	-9,458.4	-482.5	11,690,933.70	2,112,377.90	32° 11' 52.794 N	103° 28' 25.697 W
18,900.0	90.00	180.02	9,350.0	-9,558.4	-482.5	11,690,833.70	2,112,377.86	32° 11' 51.805 N	103° 28' 25.713 W
19,000.0	90.00	180.02	9,350.0	-9,658.4	-482.5	11,690,733.70	2,112,377.83	32° 11' 50.815 N	103° 28' 25.730 W
19,100.0	90.00	180.02	9,350.0	-9,758.4	-482.6	11,690,633.70	2,112,377.80	32° 11' 49.826 N	103° 28' 25.747 W
19,200.0	90.00	180.02	9,350.0	-9,858.4	-482.6	11,690,533.70	2,112,377.77	32° 11' 48.836 N	103° 28' 25.764 W
19,300.0	90.00	180.02	9,350.0	-9,958.4	-482.6	11,690,433.70	2,112,377.73	32° 11' 47.847 N	103° 28' 25.781 W
19,400.0	90.00	180.02	9,350.0	-10,058.4	-482.7	11,690,333.70	2,112,377.70	32° 11' 46.857 N	103° 28' 25.798 W
19,500.0	90.00	180.02	9,350.0	-10,158.4	-482.7	11,690,233.70	2,112,377.67	32° 11' 45.868 N	103° 28' 25.815 W
19,501.3	90.00	180.02	9,350.0	-10,159.7	-482.7	11,690,232.39	2,112,377.67	32° 11' 45.855 N	103° 28' 25.815 W

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LTP/BHL - PIRATE FED - plan hits target center - Point	0.00	0.00	9,350.0	-10,159.7	-482.7	11,690,232.39	2,112,377.67	32° 11' 45.855 N	103° 28' 25.815 W
AC - PIRATE FEDERAL - plan hits target center - Point	0.00	0.00	9,350.0	-5,178.0	-482.4	11,695,214.14	2,112,377.98	32° 12' 35.152 N	103° 28' 24.988 W
FTP - PIRATE FEDERA - plan misses target center by 233.9usft at 9275.6usft MD (9189.2 TVD, 21.8 N, -627.3 E) - Circle (radius 50.0)	0.00	0.00	9,350.0	191.6	-632.4	11,700,583.72	2,112,227.96	32° 13' 28.309 N	103° 28' 25.847 W

Checked By: _____ Approved By: _____ Date: _____

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE					CERT. N°:	504	
PURCHASER:	ContiTech Oil & Marine Corp.				P.O. N°:	4500409659	
CONTITECH RUBBER order N°:	538236		HOSE TYPE:	3" ID	Choke and Kill Hose		
HOSE SERIAL N°:	67255		NOMINAL / ACTUAL LENGTH:		10,67 m / 10,77 m		
W.P. 68,9 MPa	10000 psi		T.P. 103,4 MPa	15000 psi	Duration:	60	min.

Pressure test with water at
ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.
→ 10 mm = 20 MPa

COUPLINGS Type	Serial N°		Quality	Heat N°
3" coupling with	9251	9254	AISI 4130	A0579N
4 1/16" 10K API b.w. Flange end			AISI 4130	035608

Not Designed For Well Testing **API Spec 16 C**

Temperature rate:"B"

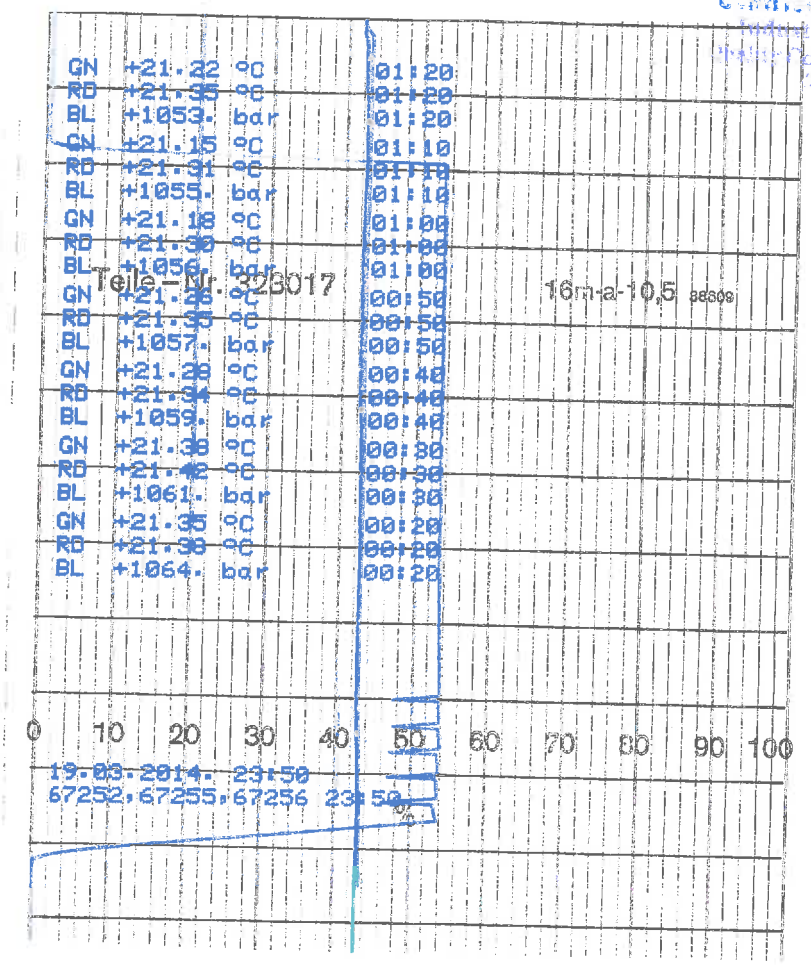
All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

Date:	Inspector	Quality Control
20. March 2014.		ContiTech Rubber Industrial Kft. Quality Control Dept.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Hose Data Sheet

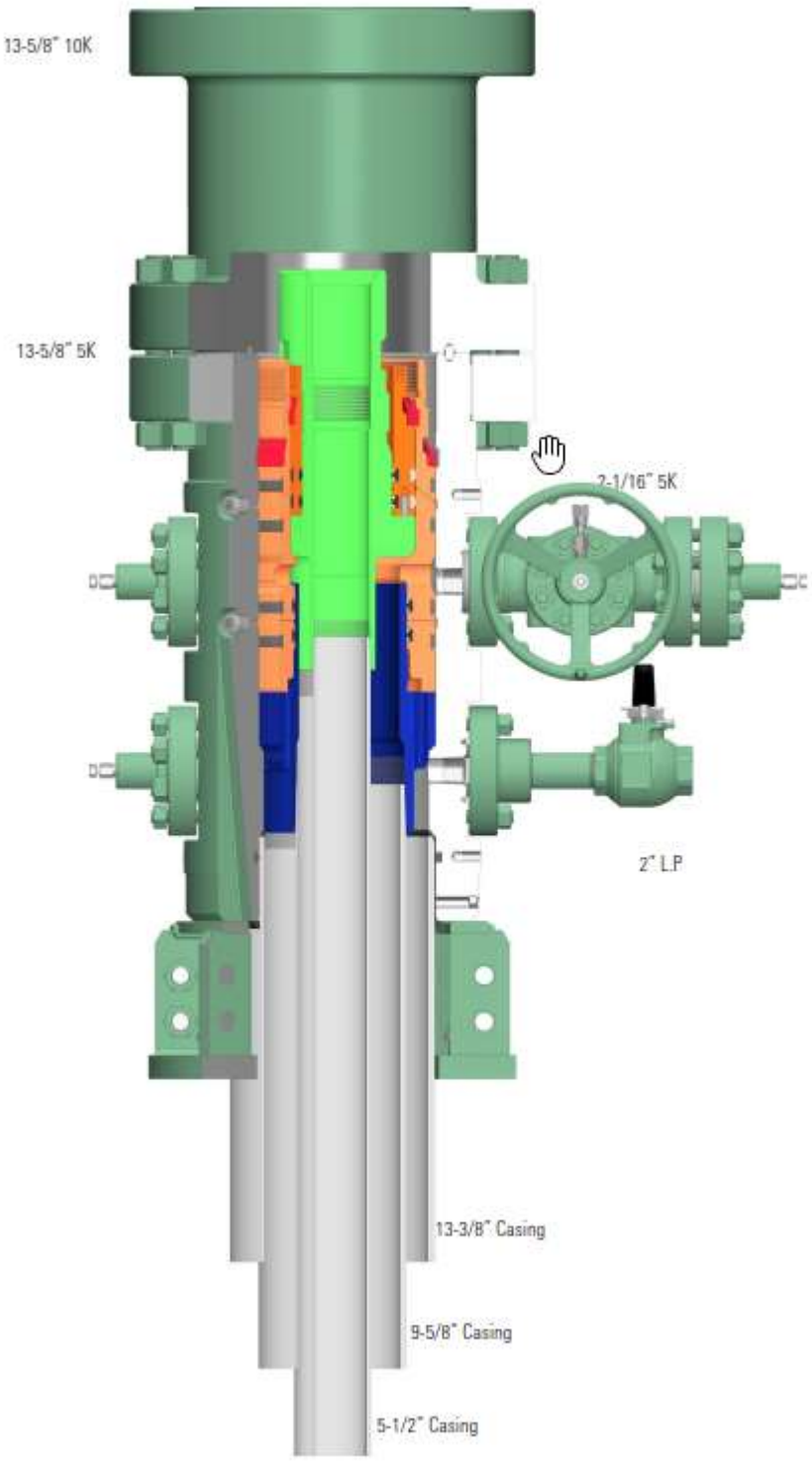
CRI Order No.	538236
Customer	ContiTech Oil & Marine Corp.
Customer Order No	4500409659
Item No.	1
Hose Type	Flexible Hose
Standard	**API SPEC 16 C**
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4.1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
Type of coupling other end	FLANGE 4.1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St.steel outer wrap
Internal stripwound tube	No
Lining	OIL + GAS RESISTANT SOUR
Safety clamp	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
Max.design temperature [°C]	100
Min.design temperature [°C]	-20
Min. Bend Radius operating [m]	0,90
Min. Bend Radius storage [m]	0,90
Electrical continuity	The Hose is electrically continuous
Type of packing	WOODEN CRATE ISPM-15

Pirate Fed Com 104H

Centennial Drilling Plan for 3-Casing String Avalon Formation

13-3/8" x 9-5/8" x 5-1/2" Casing Design

1. Drill 17-1/2" surface hole to Total Depth with Spudder Rig and perform wellbore cleanup cycles.
2. Run and land 13-3/8" casing to Depth.
3. Cement 13-3/8" casing – cement to surface.
4. Cut / 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. Place nightcap with Pressure Gauge on wellhead and test seals to 70% of Casing Collapse.
6. Bleed Pressure if necessary and remove nightcap. 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. Cement must have achieved 500psi compressive strength prior to test.
8. Install wear bushing then drill out 13-3/8" shoe-track 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. (Lamar).
10. Remove wear bushing then run and land 9-5/8" Intermediate Casing with mandrel hanger in wellhead.
11. Cement 9-5/8 casing – cement to surface.
12. Washout stack then run wash tool in wellhead and wash hanger and pack-off setting area.
13. Install pack-off 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. Cement must have achieved 500psi compressive strength prior to test.
14. Install wear bushing then drill out 9-5/8" shoe-track 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 pack-off 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.


13-5/8" 10K
13-5/8" 5K
2-1/16" 5K
2" L.P
13-3/8" Casing
9-5/8" Casing
5-1/2" Casing

AFMSS

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

Bond Info Data Report

08/04/2020

APD ID: 10400040408 **Submission Date:** 04/04/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: PIRATE FEDERAL COM **Well Number:** 104H

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

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001471

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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

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

OCD – HOBBS
08/04/2020
RECEIVED

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-025-47527	96434	Red Hills; Bone Spring, North

[4] Property Code	[5] Property Name	[6] Well Number
328936	PIRATE FEDERAL COM	#104H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372165	CENTENNIAL RESOURCE PRODUCTION, LLC	3539.4'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	16	24S	34E		300	NORTH	1680	EAST	LEA

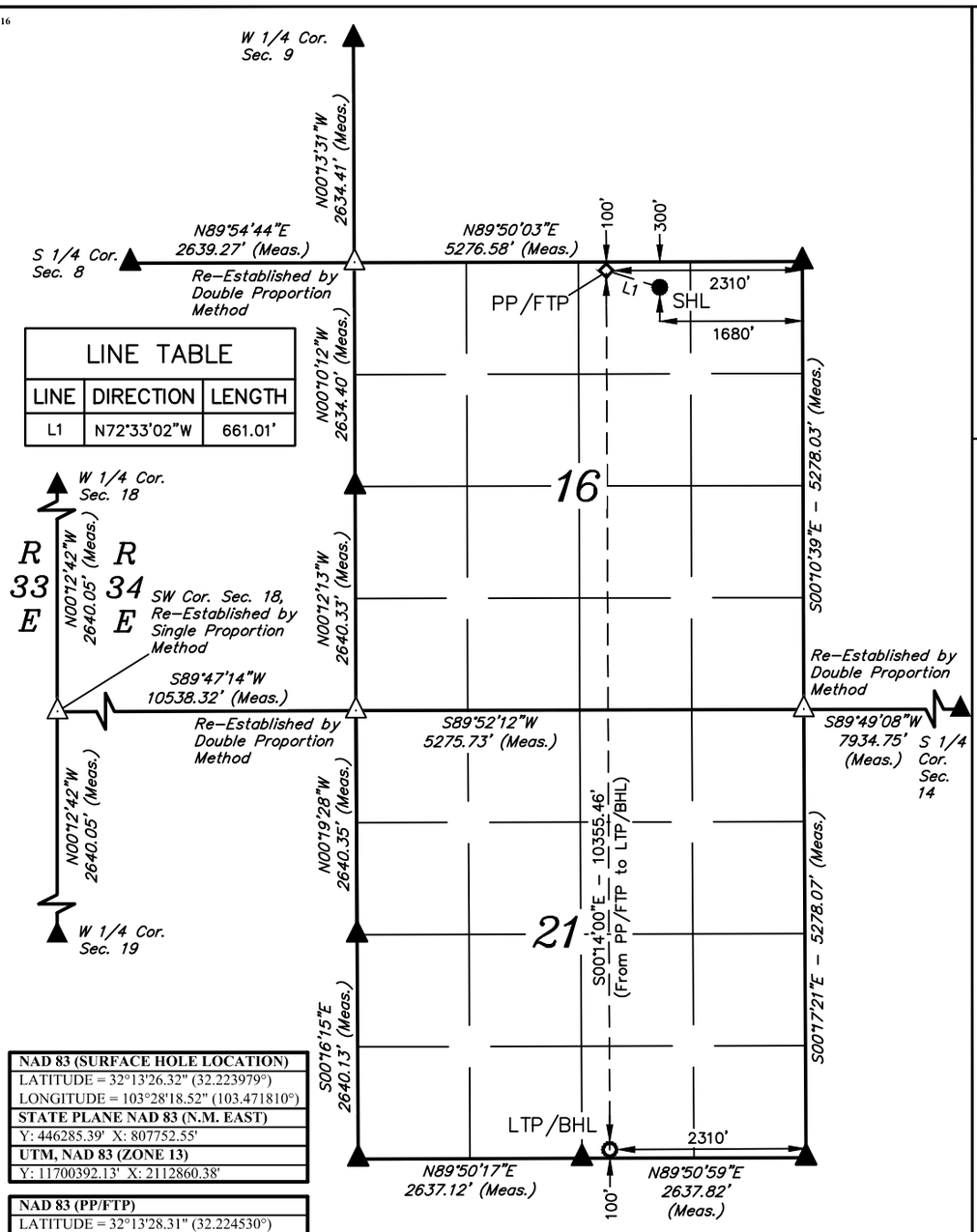
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	21	24S	34E		100	SOUTH	2310	EAST	LEA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320			

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

[16]



NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°13'26.32" (32.223979°)
LONGITUDE = 103°28'18.52" (103.471810°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 446285.39' X: 807752.55'
UTM, NAD 83 (ZONE 13)
Y: 11700392.13' X: 2112860.38'

NAD 83 (PP/FTP)
LATITUDE = 32°13'28.31" (32.224530°)
LONGITUDE = 103°28'25.85" (103.473846°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 446480.93' X: 807121.24'
UTM, NAD 83 (ZONE 13)
Y: 11700583.72' X: 2112227.96'

NAD 83 (LTP/BHL)
LATITUDE = 32°11'45.85" (32.196071°)
LONGITUDE = 103°28'25.82" (103.473838°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 436127.48' X: 807206.75'
UTM, NAD 83 (ZONE 13)
Y: 11690232.39' X: 2112377.67'

● = SURFACE HOLE LOCATION
◇ = PP/FTP
○ = LTP/BHL
▲ = SECTION CORNER LOCATED
△ = SECTION CORNER RE-ESTABLISHED. (Not Set on Ground.)

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

2000' 1000' 0' 2000'
SCALE
DRAWN BY: C.D. 09-27-18

[17] OPERATOR CERTIFICATION

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

K.C. 3/28/19
Signature Date

Kanicia Castillo
Printed Name

kanicia.castillo@cdevinc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

September 24, 2018
Date of Survey

Signature and Seal of Professional Surveyor:

PAUL BUCHELE NEW MEXICO 23782 PROFESSIONAL SURVEYOR 09-27-18

Certificate Number:

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	96434	Red Hills; Bone Spring, North

[4] Property Code	[5] Property Name	[6] Well Number
	PIRATE FEDERAL COM	#104H

[7] OGRID No.	[8] Operator Name	[9] Elevation
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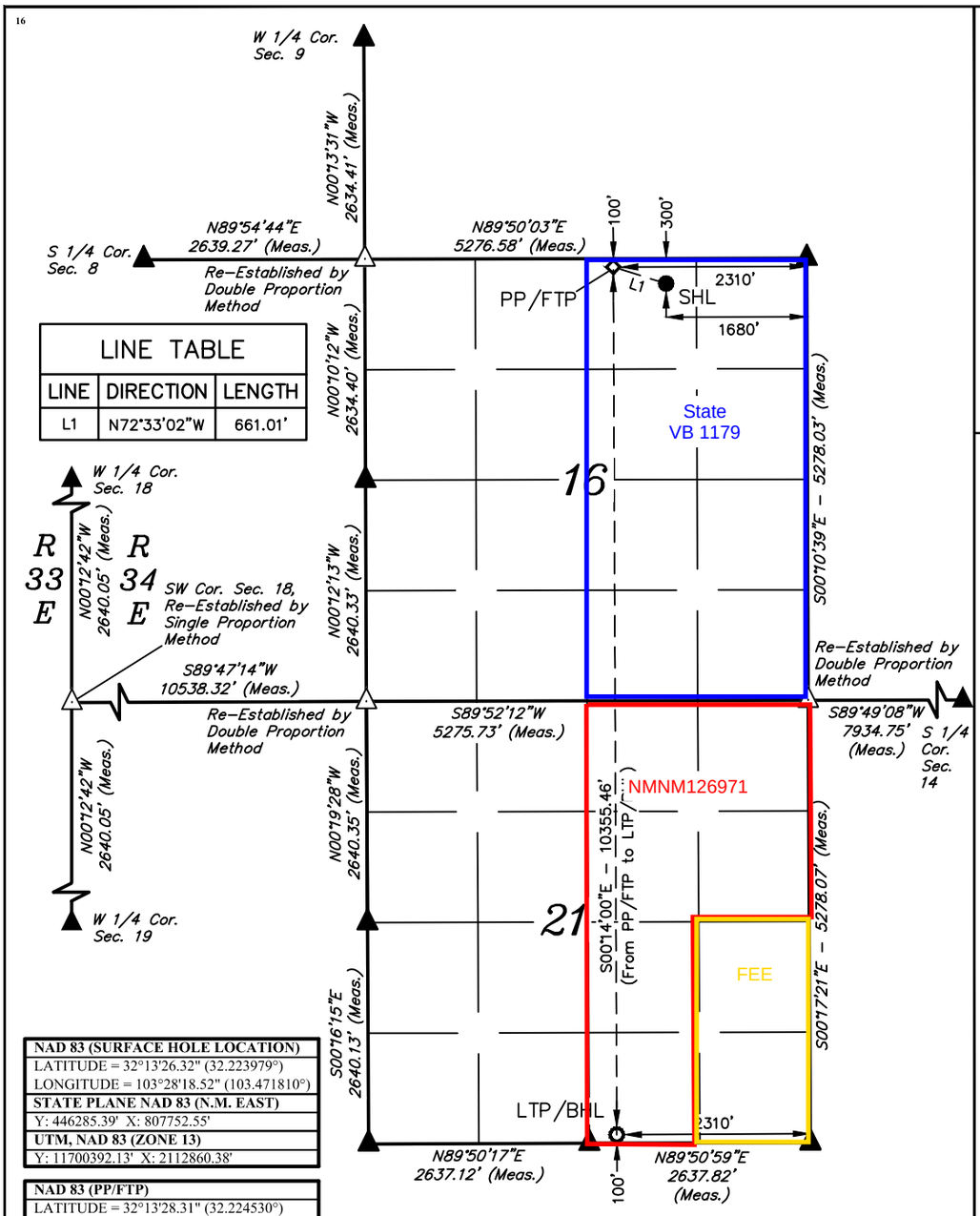

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3/28/19
Signature Date

Kanicia Castillo
Printed Name

kanicia.castillo@cdevinc.com
E-mail Address

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District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

OCD – HOBBS
08/04/2020
RECEIVED

GAS CAPTURE PLAN

Date: 3/28/2019

☒ Original
☐ Amended - Reason for Amendment:

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

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

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

Well(s)/Production Facility – Name of facility

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

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Pirate Federal Com 102H	Pending	B-16-24S-34E	300 FNL & 1620 FEL	3970 MCF/D	Neither	New Well
Pirate Federal Com 103H	Pending	B-16-24S-34E	300 FNL & 1650 FEL	3885 MCF/D	Neither	New Well
Pirate Federal Com 104H	Pending **30-025-47527**	B-16-24S-34E	300 FNL & 1680 FEL	3676 MCF/D	Neither	New Well

Gathering System and Pipeline Notification

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

Flowback Strategy

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

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

Alternatives to Reduce Flaring

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

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