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DISTRICT II-ARTESIA O.C.D.

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Form 3160-3
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.
NMNM113929

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.
LENTIL FEDERAL
161H

2. Name of Operator
TAP ROCK OPERATING LLC

9. API Well No.
30-015-46514

3a. Address
602 Park Point Drive Suite 200 Golden CO 80401

3b. Phone No. *(include area code)*
(720)460-3316

10. Field and Pool or Exploratory
~~JENNINGS / UPPER BONE SPRING SH~~ PARKWAY; WOLFCAMP 98220

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWSW / 2054 FSL / 494 FWL / LAT 32.0262137 / LONG -104.4419043
At proposed prod. zone NWSW / 2660 FSL / 330 FWL / LAT 32.0425345 / LONG -104.4424368

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 19 / T26S / R25E / NMP

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

12. County or Parish
EDDY

13. State
NM

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

16. No of acres in lease
1762.09

17. Spacing Unit dedicated to this well
321.57

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

19. Proposed Depth
6795 feet / 12540 feet

20. BLM/BIA Bond No. in file
FED: NMB001443

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3848 feet

22. Approximate date work will start*
04/01/2019

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)	Brian Wood / Ph: (505)466-8120	01/09/2019

Title
President

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	12/13/2019

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.

APPROVED WITH CONDITIONS

(Continued on page 2)

Approval Date: 12/13/2019

*(Instructions on page 2)

RJP 12-20-19

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

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

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

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

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

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

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

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: NWSW / 2054 FSL / 494 FWL / TWSP: 26S / RANGE: 25E / SECTION: 19 / LAT: 32.0262137 / LONG: -104.4419043 (TVD: 0 feet, MD: 0 feet)
   PPP: NWSW / 2391 FSL / 371 FWL / TWSP: 26S / RANGE: 25E / SECTION: 19 / LAT: 32.0271364 / LONG: -104.442301 (TVD: 6779 feet, MD: 6928 feet)
   BHL: NWSW / 2660 FSL / 330 FWL / TWSP: 26S / RANGE: 25E / SECTION: 18 / LAT: 32.0425345 / LONG: -104.4424368 (TVD: 6795 feet, MD: 12540 feet)

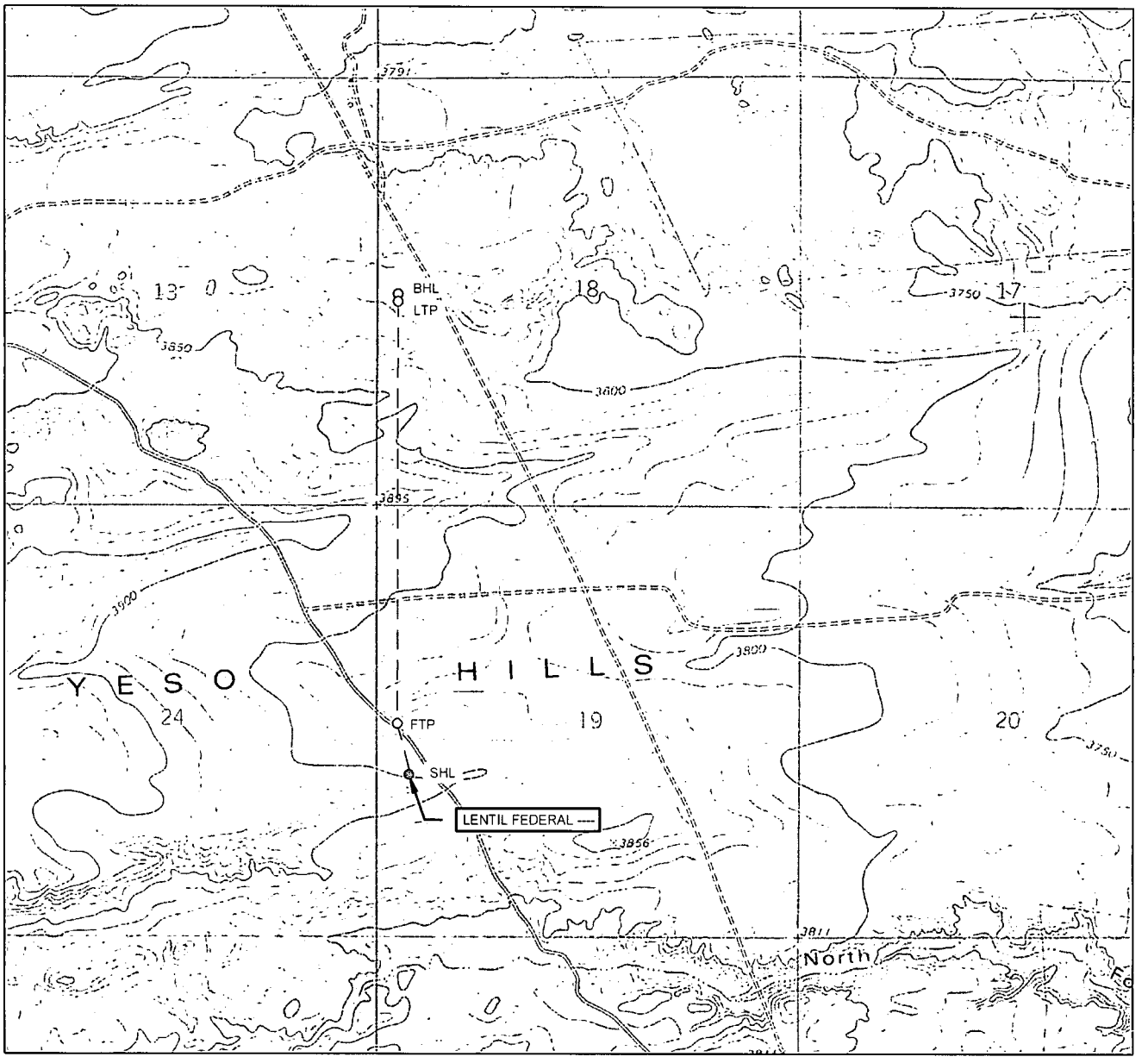
BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

Review and Appeal Rights

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

LOCATION & ELEVATION VERIFICATION MAP



TAP ROCK

LEASE NAME & WELL NO.: LENTIL FEDERAL ----

SECTION 19 TWP 26-S RGE 25-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM ELEVATION 3848'
DESCRIPTION 2054' FSL & 494' FWL

LATITUDE N 32.0262137 LONGITUDE W 104.4419043

-N-

SCALE: 1" = 2000'
0' 1000' 2000'

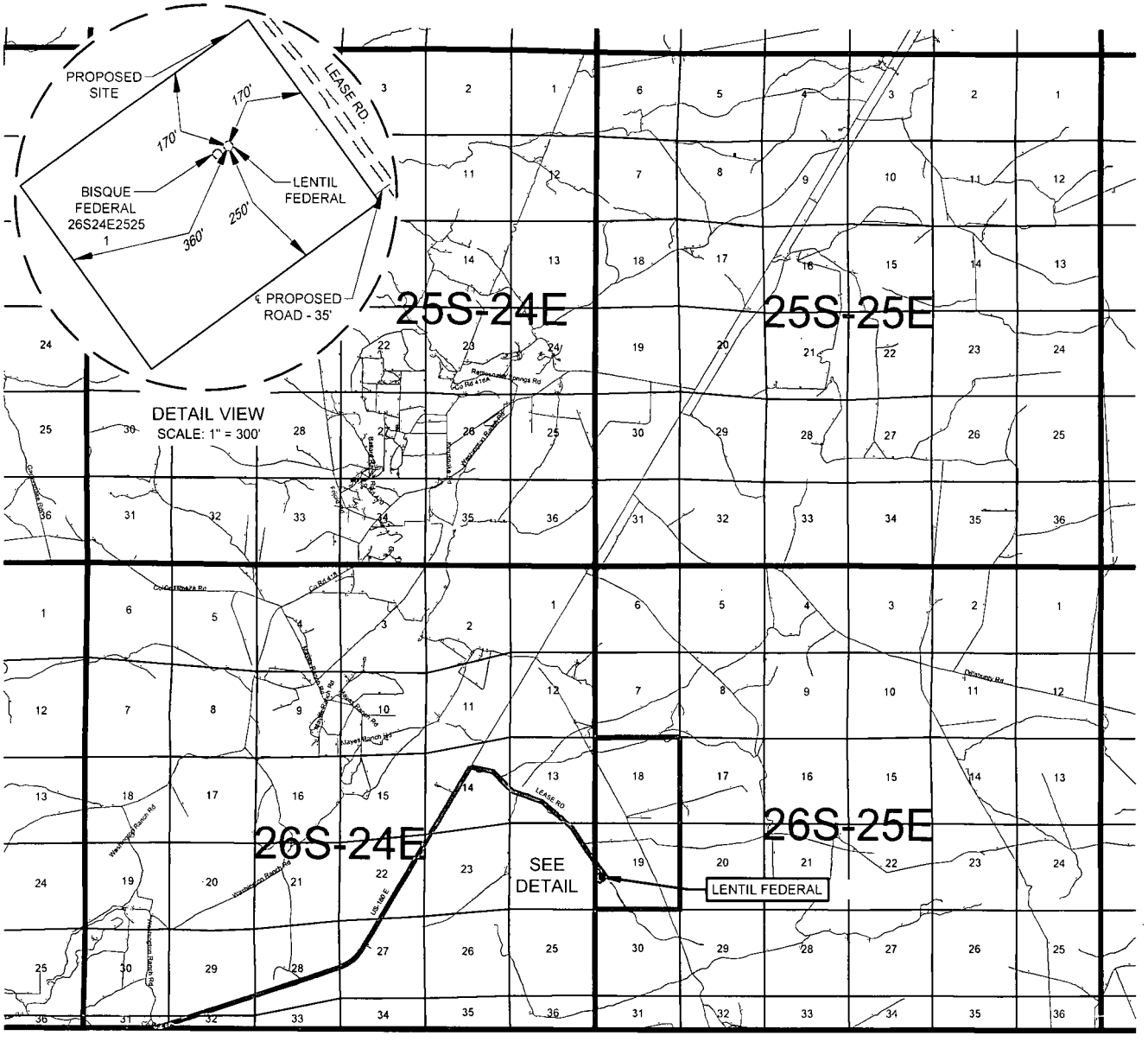
THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TAP ROCK OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

EXHIBIT 2

VICINITY MAP



TAP ROCK

LEASE NAME & WELL NO.: LENTIL FEDERAL ----

SECTION 19 TWP 26-S RGE 25-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM
DESCRIPTION 2054' FSL & 494' FWL

DISTANCE & DIRECTION

FROM INT. OF RM 652 N. & US-180 E, GO NORTHEAST ON US-180 E ±5.3 MILES, THENCE SOUTHEAST (RIGHT) ON A LEASE RD. ±2.2 MILES, THENCE SOUTHWEST (RIGHT) ON A PROPOSED ROAD ±35 FEET TO A POINT ±290 FEET SOUTHEAST OF THE LOCATION.

-N-

SCALE: 1" = 10000'

0' 5000' 10000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TAP ROCK OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

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WWW.TOPOGRAPHIC.COM

EXHIBIT 2A

SECTION 19, TOWNSHIP 26-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

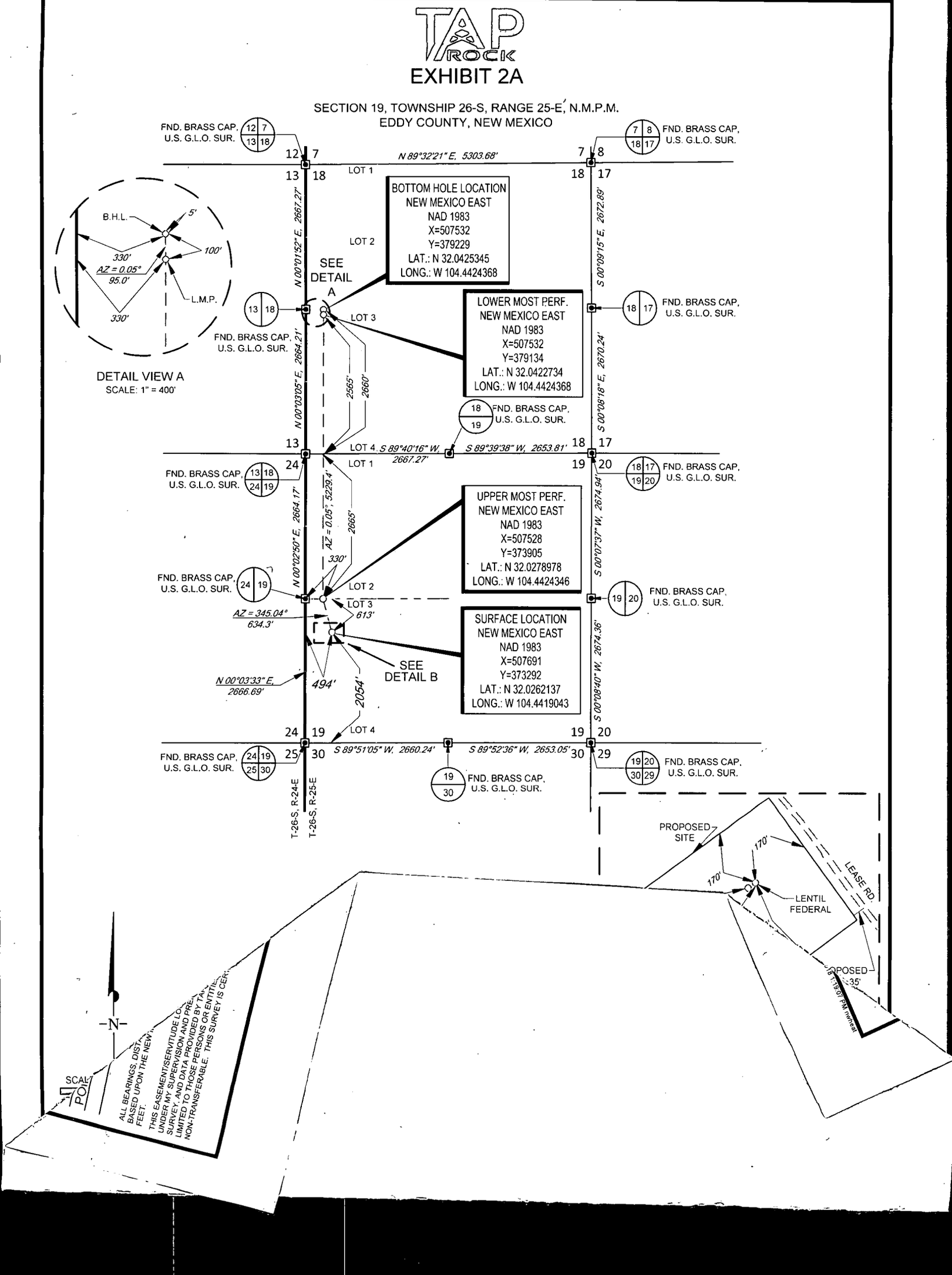
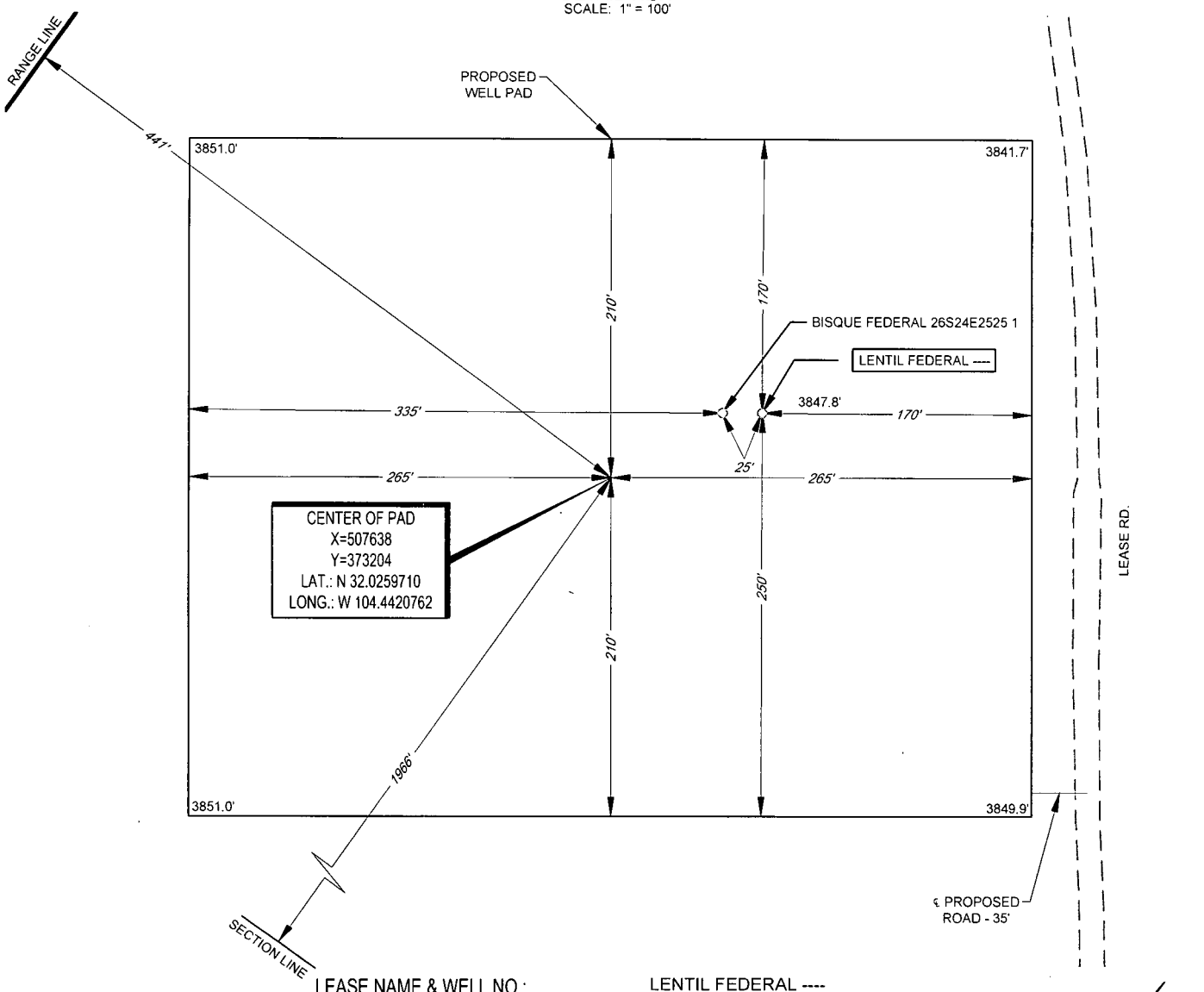


EXHIBIT 2B

TAP ROCK

SECTION 19, TOWNSHIP 26-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: LENTIL FEDERAL ----

---- LATITUDE N 32.0262137 ---- LONGITUDE W 104.4419043

LEGEND

- PROPOSED ROAD
- RANGE LINE
- SECTION LINE
- ROAD WAY

CENTER OF PAD IS 1966' FSL & 441' FWL

SCALE: 1" = 100'

0' 50' 100'

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TAP ROCK OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
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TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
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WWW.TOPOGRAPHIC.COM

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

AFMSS

U.S. Department of the Interior
Bureau of Land Management

Application for Permit to Drill

APD Package Report

Date Printed: 12/16/2019 08:45 AM

APD ID: 10400037752	Well Status: AAPD
APD Received Date: 01/09/2019 11:23 AM	Well Name: LENTIL FEDERAL
Operator: TAP ROCK OPERATING LLC	Well Number: 161H

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 2 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 2 file(s)
  -- Casing Taperd String Specs: 2 file(s)
  -- Casing Design Assumptions and Worksheet(s): 6 file(s)
  -- Hydrogen sulfide drilling operations plan: 1 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)
  -- Other Facets: 3 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- New Road Map: 1 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 1 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Construction Materials source location attachment: 1 file(s)
  -- Well Site Layout Diagram: 1 file(s)
  -- Recontouring attachment: 2 file(s)
  -- Other SUPO Attachment: 1 file(s)

- PWD Report
- PWD Attachments
  -- None

- Bond Report
- Bond Attachments
  -- None

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Tap Rock Operating LLC**
LEASE NO.:	**NMNM113929**
WELL NAME & NO.:	Lentil Federal 161H
SURFACE HOLE FOOTAGE:	2054'/S & 494'/W
BOTTOM HOLE FOOTAGE	2660'/S & 330'/W
LOCATION:	Section 19, T.26 S., R.25 E., NMPM
COUNTY:	Eddy 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	[x] Pilot Hole
Special Requirements	[ ] Water Disposal	[ ] COM	[ ] Unit

A. HYDROGEN SULFIDE

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

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **350 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8**

hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing shall be set at approximately **1100 feet** is:

Option 1 (Single Stage):

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

Option 2:

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

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.
  Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

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

Option 1 (Single Stage):

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

Option 2:

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

c. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

d. Second stage above DV tool:

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

❖ In Critical Cave/Karst Areas if cement does not circulate to surface on the first three casing strings, the cement on the 4th casing string must come to surface.

The pilot hole plugging procedure is approved as written. Note plug tops on subsequent drilling report.

Or,

Pilot hole is required to have a plug at the bottom of the hole. If two plugs are set, the BLM is to be contacted (575-361-2822 Eddy County) prior to tag of bottom plug, which must be a minimum of 200' in length. Operator can set one plug from bottom of pilot hole to kick-off point and save the WOC time for tagging the first plug. Note plug tops on subsequent drilling report.

4. The minimum required fill of cement behind the 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.

1. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the **surface** casing and **shall not** be used for drilling out the **7-5/8** inch intermediate casing shoe. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** 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.

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the **7-5/8** inch intermediate casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **7-5/8** inch intermediate casing shoe shall be **5000 (5M)** psi.

    f. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    g. 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.
    h. Manufacturer representative shall install the test plug for the initial BOP test.
    i. 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.
    j. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

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.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Tap Rock Operating LLC
LEASE NO.:	NMNM113929
COUNTY:	Eddy

Wells:

Lentil Federal 161H
SHL: 2054 ft. FSL and 494 ft. FWL; Section 19, T. 26 S., R. 25 E.
BHL: 2660 ft. FSL and 330 ft. FWL; Section 18, T. 26 S., R. 25 E.

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See information below discussing NAGPRA.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Watershed:

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Cave/Karst:

Construction Mitigation

In order to mitigate the impacts from construction activities on cave and karst resources, the following Conditions of Approval will apply to this APD or project:

- The dimensions proposed in this EA is the maximum allowable surface disturbance (temporary or permanent). Requests for additional space, temporary or permanent, would not be considered due to density and proximity of the proposed surface disturbance to karst features identified during the on-sites.
- A third-party construction will be present on site to monitor all construction activities. No work will take place in the absence of the third-party monitor.

General Construction:

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

Pad Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.

- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

Road Construction:

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

Buried Pipeline/Cable Construction:

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.
-

Drilling Mitigation

Federal regulations and standard Conditions of Approval applied to all APDs require that adequate measures are taken to prevent contamination to the environment. Due to the extreme sensitivity of the cave and karst resources in this project area, the following additional Conditions of Approval will be added to this APD.

To prevent cave and karst resource contamination the following will be required:

- Closed loop system using steel tanks - all fluids and cuttings will be hauled off-site and disposed of properly at an authorized site

- Rotary drilling with fresh water where cave or karst features are expected to prevent contamination of freshwater aquifers.
- Directional drilling is only allowed at depths greater than 100 feet below the cave occurrence zone to prevent additional impacts resulting from directional drilling.
- Lost circulation zones will be logged and reported in the drilling report so BLM can assess the situation and work with the operator on corrective actions.
- Additional drilling, casing, and cementing procedures to protect cave zones and fresh water aquifers. See drilling COAs.

Production Mitigation

In order to mitigate the impacts from production activities and due to the nature of karst terrane, the following Conditions of Approval will apply to this APD:

- Tank battery locations and facilities will be bermed and lined with a 20 mil thick permanent liner that has a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.
- Development and implementation of a leak detection system to provide an early alert to operators when a leak has occurred.
- Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Residual and Cumulative Mitigation

The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be taken to correct the problem to the BLM's approval.

Plugging and Abandonment Mitigation

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Range:

Cattleguards

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for

the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

Special Status Plant Species Occupied Habitat Stipulations:

No blading or mowing is authorized within the ROW, otherwise agreed to in writing by the Authorized Officer, in coordination with a BLM biologist. Approval of such practices would be conditioned on design features to avoid adverse impacts to special status plant species, especially special status plant species known occupied habitats.

The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies. These policies require treatment design that avoids adverse impacts to special status plant species, especially special status plant species known occupied habitats.

Prior to initiating project construction activities, a barricade for the protection of gypsum milkvetch and Allred's flax occupied habitat will be installed according the following standards:

Barricade Type
☒Temporary Fencing
☐Permanent Fencing
☐Natural Obstacles
☐Other: _____

Barricade Specifications
Construction fencing at locations A and B that effectively barricades SSPS individuals from vehicle and equipment trampling.

Location A
PLSS: L3 ¼ SW ¼, S19, T26S, R25E
Side of pad: Southwest
Distance from ROW edge: 10 feet (3 meters)
Approximate Start Point (A): UTM NAD83 ZONE 13N 552790E 3543445N
Approximate End Point (A): UTM NAD83 ZONE 13N 552657E 3543348N

Location B
PLSS: L3 ¼ SW ¼, S19, T26S, R25E
Side of pad: Southeast
Distance from ROW edge: 10 feet (3 meters)
Approximate Start Point (B): UTM NAD83 ZONE 13N 552657E 3543348N
Approximate End Point (B): UTM NAD83 ZONE 13N 552643E 3543366N

Biomonitor Required During Barrier Installation? ☒Yes ☐No
Biomonitor to coordinate with BLM biologist prior? ☒Yes ☐No

Coordination Type: Shapefile of known occurrences in project vicinity

Biomonitor Required During Project Construction? ☒Yes ☐No
Activities requiring biomonitoring: Pad construction activities
Biomonitor to coordinate with BLM biologist prior? ☐Yes ☐No ☒N/A
Coordination Type: N/A

Texas Hornshell Mussel

Oil and Gas and Associated Infrastructure Mitigation Measures for Zone D – CCA Boundary Requirements:

- Provide CEHMM with the permit, lease grant, or other authorization form BLM, if applicable.
- Provide CEHMM with plats or other electronic media describing the new surface disturbance for the project.

VRM IV:

- Above-ground structures including meter housing that are not subject to safety requirements are painted a flat non-reflective paint color, Shale Green from the BLM Standard Environmental Color Chart (CC-001: June 2013).

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

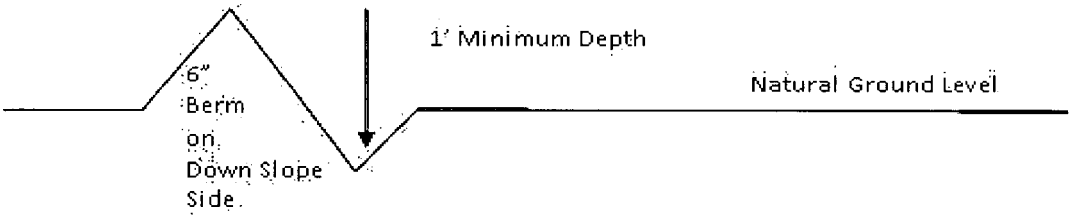
Ditching
Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be

determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattle Guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

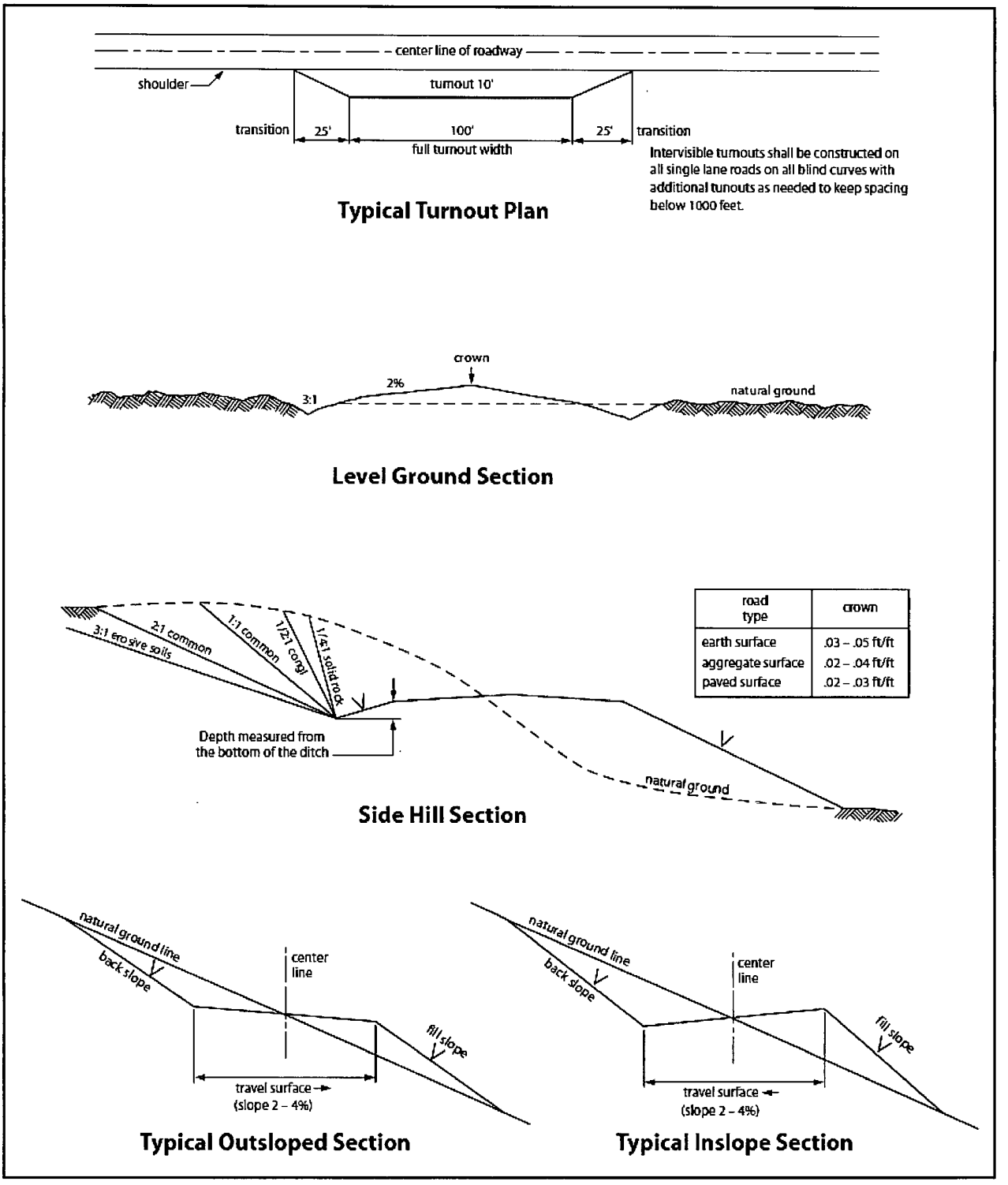


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer.
- If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
- Special restoration stipulations or realignment may be required at such intersections, if any.
- A leak detection plan **will be submitted to the BLM Carlsbad Field Office for approval** prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width

of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

(X) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	(X) seed mixture 4
( ) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color

which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 17 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

17. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of

cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

18. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

19. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

20. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 1 for Loamy Sites

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

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

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

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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

Mixture 4, for Gypsum Sites

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

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

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

Species	lb/acre
Alkali Sacaton (*Sporobolus airoides*)	1.5
DWS~ Four-wing saltbush (*Atriplex canescens*)	8.0

~DWS: DeWinged Seed

*Pounds of pure live seed:

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

AFMSS

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

Operator Certification Data Report

12/16/2019

Operator Certification

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

NAME: Brian Wood **Signed on:** 01/09/2019

Title: President

Street Address: 37 Verano Looop

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

Phone: (505)466-8120

Email address: afmss@permitswest.com

Field Representative

Representative Name:

Street Address:

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

Phone:

Email address:

AFMSS

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

Application Data Report

12/16/2019

APD ID: 10400037752

Submission Date: 01/09/2019

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL

Well Number: 161H

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400037752

Tie to previous NOS? N

Submission Date: 01/09/2019

BLM Office: CARLSBAD

User: Brian Wood

Title: President

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM113929

Lease Acres: 1762.09

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? YES

APD Operator: TAP ROCK OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: TAP ROCK OPERATING LLC

Operator Address: 602 Park Point Drive Suite 200

Zip: 80401

Operator PO Box:

Operator City: Golden

State: CO

Operator Phone: (720)460-3316

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: LENTIL FEDERAL

Well Number: 161H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: JENNINGS

Pool Name: UPPER BONE SPRING SHALE

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

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

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:** LENTIL FEDERAL **Number:** 161H

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

Well Work Type: Drill

Well Type: CONVENTIONAL GAS WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 10 Miles **Distance to nearest well:** 25 FT **Distance to lease line:** 494 FT

Reservoir well spacing assigned acres Measurement: 321.57 Acres

Well plat: Lentil_161H_C102_et_al_Wolfcamp_010719_20190109092708.pdf

Well work start Date: 04/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 18329 **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
SHL Leg #1	2054	FSL	494	FWL	26S	25E	19	Aliquot NWSW	32.0262137	-104.4419043	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 113929	3848	0	0	
KOP Leg #1	2054	FSL	494	FWL	26S	25E	19	Aliquot NWSW	32.0262137	-104.4419043	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 113929	-2399	6247	6247	
PPP Leg #1-1	2391	FSL	371	FWL	26S	25E	19	Aliquot NWSW	32.0271364	-104.4423101	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 113929	-2931	6928	6779	

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

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
EXIT Leg #1	2660	FSL	330	FWL	26S	25E	18	Aliquot NWSW	32.0425345	-104.4424368	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 113929	-2947	12540	6795	
BHL Leg #1	2660	FSL	330	FWL	26S	25E	18	Aliquot NWSW	32.0425345	-104.4424368	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 113929	-2947	12540	6795	

2	RUSTLER ANHYDRITE	3824	24	24		USEABLE WATER,OTHER : Salt	N
3	TOP SALT	3564	284	284		OTHER : Salt	N
4	BASE OF SALT	3169	679	679		OTHER : Salt	N
5	LAMAR	2804	1044	1044		NATURAL GAS,OIL	N
6	BELL CANYON	2804	1044	1044		NATURAL GAS,OIL	N
7	RAMSEY SAND	2719	1129	1129		NATURAL GAS,OIL	N
8	CHERRY CANYON	1804	2044	2044		NATURAL GAS,OIL	N
9	DELAWARE	1018	2830	2830	OTHER : Mountain Group	NATURAL GAS,OIL	N
10	BRUSHY CANYON	994	2854	2854		NATURAL GAS,OIL	N
11	BONE SPRING LIME	-546	4394	4394		NATURAL GAS,OIL	N
12	BONE SPRING 1ST	-1161	5009	5009	SANDSTONE	NATURAL GAS,OIL	N
13	BONE SPRING 2ND	-1588	5436	5436	SANDSTONE	NATURAL GAS,OIL	N
14	BONE SPRING 3RD	-2611	6459	6542	SANDSTONE	NATURAL GAS,OIL	N
15	WOLFCAMP	-2906	6754	6928	OTHER : A	NATURAL GAS,OIL	Y

Section 2 - Blowout Prevention

tested in this manner after any breaks, nipple ups, or passage of allotted time. After the second rig moves in and the 5M BOP system is nippled up, the BOP pressure tests will be made with a third party tester to 250 psi low, 5000 psi high, and the annular preventer will be tested to 2500 psi. The BOP will be tested in this manner after any breaks, nipple ups, or passage of allotted time. Casing Test procedure: Casing will be tested to .22 psi per foot of casing length or 1500 psi, whichever is greater, but not to exceed 70% of minimum internal yield.

Choke Diagram Attachment:

Lentil_161H_10M_Choke_100418_20190109094422.pdf

3M_Choke_20191101113736.pdf

BOP Diagram Attachment:

3M_BOP_20191101113711.pdf

BOP_Diagram_101619_20191101113726.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	350	0	350	3848		350	J-55	54.5	BUTT	1.13	1.15	DRY	1.51	DRY	1.51
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	1100	0	1100	3848		1100	J-55	40	BUTT	1.13	1.15	DRY	1.51	DRY	1.51
3	PRODUCTION	6.75	5.5	NEW	API	Y	0	5900	0	5900	3848		5900	P-110	20	BUTT	1.13	1.15	DRY	1.51	DRY	1.51
4	INTERMEDIATE	8.75	7.625	NEW	API	N	0	7200	0	6835	3848		7200	P-110	29.7	OTHER - W-513	1.13	1.15	DRY	1.51	DRY	1.51
5	PRODUCTION	6.75	5.0	NEW	API	Y	5900	12540	5900	6795			6640	P-110	18	OTHER - W-521	1.13	1.15	DRY	1.51	DRY	1.51

Casing Design Assumptions and Worksheet(s):

Lentil_161H_Casing_Design_Assumptions_20190109102726.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lentil_161H_Casing_Design_Assumptions_20190109102751.pdf

Casing ID: 3 **String Type:**PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Lentil_161H_5.5in_Casing_Spec_20190109102527.PDF

Casing Design Assumptions and Worksheet(s):

Lentil_161H_Casing_Design_Assumptions_20190109102814.pdf

Casing Design Assumptions and Worksheet(s):

Lentil_161H_Casing_Design_Assumptions_20190109102802.pdf

Lentil_161H_7.625in_W513_Casing_Spec_20191101120123.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Lentil_161H_5in_W521_Casing_Spec_20191101120327.pdf

Casing Design Assumptions and Worksheet(s):

Lentil_161H_Casing_Design_Assumptions_20190109102825.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	0	0	0	0	0	0	None	None
PRODUCTION	Tail		0	0	0	0	0	0	0	None	None
SURFACE	Lead		0	350	270	1.8	13.5	486	100	Class C	5% Bentonite + 2% CaCl + LCM

PRODUCTION	Lead		4900	12540	0	0	0	0	0	None	None
PRODUCTION	Tail		4900	12540	950	1.24	14.2	1178	10	Class H	Fluid Loss + Dispersant + Retarder + LCM

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

Describe what will be on location to control well or mitigate other conditions: All necessary mud products (e. g., barite, cedar bark) for weight addition and fluid loss control will always be onsite. Mud program is subject to change due to hole conditions.
Describe the mud monitoring system utilized: Electronic Pason mud monitor system complying with Onshore Order 1 will be used.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	350	SPUD MUD	8.3	8.3							
1100	7200	OTHER : Fresh water & Cut brine	9	9							

Section 6 - Test, Logging, Coring

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

Electric Logging Program: Triple combo open-hole logs are planned at this time for the pilot hole. GR will be collected while drilling through the MWD tools from intermediate casing to TD.

CBL w/ CCL from as far as gravity will let it fall to TOC.

No Drill Stem Test

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

CBL

Coring operation description for the well:

Rotary side-wall cores

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 3515 **Anticipated Surface Pressure:** 2020.1

Anticipated Bottom Hole Temperature(F): 115

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:

Lentil_161H_H2S_Plan_20190109105508.pdf

5. Perforate test zone #1 7,065' to 7,075', stimulate zone, and test.
6. P&A perf set #1 (7,065' to 7,075').
a. Set CIBP 50' above perforations
b. Dump 50 sx Class C cement on top of CIBP
7. Perforate test zone #2 6,815' to 6,825', stimulate zone, and test.
8. P&A perf set #2 (6,815' to 6,825'.
a. Set CIBP 50' above perforations
b. Dump 50 sx Class C cement on top of CIBP
9. Perforate test zone #3 6,710' to 6,720', stimulate zone, and test.
10. P&A perf set #3 (6,710' to 6,720').
a. Set CIBP 50' above perforations
b. Dump 50 sx Class C cement on top of CIBP
11. MIRU drilling rig with a minimum of 5M BOP system for phase two of drilling. Tests will be made to 250 psi low and 5000 psi high. Annular BOP will be tested to 250 psi low and 2500 psi high.
12. Install mechanical cased-hole whipstock, mill window in casing, and exit 7 5/8" casing to sidetrack well into one of three target intervals.
13. Drill 6 ¾" curve and 6 ¾" lateral to total depth.
14. Run 5 ½" x 5" tapered production string to total depth and cement in-place.
15. Release drilling rig.

Other proposed operations facets attachment:

Lentil_161H_Speedhead_Specs_100918_20190109094756.pdf

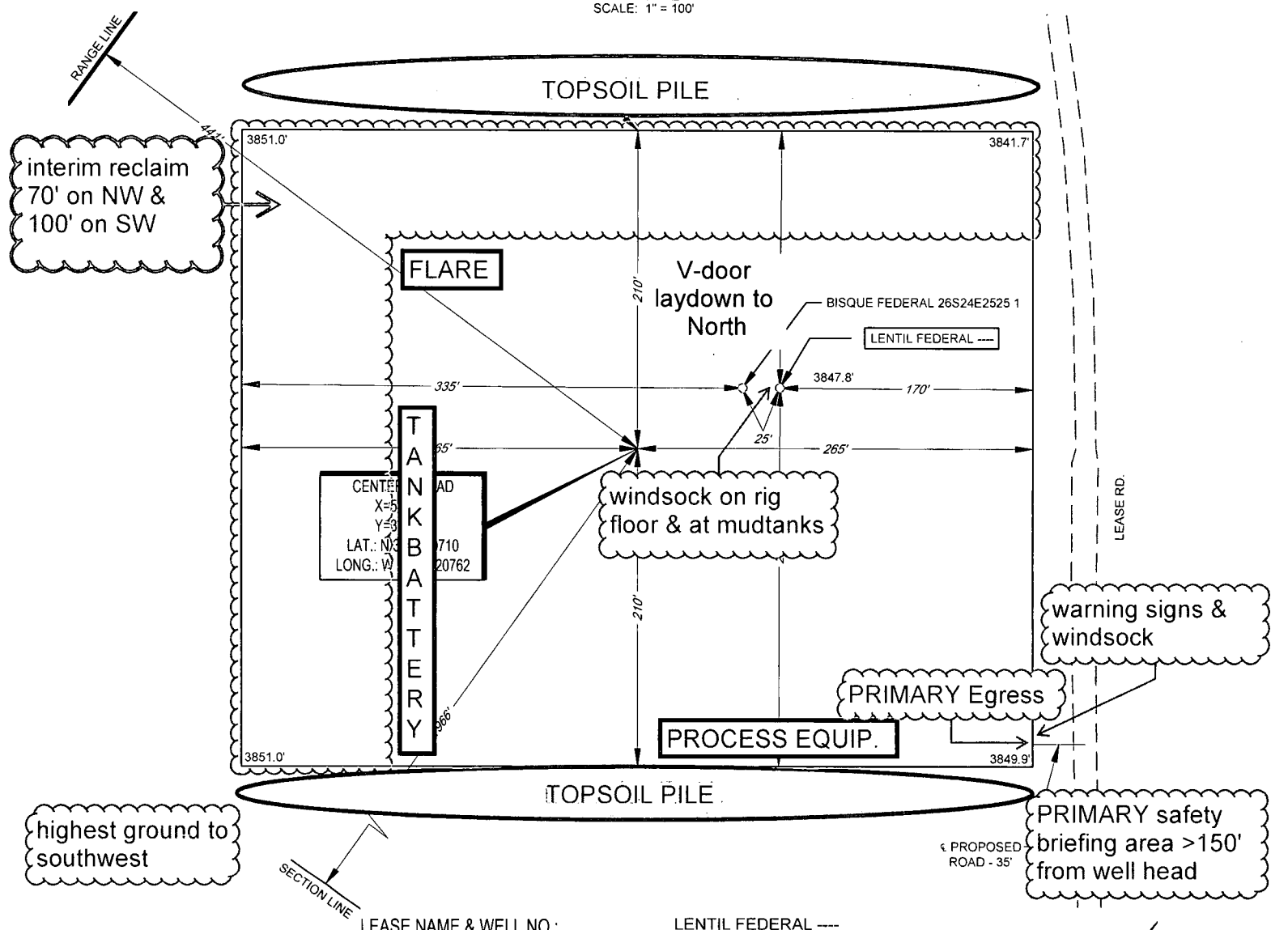
Coflex_Certs_20191011100602.pdf

Lentil_161H_Drill_Plan_v3_103119_20191101114407.pdf

Other Variance attachment:

SECTION 19, TOWNSHIP 26-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: LENTIL FEDERAL ----

---- LATITUDE N 32.0262137 ---- LONGITUDE W 104.4419043

CENTER OF PAD IS 1966' FSL & 441' FWL

LEGEND

- PROPOSED ROAD
- RANGE LINE
- SECTION LINE
- ROAD WAY

SCALE: 1" = 100'
0' 50' 100'

Prevailing wind blows from south

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TAP ROCK OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

Tap Rock Operating, LLC

Lentil Federal
161H
H2S Contingency Plan:
Radius Map

Section 19, Township 26S, Range 25E
Eddy County, New Mexico

Proposed SHL

1:27,000

0 0.25 0.5 1

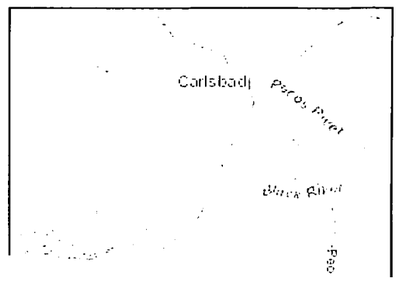
Miles

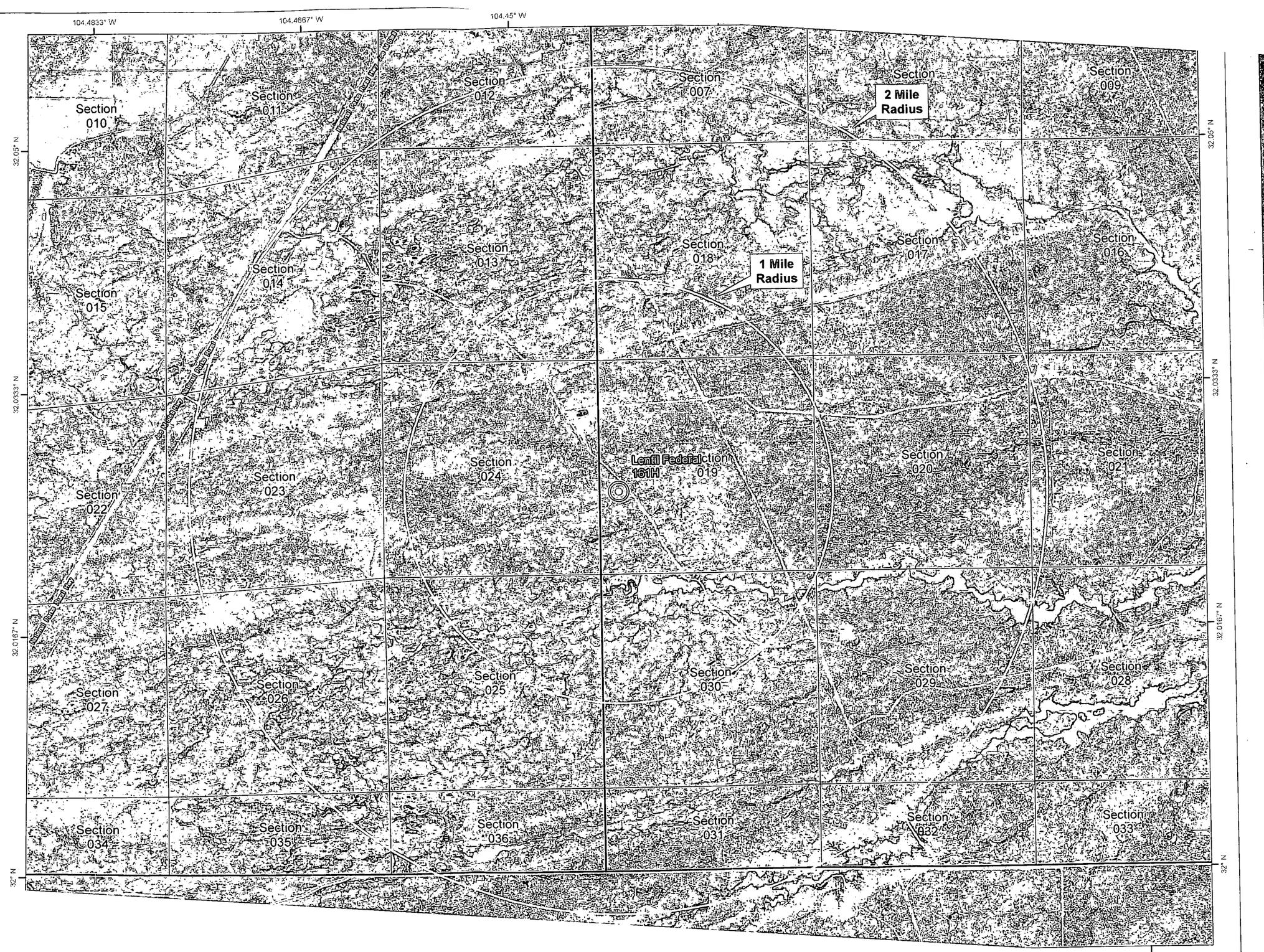
N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST, inc.
PROVIDING PERMITS for LAND USERS

Prepared by Permits West, Inc., December 18, 2018
for Tap Rock Operating, LLC





Well: Lentil 26S25E1919 Well No. 161H
Site: Section 19-T26S-R25E
Project: Eddy County, New Mexico NAD83 NM east
Design: rev0 Wfcp
Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	6247.00	0.00	0.00	6247.00	0.00	0.00	0.00	0.00	KOP Begin 10°/100' build
3	6882.80	63.57	339.74	6760.16	298.31	-110.10	10.00	301.15	Begin 10°/100' build/turn
4	7215.21	90.43	0.04	6835.00	613.00	-163.00	10.00	617.15	Begin 90.43° lateral
5	12539.37	90.43	0.04	6795.00	5937.01	-159.00	0.00	5939.14	PBHL/TD 12539.37 MD/6795.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Lentil 161 PBHL 2660 FSL 330 FWL	6795.00	5937.01	-159.00	379229.00	507532.00	32.04253353	-104.44243790
Lentil 161 Upper perf 2665 FNL 330 FWL	6835.00	613.00	-163.00	373905.00	507528.00	32.02789793	-104.44243345

Azimuths to Grid North
True North: 0.06°
Magnetic North: 7.26°

Magnetic Field
Strength: 47596.8snT
Dip Angle: 59.72°
Date: 9/12/2018
Model: IGRF2015

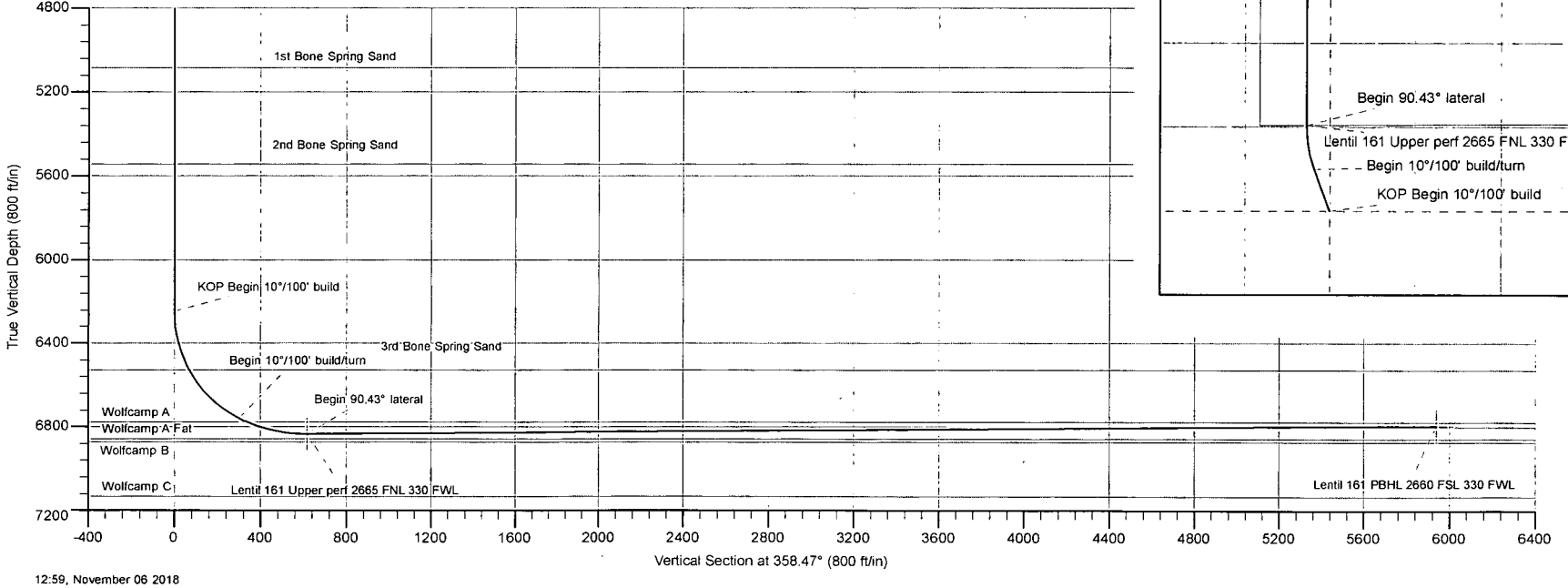
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

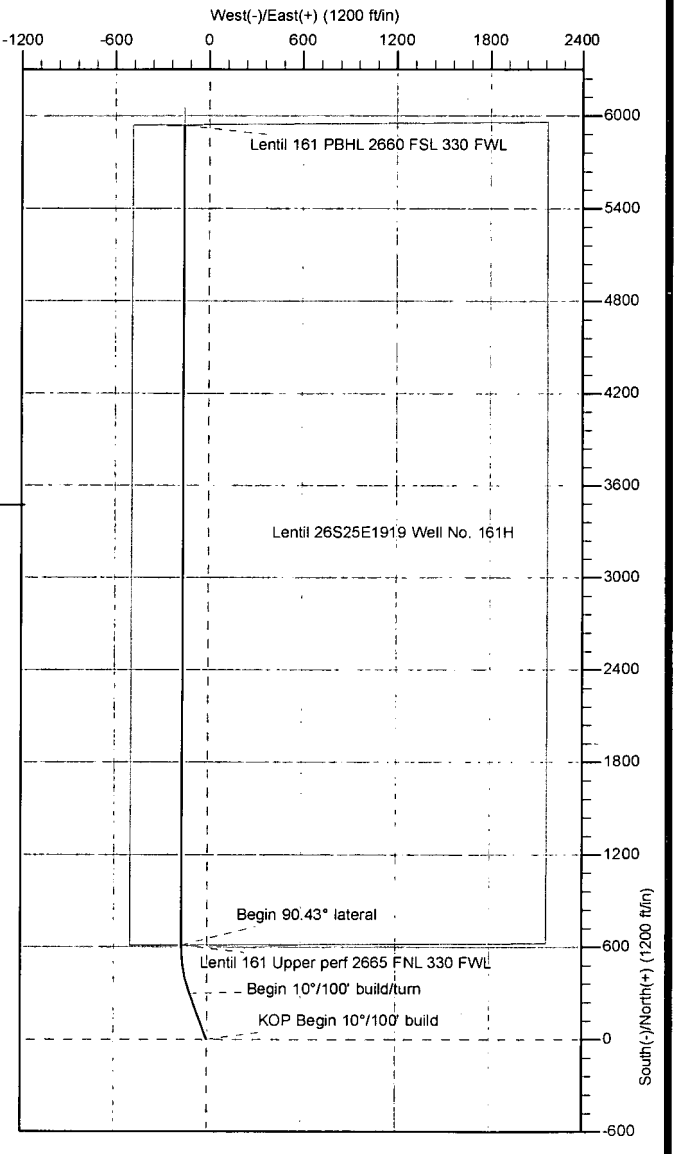
System Datum: Mean Sea Level
Depth Reference: RKB=3848+26 @ 3874.00ft
Surface location:

Northing	Easting	Latitude	Longitude
373292.00	507691.00	32.02621325	-104.44190548

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
549.00	549.00	Top Salt
884.00	884.00	Rustler Anhydrite
934.00	934.00	Base Salt
1124.00	1124.00	Delaware Mountain Gp
1174.00	1174.00	Bell Canyon
1174.00	1174.00	Lamar
1194.00	1194.00	Ramsey Sand
2169.00	2169.00	Cherry Canyon
2889.00	2889.00	Brushy Canyon
4444.00	4444.00	Bone Spring Lime
5084.00	5084.00	1st Bone Spring Sand
5544.00	5544.00	2nd Bone Spring Sand
6529.00	6541.84	3rd Bone Spring Sand
6779.00	6927.95	Wolfcamp A





12:59, November 06 2018

Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

Project Eddy County, New Mexico NAD83 NM east

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Section 19-T26S-R25E

Site Position:		**Northing:**	373,292.00 usft	**Latitude:**	32.02621325
From:	Map	**Easting:**	507,691.00 usft	**Longitude:**	-104.44190548
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.06 °

Well Lentil 26S25E1919 Well No. 161H, Surf loc: 2054 FSL 494 FWL Section 19-T26S-R25E

Well Position	**+N/-S**	0.00 ft	**Northing:**	373,292.00 usft	**Latitude:**	32.02621325
	+E/-W	0.00 ft	**Easting:**	507,691.00 usft	**Longitude:**	-104.44190548
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,848.00 ft

Wellbore Original Hole

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/12/2018	7.20	59.72	47,596.82525837

Design rev0 Wfcp

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	358.47

Survey Tool Program **Date** 11/6/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	12,538.64	rev0 Wfcp (Original Hole)	MWD	OWSG MWD - Standard

Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

Planned Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
549.00	0.00	0.00	549.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Top Salt									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
884.00	0.00	0.00	884.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Rustler Anhydrite									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
934.00	0.00	0.00	934.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Base Salt									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,124.00	0.00	0.00	1,124.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Delaware Mountain Gp									
1,174.00	0.00	0.00	1,174.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Bell Canyon - Lamar									
1,194.00	0.00	0.00	1,194.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Ramsey Sand									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00

Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

Planned Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)	Northing (usft)	Easting (usft)
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,169.00	0.00	0.00	2,169.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Cherry Canyon									
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2,889.00	0.00	0.00	2,889.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Brushy Canyon									
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00

Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

Planned Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)	Northing (usft)	Easting (usft)
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,444.00	0.00	0.00	4,444.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
Bone Spring Lime									
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,084.00	0.00	0.00	5,084.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
1st Bone Spring Sand									
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,544.00	0.00	0.00	5,544.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
2nd Bone Spring Sand									
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00

Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

Planned Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)	Northing (usft)	Easting (usft)
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
6,247.00	0.00	0.00	6,247.00	0.00	0.00	0.00	0.00	373,292.00	507,691.00
KOP Begin 10°/100' build									
6,300.00	5.30	339.74	6,299.92	2.30	-0.85	10.00	2.32	373,294.30	507,690.15
6,400.00	15.30	339.74	6,398.19	19.05	-7.03	10.00	19.23	373,311.05	507,683.97
6,500.00	25.30	339.74	6,491.86	51.55	-19.03	10.00	52.04	373,343.55	507,671.97
6,541.84	29.48	339.74	6,529.00	69.60	-25.69	10.00	70.26	373,361.60	507,665.31
3rd Bone Spring Sand									
6,600.00	35.29	339.74	6,578.10	98.81	-36.47	10.00	99.75	373,390.81	507,654.53
6,700.00	45.29	339.74	6,654.27	159.40	-58.83	10.00	160.92	373,451.40	507,632.17
6,800.00	55.29	339.74	6,718.08	231.48	-85.44	10.00	233.69	373,523.48	507,605.56
6,882.80	63.57	339.74	6,760.16	298.31	-110.10	10.00	301.15	373,590.31	507,580.90
Begin 10°/100' build/turn									
6,900.00	64.90	340.94	6,767.63	312.89	-115.31	10.00	315.87	373,604.89	507,575.69
6,927.95	67.10	342.84	6,779.00	337.16	-123.24	10.00	340.34	373,629.16	507,567.76
Wolfcamp A									
7,000.00	72.84	347.47	6,803.69	402.56	-140.52	10.00	406.17	373,694.56	507,550.48
7,100.00	80.96	353.46	6,826.35	498.49	-156.54	10.00	502.51	373,790.49	507,534.46
7,200.00	89.18	359.18	6,834.95	597.79	-162.90	10.00	601.94	373,889.79	507,528.10
7,215.21	90.43	0.04	6,835.00	613.00	-163.00	10.00	617.15	373,905.00	507,528.00
Begin 90.43° lateral									
7,300.00	90.43	0.04	6,834.36	697.79	-162.94	0.00	701.90	373,989.79	507,528.06
7,400.00	90.43	0.04	6,833.61	797.79	-162.86	0.00	801.86	374,089.79	507,528.14
7,500.00	90.43	0.04	6,832.86	897.78	-162.79	0.00	901.82	374,189.78	507,528.21
7,600.00	90.43	0.04	6,832.11	997.78	-162.71	0.00	1,001.78	374,289.78	507,528.29
7,700.00	90.43	0.04	6,831.36	1,097.78	-162.64	0.00	1,101.74	374,389.78	507,528.36

Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

Planned Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)	Northing (usft)	Easting (usft)
7,800.00	90.43	0.04	6,830.61	1,197.78	-162.56	0.00	1,201.70	374,489.77	507,528.44
7,900.00	90.43	0.04	6,829.86	1,297.77	-162.49	0.00	1,301.66	374,589.77	507,528.51
8,000.00	90.43	0.04	6,829.10	1,397.77	-162.41	0.00	1,401.62	374,689.77	507,528.59
8,100.00	90.43	0.04	6,828.35	1,497.77	-162.34	0.00	1,501.58	374,789.76	507,528.66
8,200.00	90.43	0.04	6,827.60	1,597.76	-162.26	0.00	1,601.54	374,889.76	507,528.74
8,300.00	90.43	0.04	6,826.85	1,697.76	-162.19	0.00	1,701.50	374,989.76	507,528.81
8,400.00	90.43	0.04	6,826.10	1,797.76	-162.11	0.00	1,801.45	375,089.76	507,528.89
8,500.00	90.43	0.04	6,825.35	1,897.76	-162.04	0.00	1,901.41	375,189.75	507,528.97
8,600.00	90.43	0.04	6,824.60	1,997.75	-161.96	0.00	2,001.37	375,289.75	507,529.04
8,700.00	90.43	0.04	6,823.84	2,097.75	-161.88	0.00	2,101.33	375,389.75	507,529.12
8,800.00	90.43	0.04	6,823.09	2,197.75	-161.81	0.00	2,201.29	375,489.74	507,529.19
8,900.00	90.43	0.04	6,822.34	2,297.74	-161.73	0.00	2,301.25	375,589.74	507,529.27
9,000.00	90.43	0.04	6,821.59	2,397.74	-161.66	0.00	2,401.21	375,689.74	507,529.34
9,100.00	90.43	0.04	6,820.84	2,497.74	-161.58	0.00	2,501.17	375,789.73	507,529.42
9,200.00	90.43	0.04	6,820.09	2,597.74	-161.51	0.00	2,601.13	375,889.73	507,529.49
9,300.00	90.43	0.04	6,819.34	2,697.73	-161.43	0.00	2,701.09	375,989.73	507,529.57
9,400.00	90.43	0.04	6,818.59	2,797.73	-161.36	0.00	2,801.05	376,089.73	507,529.64
9,500.00	90.43	0.04	6,817.83	2,897.73	-161.28	0.00	2,901.01	376,189.72	507,529.72
9,600.00	90.43	0.04	6,817.08	2,997.73	-161.21	0.00	3,000.97	376,289.72	507,529.79
9,700.00	90.43	0.04	6,816.33	3,097.72	-161.13	0.00	3,100.93	376,389.72	507,529.87
9,800.00	90.43	0.04	6,815.58	3,197.72	-161.06	0.00	3,200.88	376,489.71	507,529.94
9,900.00	90.43	0.04	6,814.83	3,297.72	-160.98	0.00	3,300.84	376,589.71	507,530.02
10,000.00	90.43	0.04	6,814.08	3,397.71	-160.91	0.00	3,400.80	376,689.71	507,530.09
10,100.00	90.43	0.04	6,813.33	3,497.71	-160.83	0.00	3,500.76	376,789.70	507,530.17
10,200.00	90.43	0.04	6,812.58	3,597.71	-160.76	0.00	3,600.72	376,889.70	507,530.24
10,300.00	90.43	0.04	6,811.82	3,697.71	-160.68	0.00	3,700.68	376,989.70	507,530.32
10,400.00	90.43	0.04	6,811.07	3,797.70	-160.61	0.00	3,800.64	377,089.69	507,530.39

Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

Planned Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)	Northing (usft)	Easting (usft)
10,500.00	90.43	0.04	6,810.32	3,897.70	-160.53	0.00	3,900.60	377,189.69	507,530.47
10,600.00	90.43	0.04	6,809.57	3,997.70	-160.46	0.00	4,000.56	377,289.69	507,530.54
10,700.00	90.43	0.04	6,808.82	4,097.69	-160.38	0.00	4,100.52	377,389.69	507,530.62
10,800.00	90.43	0.04	6,808.07	4,197.69	-160.31	0.00	4,200.48	377,489.68	507,530.69
10,900.00	90.43	0.04	6,807.32	4,297.69	-160.23	0.00	4,300.44	377,589.68	507,530.77
11,000.00	90.43	0.04	6,806.57	4,397.69	-160.16	0.00	4,400.40	377,689.68	507,530.84
11,100.00	90.43	0.04	6,805.81	4,497.68	-160.08	0.00	4,500.36	377,789.67	507,530.92
11,200.00	90.43	0.04	6,805.06	4,597.68	-160.01	0.00	4,600.32	377,889.67	507,530.99
11,300.00	90.43	0.04	6,804.31	4,697.68	-159.93	0.00	4,700.27	377,989.67	507,531.07
11,400.00	90.43	0.04	6,803.56	4,797.67	-159.86	0.00	4,800.23	378,089.66	507,531.14
11,500.00	90.43	0.04	6,802.81	4,897.67	-159.78	0.00	4,900.19	378,189.66	507,531.22
11,600.00	90.43	0.04	6,802.06	4,997.67	-159.71	0.00	5,000.15	378,289.66	507,531.29
11,700.00	90.43	0.04	6,801.31	5,097.67	-159.63	0.00	5,100.11	378,389.65	507,531.37
11,800.00	90.43	0.04	6,800.55	5,197.66	-159.56	0.00	5,200.07	378,489.65	507,531.44
11,900.00	90.43	0.04	6,799.80	5,297.66	-159.48	0.00	5,300.03	378,589.65	507,531.52
12,000.00	90.43	0.04	6,799.05	5,397.66	-159.41	0.00	5,399.99	378,689.65	507,531.59
12,100.00	90.43	0.04	6,798.30	5,497.65	-159.33	0.00	5,499.95	378,789.64	507,531.67
12,200.00	90.43	0.04	6,797.55	5,597.65	-159.26	0.00	5,599.91	378,889.64	507,531.75
12,300.00	90.43	0.04	6,796.80	5,697.65	-159.18	0.00	5,699.87	378,989.64	507,531.82
12,400.00	90.43	0.04	6,796.05	5,797.65	-159.11	0.00	5,799.83	379,089.63	507,531.90
12,500.00	90.43	0.04	6,795.30	5,897.64	-159.03	0.00	5,899.79	379,189.63	507,531.97
12,539.37	90.43	0.04	6,795.00	5,937.01	-159.00	0.00	5,939.14	379,229.00	507,532.00

PBHL/TD 12539.37 MD/6795.00 TVD

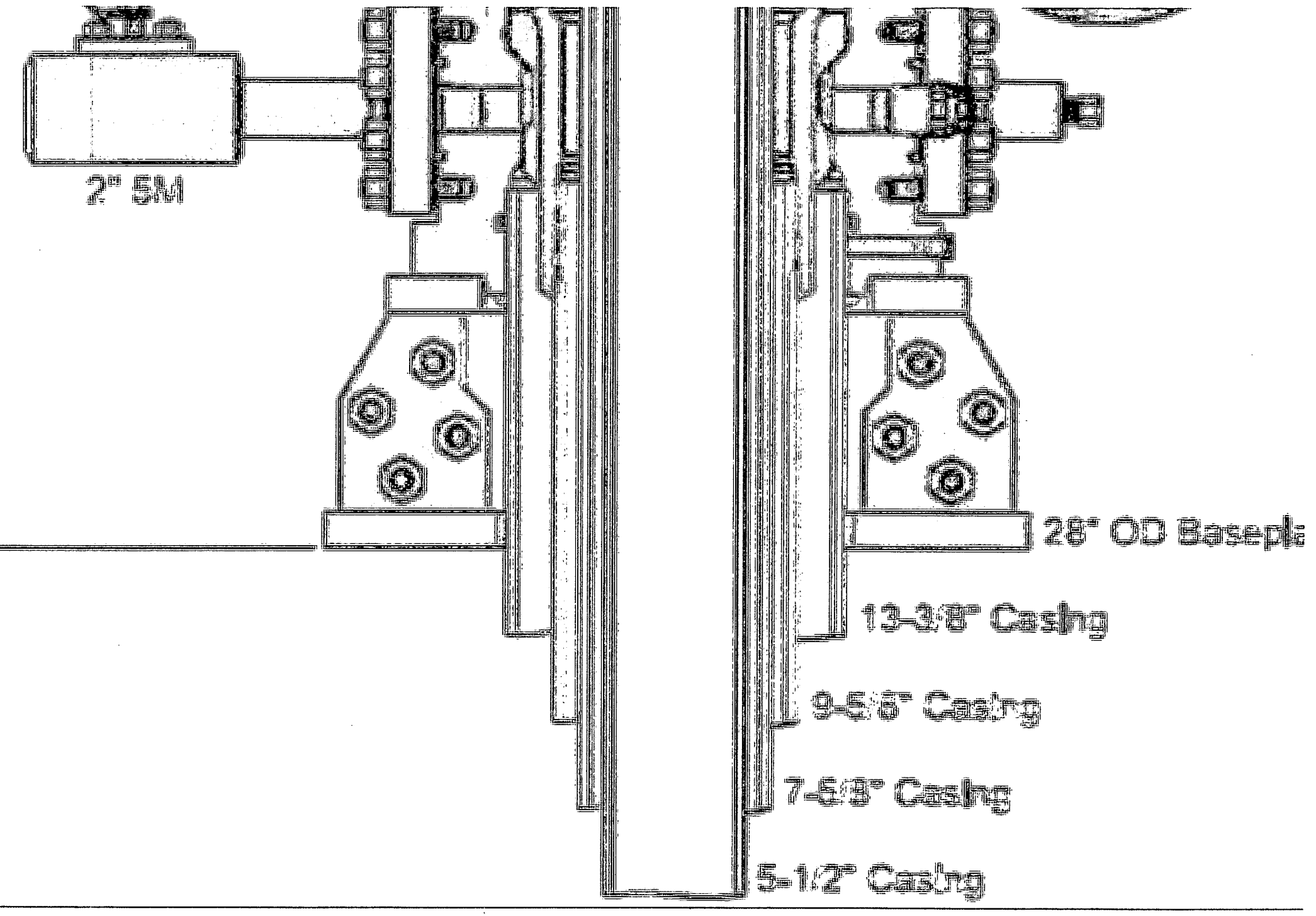
Company:	Tap Rock Operating LLC	**Local Co-ordinate Reference:**	Well Lentil 26S25E1919 Well No. 161H
Project:	Eddy County, New Mexico NAD83 NM east	**TVD Reference:**	RKB=3848+26 @ 3874.00ft
Site:	Section 19-T26S-R25E	**MD Reference:**	RKB=3848+26 @ 3874.00ft
Well:	Lentil 26S25E1919 Well No. 161H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	rev0 Wfcp	**Database:**	DB_Jul2216dt_v14

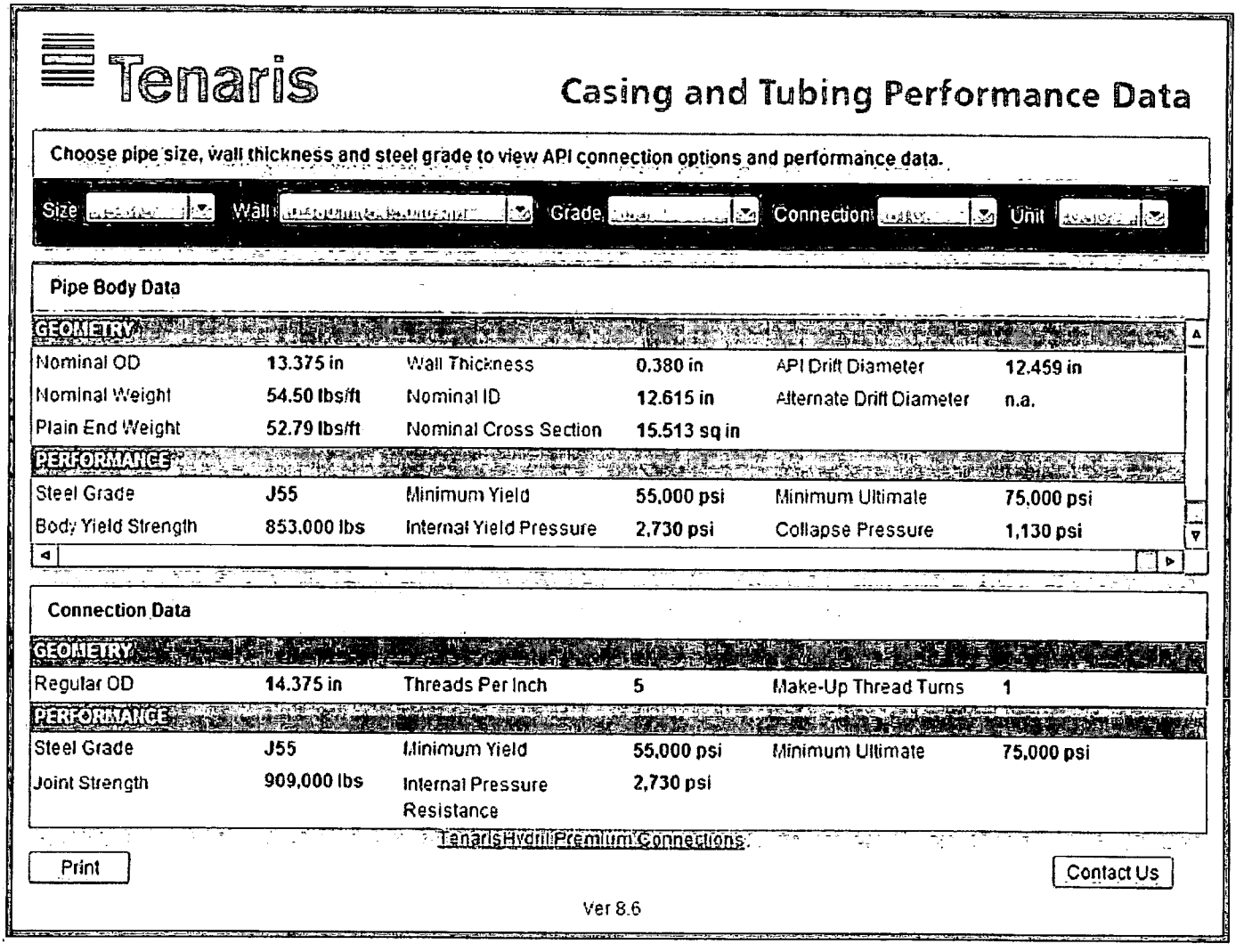
Formations

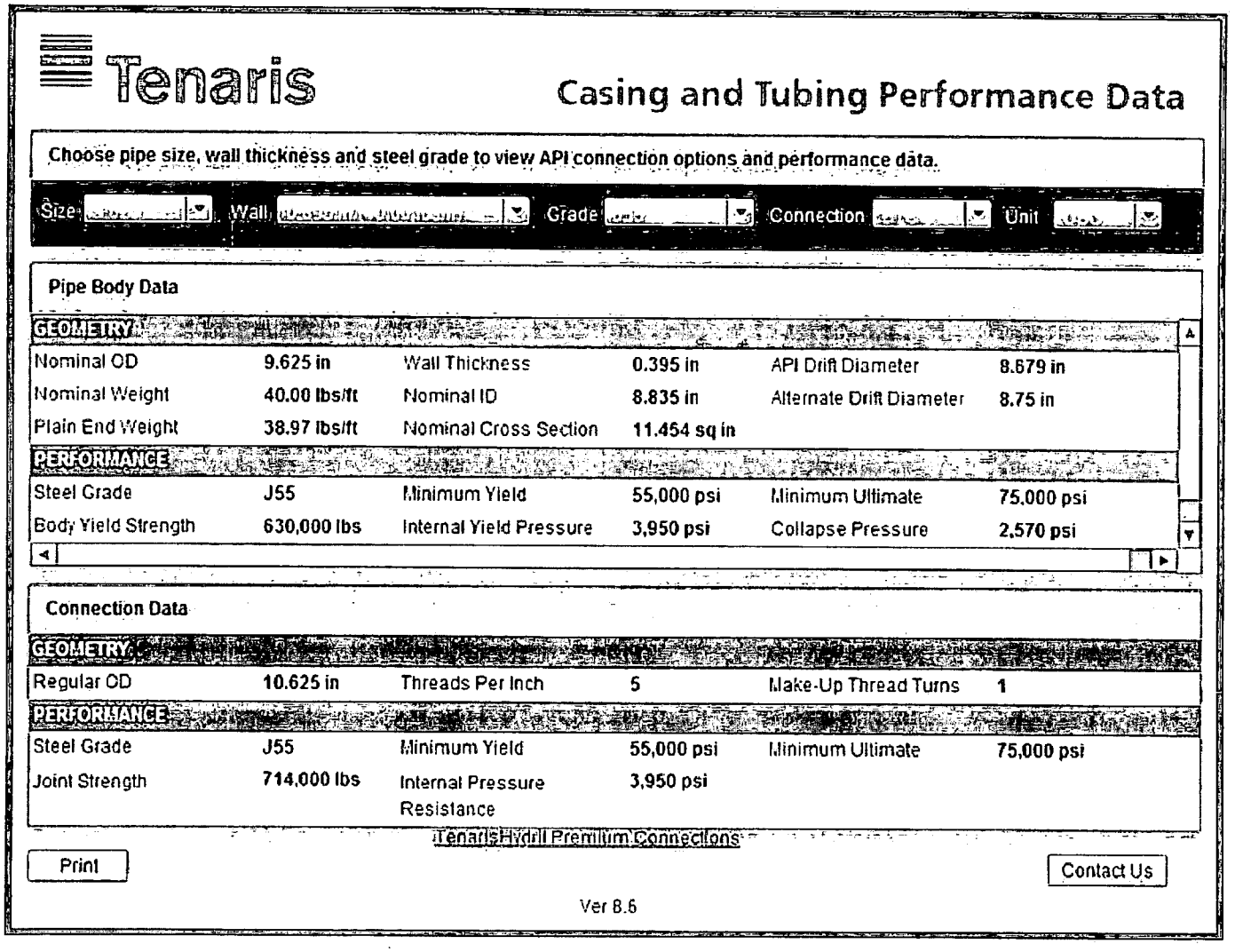
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
549.00	549.00	Top Salt			
884.00	884.00	Rustler Anhydrite			
934.00	934.00	Base Salt			
1,124.00	1,124.00	Delaware Mountain Gp			
1,174.00	1,174.00	Bell Canyon			
1,174.00	1,174.00	Lamar			
1,194.00	1,194.00	Ramsey Sand			
2,169.00	2,169.00	Cherry Canyon			
2,889.00	2,889.00	Brushy Canyon			
4,444.00	4,444.00	Bone Spring Lime			
5,084.00	5,084.00	1st Bone Spring Sand			
5,544.00	5,544.00	2nd Bone Spring Sand			
6,541.84	6,529.00	3rd Bone Spring Sand			
6,927.95	6,779.00	Wolfcamp A			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
6,247.00	6,247.00	0.00	0.00	KOP Begin 10°/100' build
6,882.80	6,760.16	298.31	-110.10	Begin 10°/100' build/turn
7,215.21	6,835.00	613.00	-163.00	Begin 90.43° lateral
12,539.37	6,795.00	5,937.01	-159.00	PBHL/TD 12539.37 MD/6795.00 TVD


2" SM
28" OD Baseplate
13-3/8" Csg
9-5/8" Csg
7-5/8" Csg
5-1/2" Csg


Tenaris
Casing and Tubing Performance Data
Choose pipe size, wall thickness and steel grade to view API connection options and performance data.
Size
Wall
Grade
Connection
Unit
Pipe Body Data
GEOMETRY
Nominal OD 13.375 in
Wall Thickness 0.380 in
API Drift Diameter 12.459 in
Nominal Weight 54.50 lbs/ft
Nominal ID 12.615 in
Alternate Drift Diameter n.a.
Plain End Weight 52.79 lbs/ft
Nominal Cross Section 15.513 sq in
PERFORMANCE
Steel Grade J55
Minimum Yield 55,000 psi
Minimum Ultimate 75,000 psi
Body Yield Strength 853,000 lbs
Internal Yield Pressure 2,730 psi
Collapse Pressure 1,130 psi
Connection Data
GEOMETRY
Regular OD 14.375 in
Threads Per Inch 5
Make-Up Thread Turns 1
PERFORMANCE
Steel Grade J55
Minimum Yield 55,000 psi
Minimum Ultimate 75,000 psi
Joint Strength 909,000 lbs
Internal Pressure Resistance 2,730 psi
TenarisHydril Premium Connections
Print
Contact Us
Ver 8.6


Tenaris
Casing and Tubing Performance Data
Choose pipe size, wall thickness and steel grade to view API connection options and performance data.
Size
Wall
Grade
Connection
Unit
Pipe Body Data
GEOMETRY
Nominal OD 9.625 in
Wall Thickness 0.395 in
API Drift Diameter 8.679 in
Nominal Weight 40.00 lbs/ft
Nominal ID 8.835 in
Alternate Drift Diameter 8.75 in
Plain End Weight 38.97 lbs/ft
Nominal Cross Section 11.454 sq in
PERFORMANCE
Steel Grade J55
Minimum Yield 55,000 psi
Minimum Ultimate 75,000 psi
Body Yield Strength 630,000 lbs
Internal Yield Pressure 3,950 psi
Collapse Pressure 2,570 psi
Connection Data
GEOMETRY
Regular OD 10.625 in
Threads Per Inch 5
Make-Up Thread Turns 1
PERFORMANCE
Steel Grade J55
Minimum Yield 55,000 psi
Minimum Ultimate 75,000 psi
Joint Strength 714,000 lbs
Internal Pressure Resistance 3,950 psi
TenarisHydril Premium Connections
Print
Contact Us
Ver 8.6

Tenaris

Casing and Tubing Performance Data

PIPE BODY DATA

GEOMETRY

Outside Diameter	7.625 in	Wall Thickness	0.375 in	API Drift Diameter	6.750 in
Nominal Weight	29.70 lbs/ft	Nominal ID	6.875 in	Alternative Drift Diameter	n.a.
Plain End Weight	29.06 lbs/ft	Nominal cross section	8.541 in		

PERFORMANCE

Steel Grade	P110	Minimum Yield	110,000 psi	Minimum Ultimate	125,000 psi
Tension Yield	940,000 in	Internal Pressure Yield	9,470 psi	Collapse Pressure	5,350 psi
Available Seamless	Yes	Available Welded	Yes		

CONNECTION DATA

TYPE: BTC

GEOMETRY

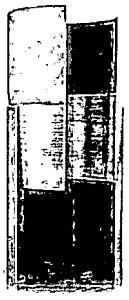
Coupling Reg OD	8.500 in	Threads per in	5	Thread turns make up	1

PERFORMANCE

Steel Grade	P110	Coupling Min Yield	110,000 psi	Coupling Min Ultimate	125,000 psi
Joint Strength	960,000 lbs			Internal Pressure Resistance	9,470 psi

Wedge 513®

Printed on: 01/30/2018



Outside Diameter	7.625 in.	Min. Wall Thickness	87.5%	(*) Grade P110	
Wall Thickness	0.375 in.	Connection OD Option	REGULAR	COUPLING	PIPE BODY
Grade	P110*	Drift	API Standard	Body: White 1st Band: - 2nd Band: -	1st Band: White 2nd Band: - 3rd Band: -
		Type	Casing	3rd Band: -	4th Band: -

GEOMETRY					
Nominal OD	7.625 in.	Nominal Weight	29.70 lbs/ft	Drift	6.75 in.
Nominal ID	6.875 in.	Wall Thickness	0.375 in.	Plain End Weight	29.06 lbs/ft
OD Tolerance	API				
PERFORMANCE					
Body Yield Strength	940 x1000 lbs	Internal Yield	9470 psi	SMYS	110000 psi
Collapse	5350 psi				

GEOMETRY					
Connection OD	7.625 in.	Connection ID	6.800 in.	Make-up Loss	4.420 in.
Threads per in	3.29	Connection OD Option	REGULAR		
PERFORMANCE					
Tension Efficiency	60.0 %	Joint Yield Strength	564.000 x1000 lbs	Internal Pressure Capacity	9470.000 psi
Compression Efficiency	75.2 %	Compression Strength	706.880 x1000 lbs	Max. Allowable Bending	39.6 °/100 ft
External Pressure Capacity	5350.000 psi				
MAKE-UP TORQUES					
Minimum	9000 ft-lbs	Optimum	10800 ft-lbs	Maximum	15800 ft-lbs
OPERATION LIMIT TORQUES					
Operating Torque	47000 ft-lbs	Yield Torque	70000 ft-lbs		

Notes

This connection is fully interchangeable with:

Wedge 523® - 7.625 in. - 29.7 lbs/ft

Connections with Dopeless® Technology are fully compatible with the same connection in its Standard version

For further information on concepts indicated in this datasheet, download the Datasheet Manual from www.tenaris.com

Tenaris

Casing and Tubing Performance Data

PIPE BODY DATA

GEOMETRY

Outside Diameter	7.000 in	Wall Thickness	0.408 in	API Drift Diameter	6.059 in
Nominal Weight	29.00 lbs/ft	Nominal ID	6.184 in	Alternative Drift Diameter	6.125 in
Plain End Weight	28.75 lbs/ft	Nominal cross section	8.449 in		

PERFORMANCE

Steel Grade	P110	Minimum Yield	110,000 psi	Minimum Ultimate	125,000 psi
Tension Yield	929,000 in	Internal Pressure Yield	11,220 psi	Collapse Pressure	8,530 psi
Available Seamless	Yes	Available Welded	Yes		

CONNECTION DATA

TYPE: BTC

GEOMETRY

Coupling Reg OD	7.656 in	Threads per in	5	Thread turns make up	1

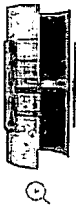
PERFORMANCE

Steel Grade	P110	Coupling Min Yield	110,000 psi	Coupling Min Ultimate	125,000 psi
Joint Strength	955,000 lbs			Internal Pressure Resistance	11,220 psi

5.5", 20#, P-110, TXP connection (modified buttress connection that provides a torque rating of nearly 24000ft-lbs)

TXP® BTC

SHARE EXPORT DATA PRINT



Outside Diameter	5.500 in	Min. Wall Thickness	87.5%		
Wall Thickness	0.361 in	Drift	API Standard		
Grade	P110	Type	Casing		
		Connection OD Option	REGULAR		

Clear Filters

Compare

Request Info

CONNECTION INFORMATION

- Blanking Dimensions
- Connection's Page
- Brochure
- Datasheet Manual

PIPE BODY DATA

GEOMETRY

Nominal OD	5.500 in	Nominal Weight	20 lbs/ft	Drift	4.653 in.
Nominal ID	4.778 in	Wall Thickness	0.361 in	Plain End Weight	19.83 lbs/ft
OD Tolerance	API				

PERFORMANCE

Body Yield Strength	641 x1000 lbs	Internal Yield	12640 psi	SMYS	110000 psi
Collapse	11100 psi				

CONNECTION DATA

GEOMETRY

Connection OD	6.100 in	Coupling Length	9.450 in	Connection ID	4.766 in
Make-up Loss	4.204 in	Threads per in	5	Connection OD Option	REGULAR

PERFORMANCE

Tension Efficiency	100.0 %	Joint Yield Strength	641.000 x1000 lbs	Internal Pressure Capacity [1]	12640.000 psi
Compression Efficiency	100 %	Compression Strength	641.000 x1000 lbs	Max. Allowable Bending	92 °/100 ft
External Pressure Capacity	11100.000 psi				

MAKE-UP TORQUES

Minimum	11270 ft-lbs	Optimum	12520 ft-lbs	Maximum	13770 ft-lbs

OPERATION LIMIT TORQUES

Operating Torque	21500 ft-lbs	Yield Torque	23900 ft-lbs

Tenaris

Casing and Tubing Performance Data

PIPE BODY DATA

GEOMETRY

Outside Diameter	4.500 in	Wall Thickness	0.290 in	API Drift Diameter	3.795 in
Nominal Weight	13.50 lbs/ft	Nominal ID	3.920 in	Alternative Drift Diameter	n.a.
Plain End Weight	13.05 lbs/ft	Nominal cross section	3.836 in		

PERFORMANCE

Steel Grade	P110	Minimum Yield	110,000 psi	Minimum Ultimate	125,000 psi
Tension Yield	422,000 in	Internal Pressure Yield	12,410 psi	Collapse Pressure	10,690 psi
Available Seamless	Yes	Available Welded	Yes		

CONNECTION DATA

TYPE: BTC

GEOMETRY

Coupling Reg OD	5.000 in	Threads per in	5	Thread turns make up	0.5

PERFORMANCE

Steel Grade	P110	Coupling Min Yield	110,000 psi	Coupling Min Ultimate	125,000 psi
Joint Strength	443,000 lbs			Internal Pressure Resistance	12,410 psi

Hydrostatic Test Certificate

ContiTech

Certificate Number	COM Order Reference	Customer Name & Address
938562	938562	HELMERICH & PAYNE DRILLING CO 1434 SOUTH BOULDER AVE TULSA, OK 74119 USA
Customer Purchase Order No:	740043386	
Project: HOW		

Test Center Address	Accepted by COM Inspection	Accepted by Client Inspection
ContiTech Oil & Marine Corp. 11535 Brittmoore Park Drive Houston, TX 77041 USA	Signed: Roger Suarez Date: 3/13/17	

We certify that the goods detailed hereon have been inspected as described below by our Quality Management System, and to the best of our knowledge are found to conform the requirements of the above referenced purchase order as issued to ContiTech Oil & Marine Corporation.

Item	Part No.	Description	Qnty	Serial Number	Work. Press.	Test Press.	Test Time (minutes)
20		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	53631	10,000 psi	15,000 psi	60
30		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	54500	10,000 psi	15,000 psi	60
40		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	56838	10,000 psi	15,000 psi	60
50		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	58489	10,000 psi	15,000 psi	60
60		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	61475	10,000 psi	15,000 psi	60
80		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	60197	10,000 psi	15,000 psi	60
90		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	39474	10,000 psi	15,000 psi	60
100		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	60887	10,000 psi	15,000 psi	60

Certificate of Conformity

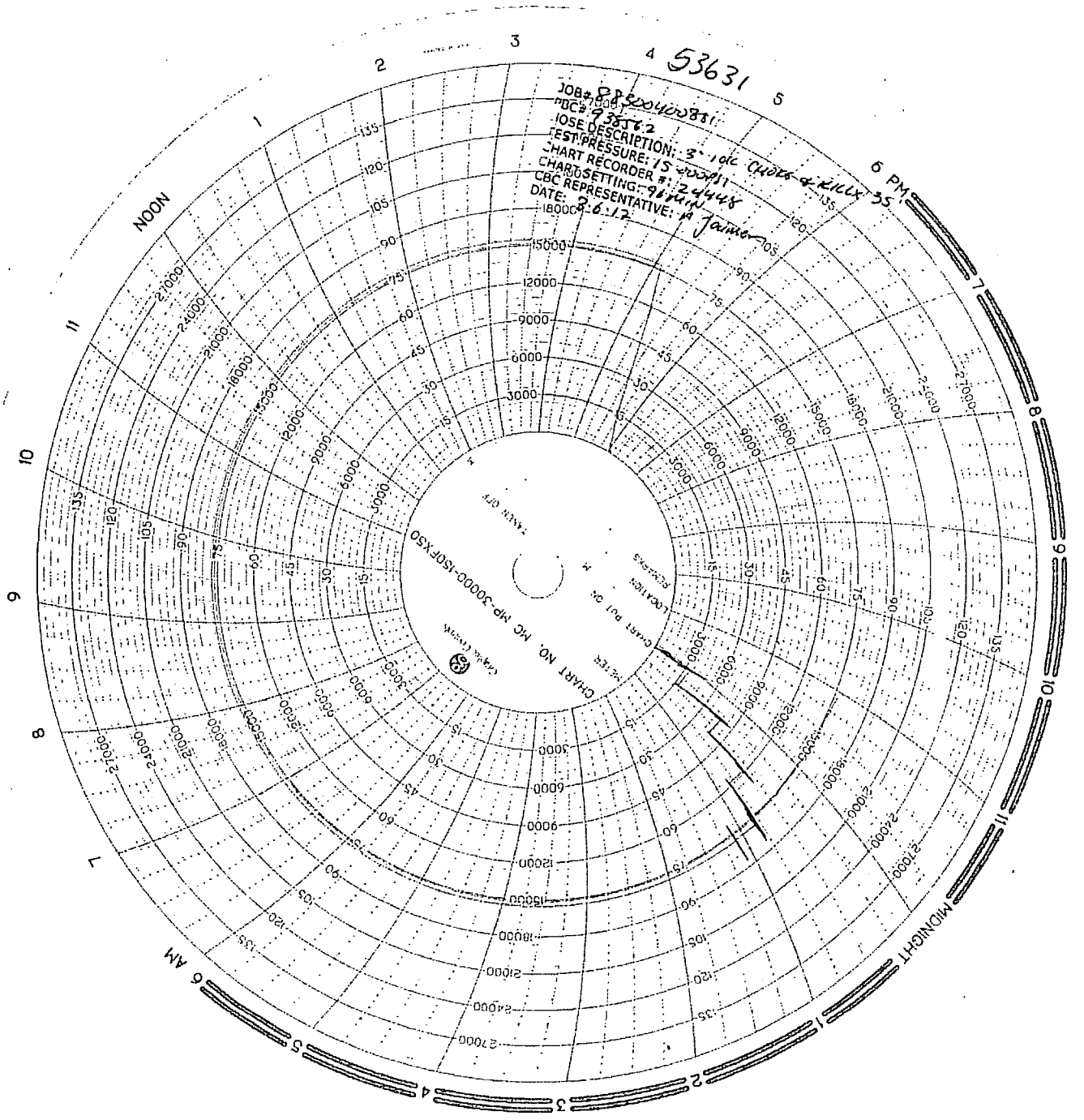
ContiTech

Certificate Number	COM Order Reference	Customer Name & Address
938562	938562	HELMERICH & PAYNE DRILLING CO 1434 SOUTH BOULDER AVE TULSA, OK 74119 USA
Customer Purchase Order No:	740043386	
Project: HOW		

Test Center Address	Accepted by COM Inspection	Accepted by Client Inspection
ContiTech Oil & Marine Corp. 11535 Brittmoore Park Drive Houston, TX 77041 USA	Signed: Roger Suarez Date: 3/13/17	

We certify that the items detailed below meet the requirements of the customer's Purchase Order referenced above, and are in conformance with the specifications given below.

Item	Part No.	Description	Qnty	Serial Number	Specifications
20		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	53631	ContiTech Standard
30		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	54500	ContiTech Standard
40		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	56838	ContiTech Standard
50		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	56489	ContiTech Standard
60		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	61475	ContiTech Standard
80		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	60197	ContiTech Standard
90		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	39474	ContiTech Standard
100		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	60887	ContiTech Standard


53631
JOB# BP5200403831
PDC# 938562
HOSE DESCRIPTION: 3" 10K CHOKE & KILL
TEST PRESSURE: 15,000 PSI
CHART RECORDER #: 24448
CHART SETTING: 9:44 AM
CBC REPRESENTATIVE: A James
DATE: 2.6.12
CHART NO. MC MP-30000-1502-X50
NOON
MIDNIGHT
6 PM
6 AM

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/06/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	53631	**Date of Manufacture**	08/2008
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	**End B:** 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
◦ No damage	• No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydro test:** 35'

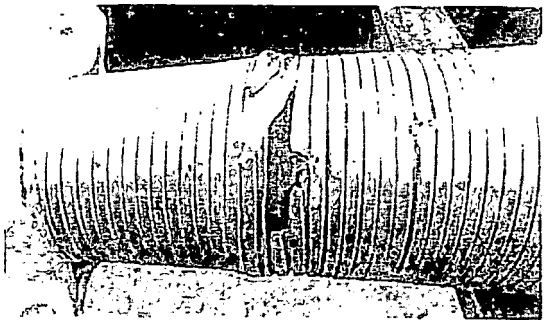
Conclusion: Hose #53631 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #53631 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #53631 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

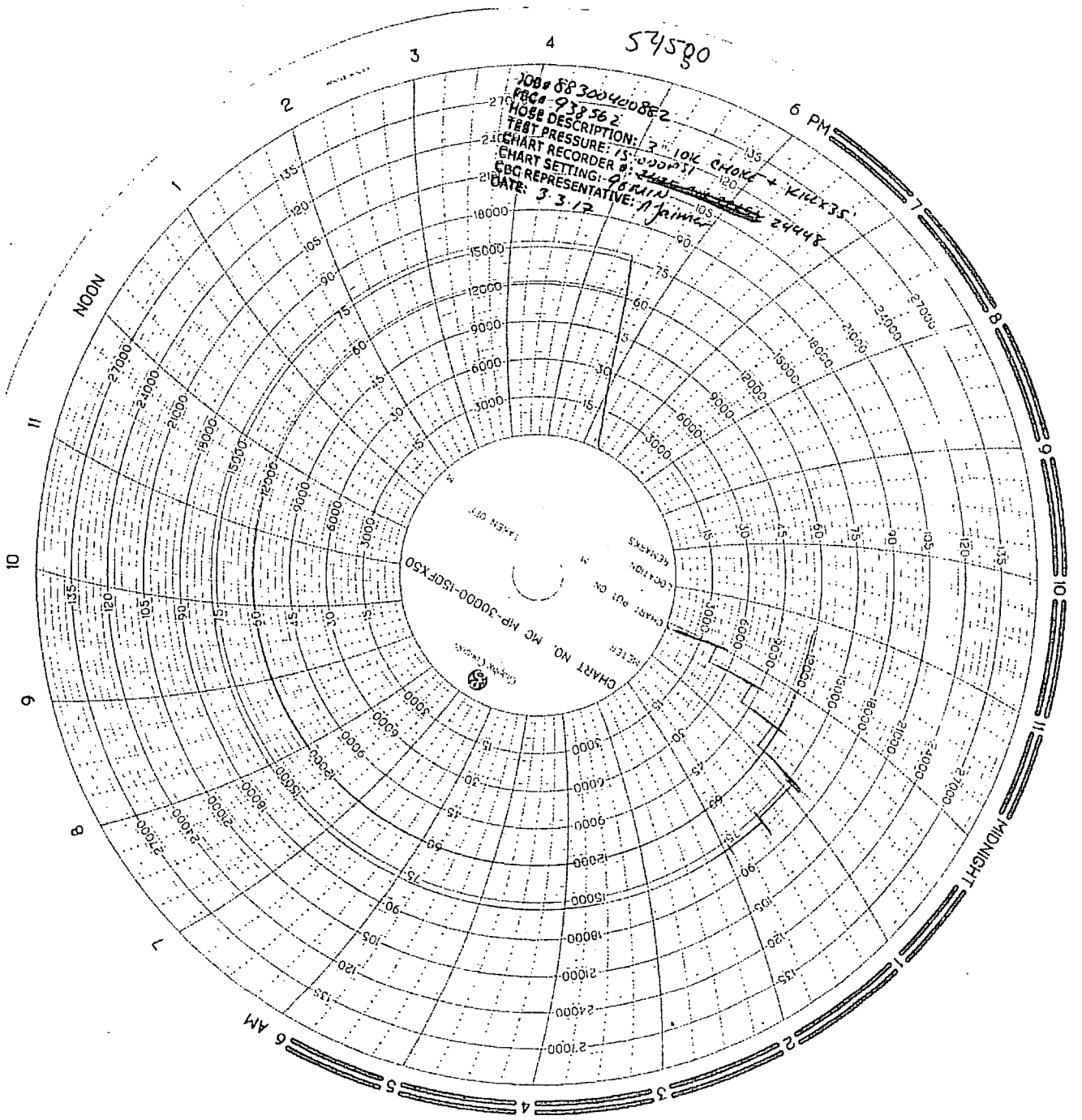
**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.

External Damage Post – Hydro test	
Approx. Distance from End A	3'
Width	8"
Length	3"
Depth	To hose body
Notes	Broken armor



Issued By: Alejandro Jaimes
Date: 03/10/2017

Checked By: Gerson Mejia-Lazo
Date: 03/10/2017


57580
JOB# 88300440882
FBG# 938562
HOSE DESCRIPTION: 3" 10K CHOKE + KILL X35'
TEST PRESSURE: 15,000 PSI
CHART RECORDER #: 24448
CHART SETTING: 90 MIN
CBG REPRESENTATIVE: N Jaime
DATE: 3.3.17
CHART NO. MC MP-30000-150F-X50
NOON
6 PM
MIDNIGHT
6 AM

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/03/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	54500	**Date of Manufacture**	01/2009
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

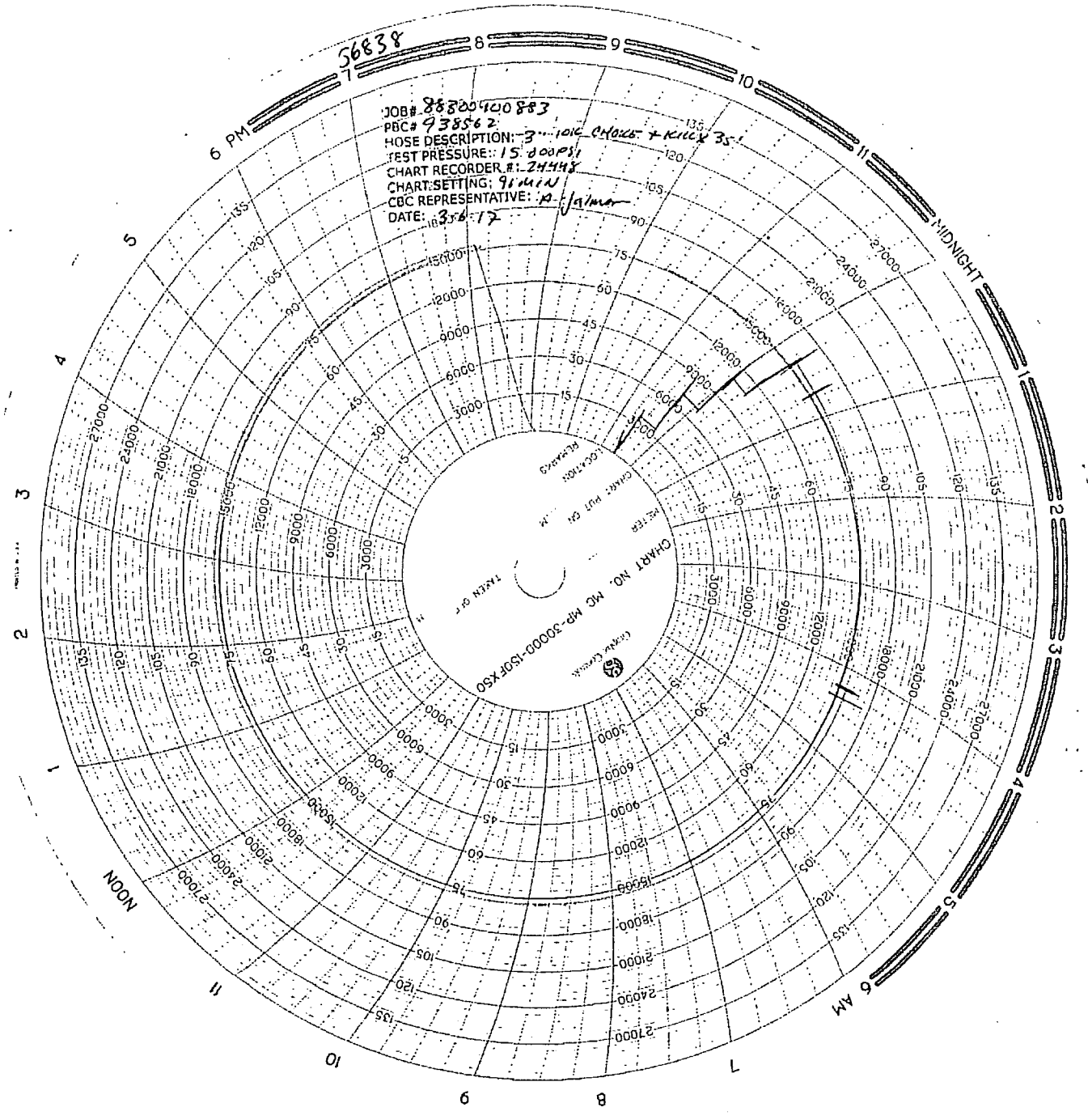
End A: 3.1/8" 5KPsi API Spec 6A Type 6BX Flange	**End B:** 3.1/8" 5Kpsi API Spec 6A Type 6BX Flange
• No damage	• No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydro test:** 35'

Conclusion: Hose #54500 passed the external inspection with no notable damages to the hose armor. Internal borescope of the hose showed no damage to the liner. Hose #54500 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #54500 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.


56838
JOB# 8820100883
PBC# 938562
HOSE DESCRIPTION: 3" 10K CHOKE + KILL X 35'
TEST PRESSURE: 15,000PSI
CHART RECORDER #: 24448
CHART SETTING: 90 MIN
CBC REPRESENTATIVE: A. Salmon
DATE: 3-6-17
CHART NO. MC MP-30000-ISDFXSO
6 PM
MIDNIGHT
NOON
6 AM

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/06/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	56838	**Date of Manufacture**	11/2010
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

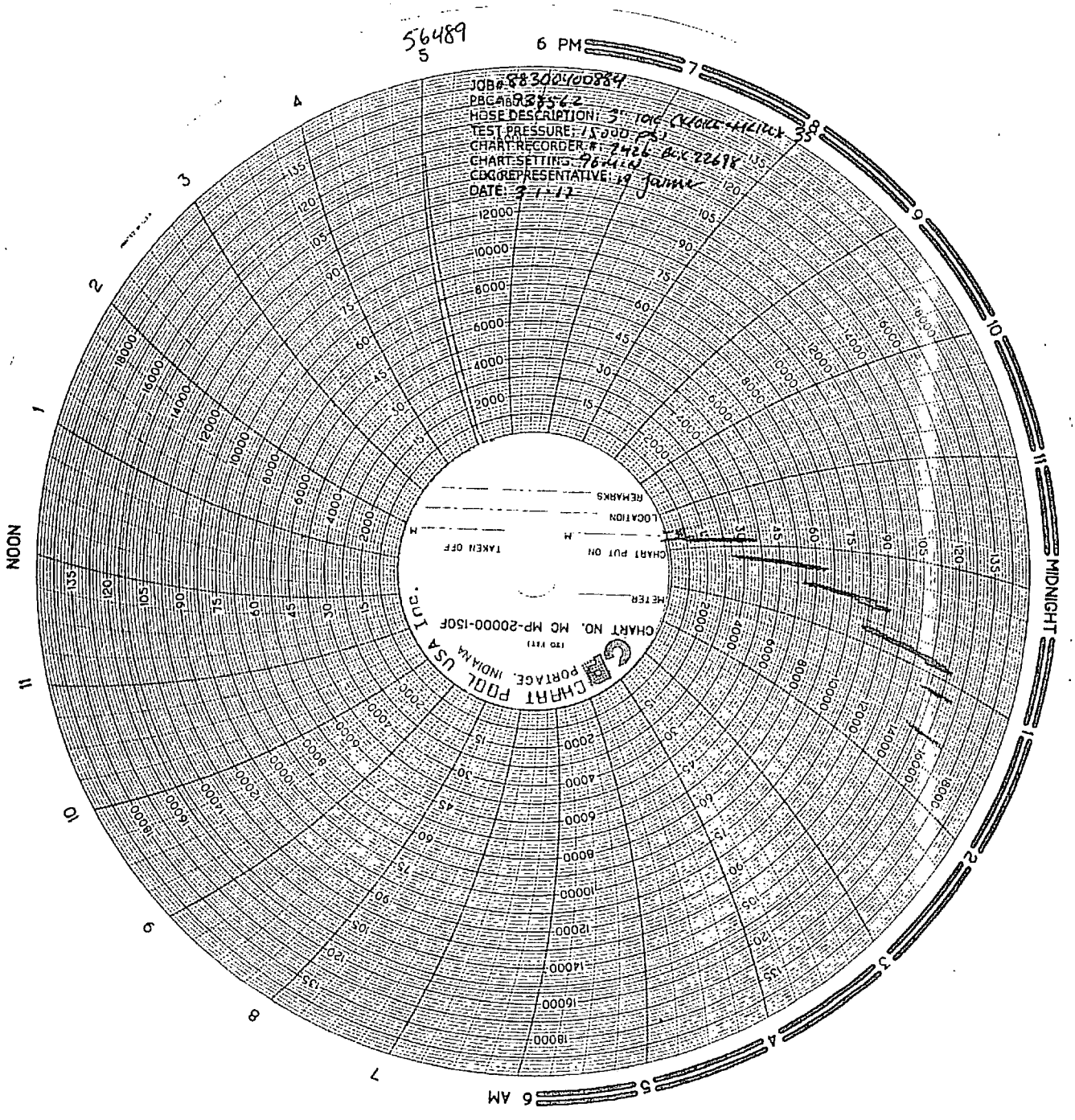
End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	End B: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
◦ No damage	◦ No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydro test:** 35'

Conclusion: Hose #56838 passed the external inspection with no notable damage to the hose armor. Internal borescope of the hose showed no damage to the liner. Hose #56838 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #56838 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual Inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.


56489
JOB# 8830010088
PBC# 838562
HOSE DESCRIPTION: 3" 10K CK/CK+HALLIX
TEST PRESSURE: 15000 PSI
CHART RECORDER #: 7426 BOX 22698
CHART SETTING: 98410
CDC REPRESENTATIVE: Jaime
DATE: 3-1-17
6 PM
NOON
MIDNIGHT
6 AM
CHART POOL USA Inc.
PORTAGE, INDIANA
CHART NO. MC MP-20000-15OF
METER
CHART PUT ON
TAKEN OFF
LOCATION
REMARKS

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/01/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	56489	**Date of Manufacture**	08/2010
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

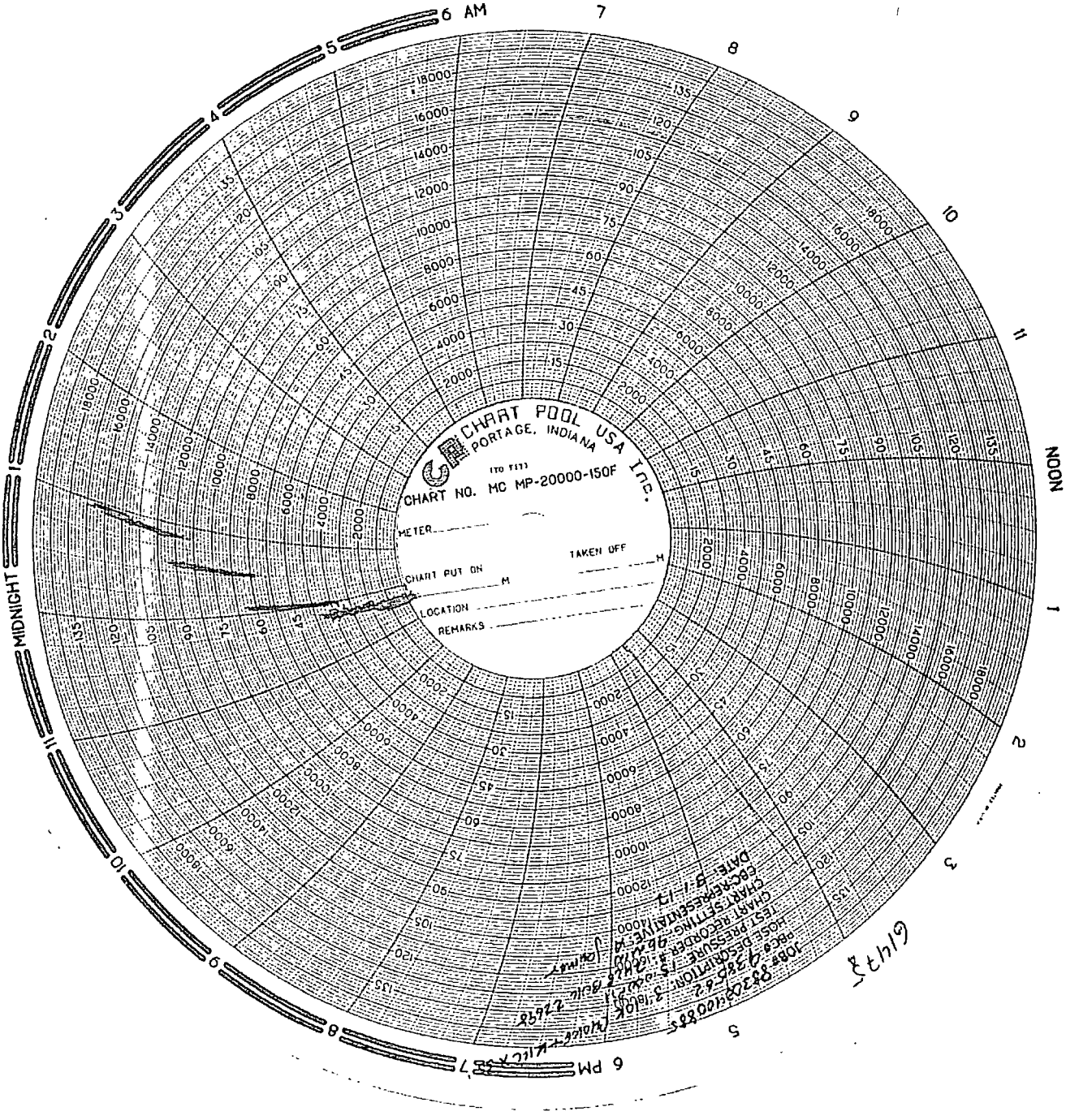
End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	**End B:** 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
◦ No damage	◦ No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydro test** 35'

Conclusion: Hose #56489 passed the external inspection with no notable damage to the hose armor. Internal borescope of the hose showed no damage to the liner. Hose #56489 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #56489 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.


6 AM
7
8
9
10
11
NOON
1
2
3
4
5
6 PM
7
8
9
10
11
MIDNIGHT
1
2
3
4
5
CHART POOL USA Inc.
PORTAGE, INDIANA
(TO FIT)
CHART NO. MC MP-20000-150F
METER
CHART PUT ON
TAKEN OFF
LOCATION
REMARKS

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/01/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	61475	**Date of Manufacture**	01/2012
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

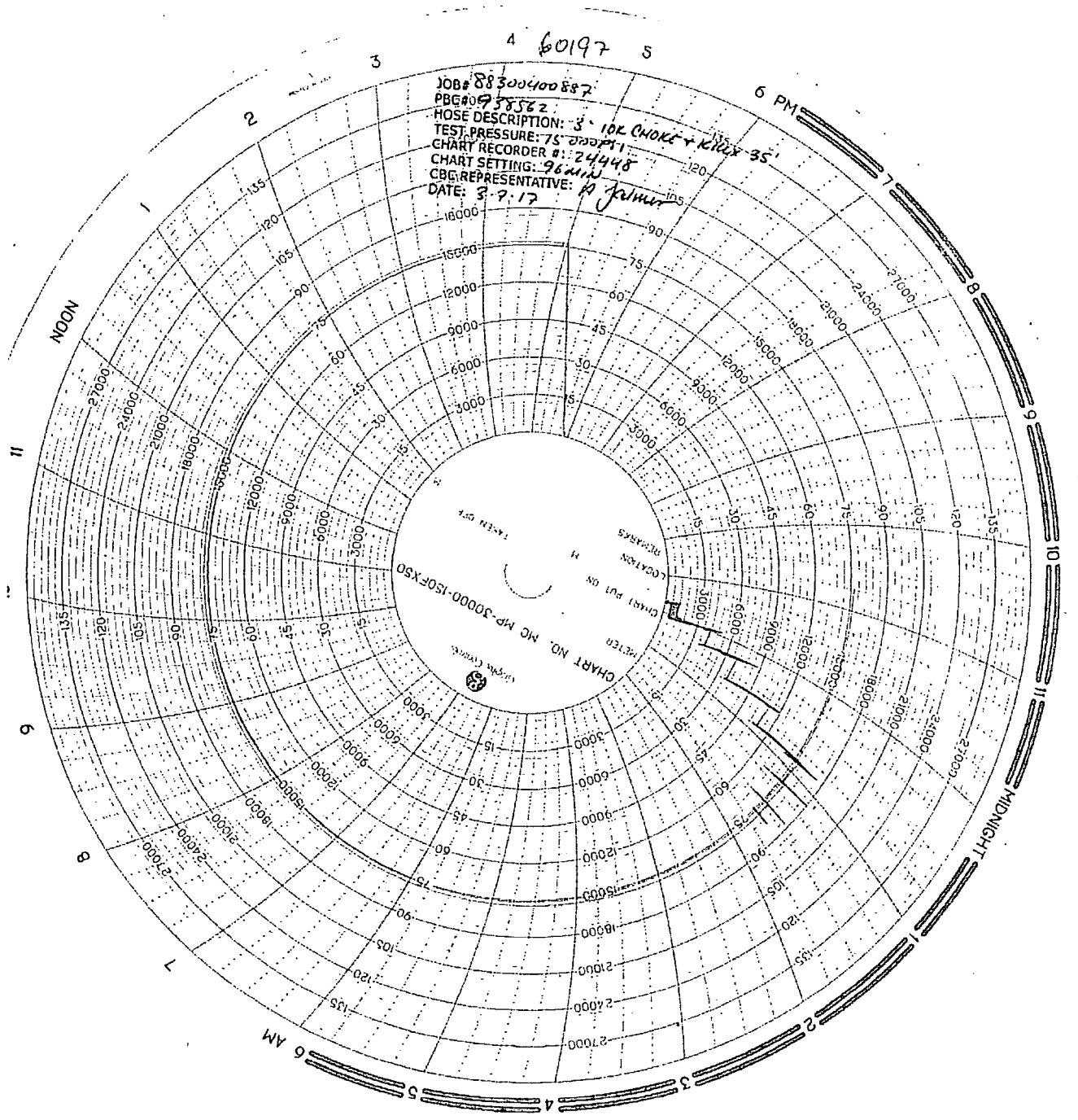
End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	**End B:** 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
• No damage	• No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydrotest:** 35'

Conclusion: Hose #61475 passed the external inspection with no notable damage to the hose armor. Internal borescope of the hose showed no damage to the liner. Hose #61475 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #61475 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major Inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.


60197
JOB# 883004100887
PBG# 958562
HOSE DESCRIPTION: 3" 10K CHOKE + KILL 35'
TEST PRESSURE: 7500 PSI
CHART RECORDER #: 24448
CHART SETTING: 96 MIN
CBG REPRESENTATIVE: A Jarmin
DATE: 3.7.17
CHART NO. MC MP-3000-15OF-XSO
NOON
6 PM
MIDNIGHT
6 AM

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/07/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	60197	**Date of Manufacture**	01/2011
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	**End B:** 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
• No damage	• No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydro test:** 35'

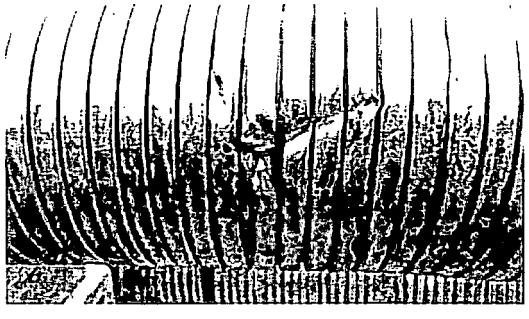
Conclusion: Hose #60197 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #60197 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #60197 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual Inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.

External Damage Post – Hydro test	
Approx. Distance from End A	6'
Width	1"
Length	1"
Depth	On armor
Notes	Crack on armor

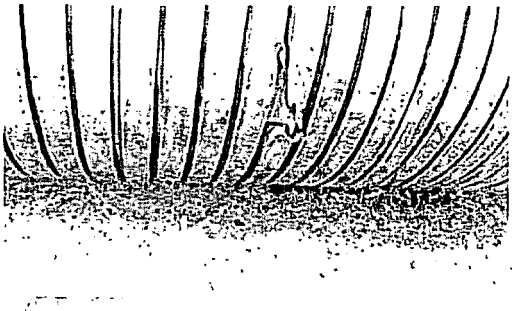


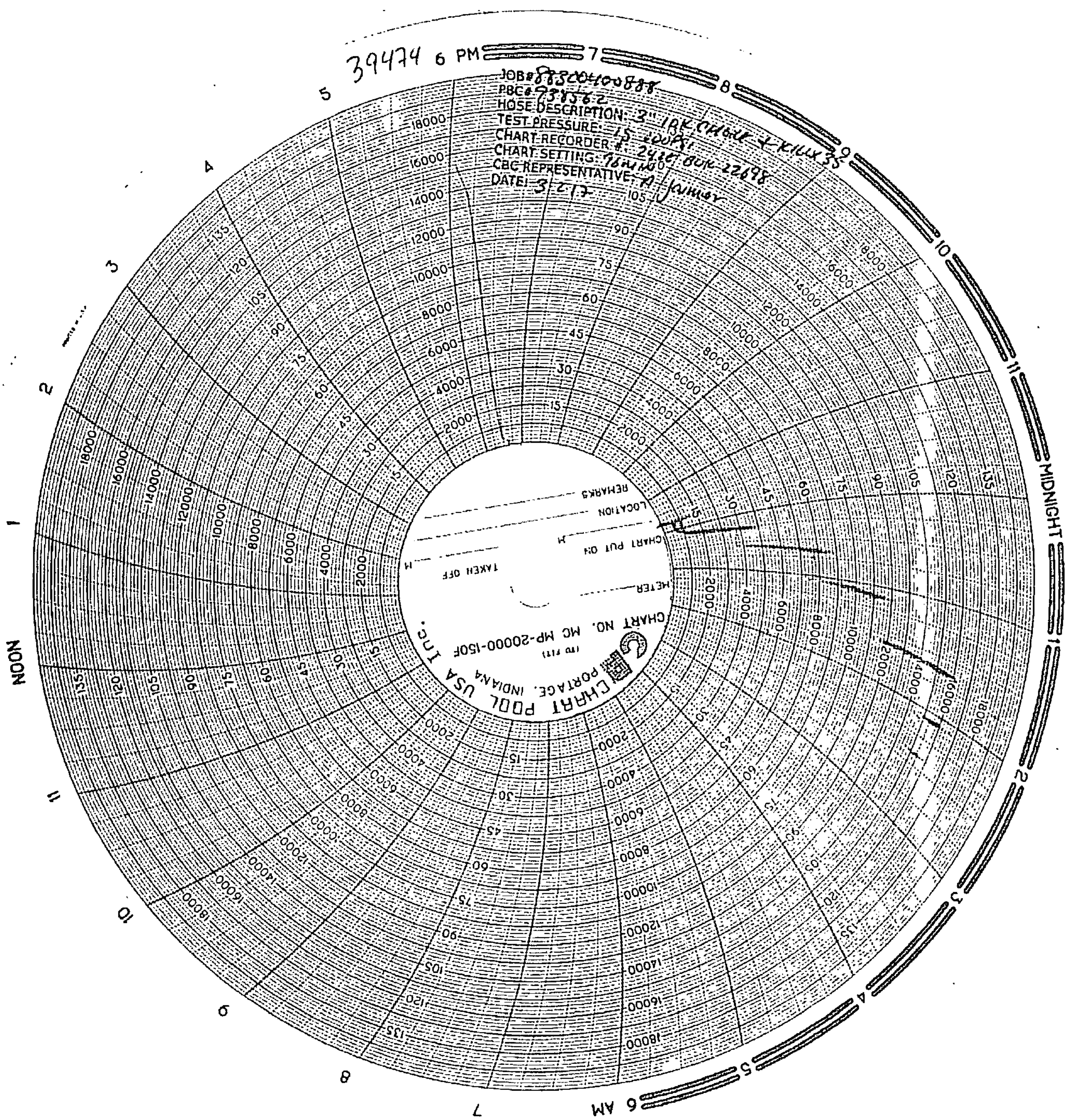
Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/07/2017

External Damage Post – Hydro test	
Approx. Distance from End A	20'
Width	1"
Length	1"
Depth	On armor
Notes	Crack on armor




39474
6 PM
JOB# 883004100888
PBC# 938562
HOSE DESCRIPTION:
TEST PRESSURE:
CHART RECORDER #:
CHART SETTING:
CBC REPRESENTATIVE:
DATE: 3-2-17
MIDNIGHT
NOON
6 AM
REMARKS
LOCATION
CHART PUT ON
TAKEN OFF
CHART NO. MC MP-20000-150F
CHART POOL USA INC.
PORTAGE, INDIANA

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/02/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	39474	**Date of Manufacture**	08/2003
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	**End B:** 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
◦ No damage	◦ No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydro test: 35'**

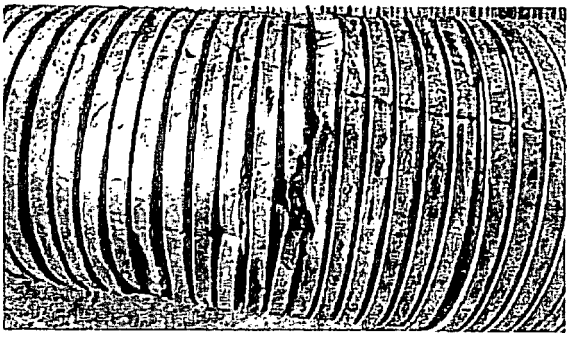
Conclusion: Hose #39474 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #39474 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #39474 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

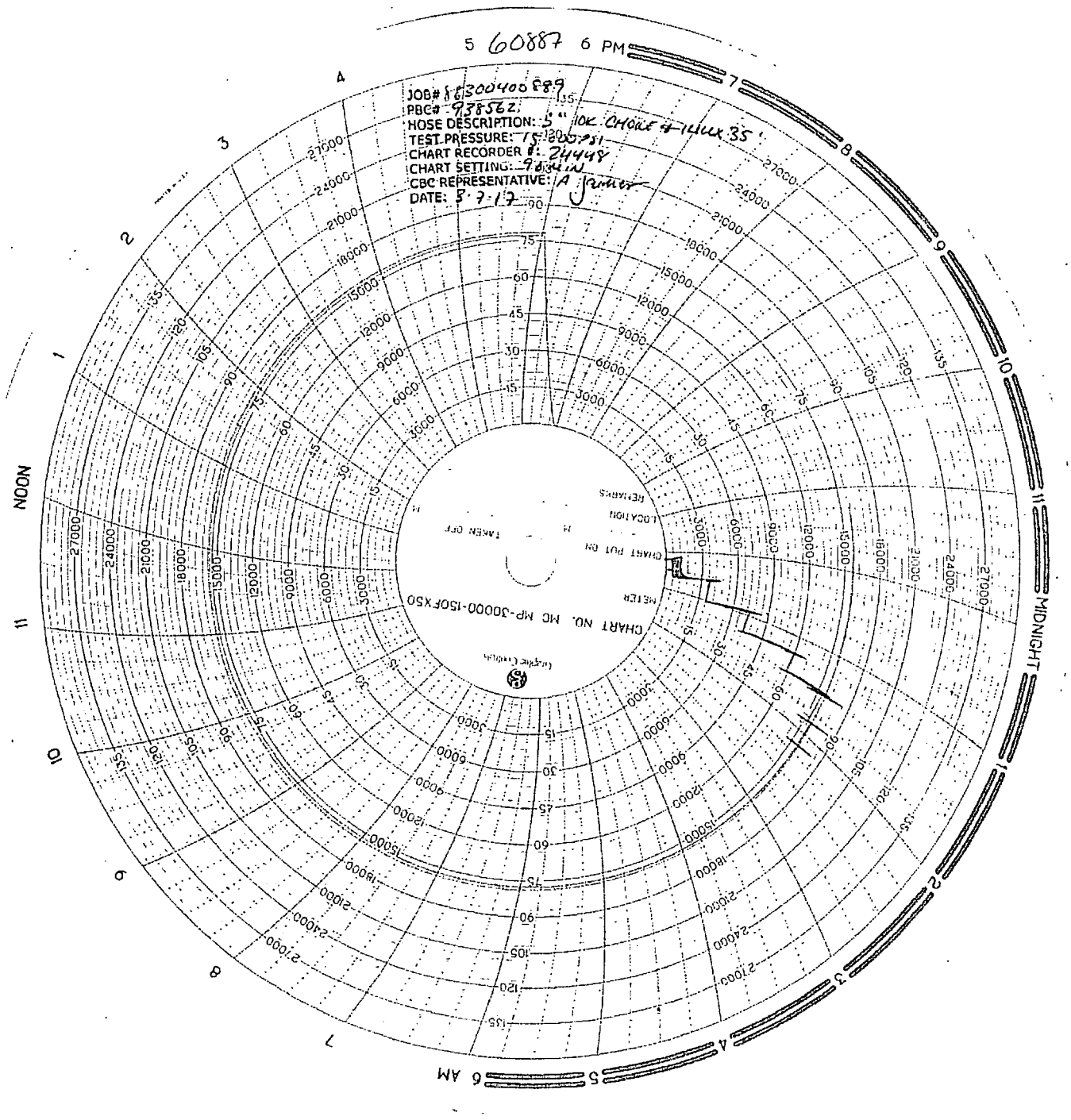
**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.

External Damage Post – Hydro test	
Approx. Distance from End A	15'
Width	1"
Length	1"
Depth	To hose body
Notes	Cracked armor



Issued By: Alejandro Jaimes
Date: 03/10/2017

Checked By: Gerson Mejia-Lazo
Date: 03/10/2017


5 60887 6 PM
JOB# 16300400689
PBC# 938562
HOSE DESCRIPTION: 5" 10K CHOKE & KILL X 35'
TEST PRESSURE: 15,000 PSI
CHART RECORDER #: 214448
CHART SETTING: 90 MIN
CBC REPRESENTATIVE: A Jamison
DATE: 3-7-17
NOON
MIDNIGHT
6 AM
CHART NO. MC MP-30000-15OFX50
METER
CHART PUT ON
LOCATION
REMARKS
TAKEN OFF

Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/07/2017

Hose Manufacturer	Contitech Rubber Industrial

Hose Serial #	60887	**Date of Manufacture**	10/2011
Hose I.D.	3"	**Working Pressure**	10000PSI
Hose Type	Choke and Kill	**Test Pressure**	15000PSI
Manufacturing Standard	API 16C		

Connections

End A: 4.1/16" 5Kpsi API Spec 6A Type 6BX Flange	End B: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
▫ No damage	▫ No damage
Material: Carbon Steel	**Material:** Carbon Steel
Seal Face: BX155	**Seal Face:** BX155
Length Before Hydro Test: 35'	**Length After Hydro test:** 35'

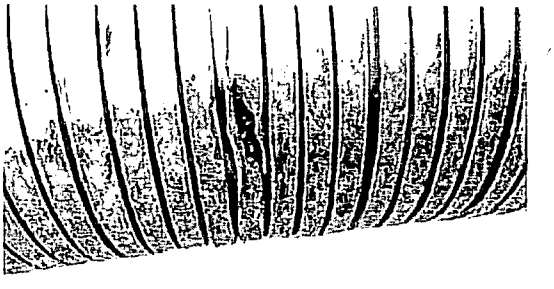
Conclusion: Hose #60887 passed the external inspection with minimal damage to the hose armor. Internal borescope showed no damage to the liner. Hose #60887 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. **Hose #60887 is suitable for continued service.**

Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

Visual Inspection: Every 3 to 6 months (or during installation/removal)
Annual: In-situ pressure test (in addition to the 3 to 6 monthly inspections)
Initial 5 years service: Major Inspection
2nd Major inspection: Following subsequent 3 year life cycle
(Detailed description of test regime available upon request, QCP 206-1)

**NOTE: There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service life, in particular maximums and peak conditions.

External Damage Post – Hydro test	
Approx. Distance from End A	10'
Width	1"
Length	1"
Depth	To hose body
Notes	Crack on armor

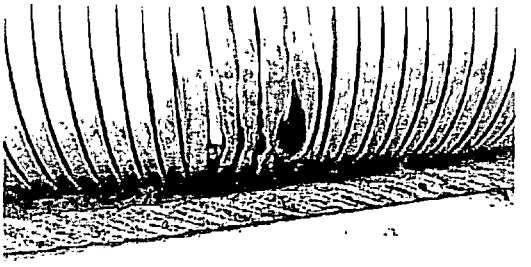


Hose Inspection Report

ContiTech Oil & Marine

Customer	Customer Reference #	CBC Reference #	CBC Inspector	Date of Inspection
H&P Drilling	740043386	COM938562	A. Jaimes	03/07/2017

External Damage Post – Hydro test	
Approx. Distance from End A	4'
Width	4"
Length	4"
Depth	To hose body
Notes	Rubber exposed



Tap Rock Operating, LLC **DRILL PLAN PAGE 1**
Lentil Federal #161H
SHL 2054' FSL & 494' FWL, Sec. 19
BHL 2660' FSL & 330' FWL, Sec. 18
T. 26S., R. 25E., Eddy County, NM

TYPE OF WELL:
Pilot hole, open-hole wireline logs, run and cement 7 5/8" 2nd intermediate pipe, stimulate and test three zones individually, then set a cased-hole whipstock and drill horizontal in one of three potential Wolfbone intervals.

Proposed Drilling Total Depth: Pilot hole 7244' TD
Pilot hole proposed test intervals:
(#1) 7,065' to 7,075'
(#2) 6,815' to 6,825'
(#3) 6,710' to 6,720'

1. ESTIMATED TOPS

Formation Name	TVD'	MD'	Bearing
Quaternary Alluvium	0	0	water/salt
Rustler Anhydrite	24	24	water/salt
Top Salt	284	284	salt
Base Salt	679	679	salt
Bell Canyon	1044	1044	hydrocarbons
Lamar	1044	1044	hydrocarbons
Ramsey Sand	1129	1129	hydrocarbons
Cherry Canyon	2044	2044	hydrocarbons
Delaware Mountain Group	2830	2830	hydrocarbons
Brushy Canyon	2854	2854	hydrocarbons
Bone Spring Lime	4394	4394	hydrocarbons
1st Bone Spring Sand	5009	5009	hydrocarbons
2nd Bone Spring Sand	5436	5436	hydrocarbons
KOP	**6247**	**6247**	--
3rd Bone Spring Sand	6459	6542	hydrocarbons
Wolfcamp A **(Goal)**	6754	6928	hydrocarbons
TD	**6795**	**12540**	--

2. NOTABLE ZONES

Wolfbone is the goal. Depth to water was not reported but OSE estimated ground water depth is 100'.

3. PROCEDURE

1. MIRU drilling rig with a minimum of 3M BOP system, spud and drill vertical well to TD. Tests will be made to 250 psi low and 3000 psi high. Annular BOP will be tested to 250 psi low and 1500 psi high.
2. Wireline log well (triple combo).
3. Run and cement 7 5/8" casing to aproximately 7200'.
4. Release drilling rig.
5. Perforate test zone #1 7,065' to 7,075', stimulate zone, and test.
6. P&A perf set #1 (7,065' to 7,075').
    a. Set CIBP 50' above perforations
    b. Dump 50 sx Class C cement on top of CIBP
7. Perforate test zone #2 6,815' to 6,825', stimulate zone, and test.
8. P&A perf set #2 (6,815' to 6,825'.
    a. Set CIBP 50' above perforations
    b. Dump 50 sx Class C cement on top of CIBP
9. Perforate test zone #3 6,710' to 6,720', stimulate zone, and test.
10. P&A perf set #3 (6,710' to 6,720').
    a. Set CIBP 50' above perforations
    b. Dump 50 sx Class C cement on top of CIBP
11. MIRU drilling rig with a minimum of 5M BOP system for phase two of drilling. Tests will be made to 250 psi low and 5000 psi high. Annular BOP will be tested to 250 psi low and 2500 psi high.
12. Install mechanical cased-hole whipstock, mill window in casing, and exit 7 5/8" casing to sidetrack well into one of three target intervals.
13. Drill 6 ¾" curve and 6 ¾" lateral to total depth.
14. Run 5 ½" x 5" tapered production string to total depth and cement in-place.
15. Release drilling rig.

4. PRESSURE CONTROL

A minimum of a 3M BOP system will be utilized below surface casing until 7-5/8" casing is set. A minimum of a 5M BOP system will be installed prior to drilling out the 7-5/8" casing shoe. Also present will be an accumulator that meets the requirements of Onshore Order #2 for the pressure rating of the BOP stack. A rotating head will also be installed as needed. BOP will be inspected and operated as recommended in Onshore Order #2. A top drive check valve and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position. The wellhead will be a multi-bowl speed head.

BOP Test procedure will be as follows:
After surface casing is set and the 3M BOP system is nippled up, the BOP pressure tests will be made with a third party tester to 250 psi low, 3000 psi high, and the annular preventer will be tested to 1500 psi. The BOP will be tested in this manner after any breaks, nipple ups, or passage of allotted time.

After the second rig moves in and the 5M BOP system is nippled up, the BOP pressure tests will be made with a third party tester to 250 psi low, 5000 psi high, and the annular preventer will be tested to 2500 psi. The BOP will be tested in this manner after any breaks, nipple ups, or passage of allotted time.

Casing Test procedure:
Casing will be tested to .22 psi per foot of casing length or 1500 psi, whichever is greater, but not to exceed 70% of minimum internal yield.

Tap Rock requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.

5. CASING & CEMENT

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

Hole O. D.	Set MD'	Set TVD'	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
17.5"	0 - 350	0 - 350	13.375" surface	54.5	J-55	BTC	1.13	1.15	1.51
12.25"	0 - 1100	0 - 1100	9.625" inter. 1	40.0	J-55	BTC	1.13	1.15	1.51
8.75"	0 – 7200	0 – 6835	7.625" inter. 2	29.7	P-110	W-513	1.13	1.15	1.51
6.75"	0 – 5900	0 – 5900	5.5" product. top	20.0	P-110	BTC	1.13	1.15	1.51
6.75"	5900 – 12540	5900 – 6795	5" product. bottom	18.0	P-110	W-521	1.13	1.15	1.51

Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Tail	270	1.8	486	13.5	Class C + 5% Bentonite + 2% CaCl + LCM
TOC = GL		100% Excess			Centralizers per Onshore Order 2 III. B. 1f	
Intermediate 1	Lead	252	2.19	552	12.7	Class C + bentonite + 1% $CaCl_2$ + 8% NaCl + LCM
	Tail	150	1.33	200	14.8	Class C + 5% NaCl + LCM
TOC = GL		100% Excess			2 on btm jt, 1 on 2nd jt, 1 every 4th jt to GL	
Intermediate 2	Lead	250	3.36	840	11.5	TXI + fluid loss + dispersant + retarder + LCM
	Tail	120	1.39	167	13.2	TXI + fluid loss + dispersant + retarder + LCM
TOC = GL'		35% Excess			2 on btm jt, 1 on 2nd jt, 1 every other jt to top of tail cement	
Production	Tail	950	1.24	1178	14.2	Class H + fluid loss + dispersant + retarder + LCM
TOC = 4900'		10% Excess			2 on btm jt, 1 on 2nd jt, 1 every third jt to top of curve	

6. MUD PROGRAM

Electronic Pason mud monitor system complying with Onshore Order 1 will be used. All necessary mud products (e. g., barite, cedar bark) for weight addition and fluid loss control will always be on site. Mud program is subject to change due to hole conditions. A closed loop system will be used.

Casing	Hole Size	Type	Interval (MD)	Mud Wt. (lb/gal)	Viscosity	Fluid Loss
Surface	17.5"	FW spud mud	0-350	8.3	28	NC
Inter. 1	12.25"	Brine water	350 - 1100	10.0	30-32	NC
Inter. 2	8.75"	FW & cut brine	1100 - 7200	9.0	30-32	NC
Production	6.75"	OBM	7200 - 12540	12.50	15-20	<10

7. CORES, TESTS, & LOGS

- Electric Logging Program: Triple combo open-hole logs are planned at this time for the pilot hole. GR will be collected while drilling through the MWD tools from intermediate casing to TD.
- No Drill Stem Test
- Rotary sidewall cores will be taken
- CBL w/ CCL from as far as gravity will let it fall to TOC.

8. DOWN HOLE CONDITIONS

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Tap Rock Operating does not anticipate that there will be enough H_2S from the surface to the Wolfcamp formations to meet the BLM's minimum requirements for the submission of an "H_2S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H_2S safety package on all wells, attached is an "H_2S Drilling Operations Plan". Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used

Estimated BHP: 3515 psi
Estimated BHT: 115°

9. OTHER INFORMATION

Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved. Drilling expected to take 30 days. If production casing is run an additional 60 days will be required to complete and construct surface facilities.

AFMSS

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

SUPO Data Report

12/16/2019

APD ID: 10400037752

Submission Date: 01/09/2019

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL

Well Number: 161H

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Lentil_161H_Existing_Rd_Map_Plats_20190109105729.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Lentil_161H_New_Rd_Map_Plat_20190109105751.pdf

New road type: RESOURCE

Length: 35.11 Feet **Width (ft.):** 30

Max slope (%): 0 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Crowned and ditched

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Grader

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Crowned and ditched

Road Drainage Control Structures (DCS) description: None

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Lentil_161H_well_Map_v1_121418_20190109105906.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Production facilities will be on the south and east sides of the pad. A 4.5" O. D. buried gas pipeline will be laid 80.01' northeast. No power line is planned at this time.
Production Facilities map:

Lentil_161H_Production_Facilities_v2_103119_20191101114445.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Water source type: GW WELL

Water source use type: SURFACE CASING

STIMULATION

DUST CONTROL

INTERMEDIATE/PRODUCTION CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: FEDERAL

Water source volume (barrels): 15000 **Source volume (acre-feet):** 1.9333965

Source volume (gal): 630000

Water source and transportation map:

Lentil_161H_Water_Gravel_Sites_010719_20190109110208.pdf

Water source comments: Water will be trucked from a private water well (DF Ranch water station) in Texas on FM Road 652 at a point 4.3 miles south of US 62/180.
New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: NM One Call (811) will be notified before construction starts. Top 6" of soil and brush will be stockpiled northwest and southeast of the pad. V-door will be to the north. A closed loop drilling system will be used. Caliche will be hauled from Constructors Inc. existing pit on State land in SENW 15-23s-26e. NMSLO lease number is HA-0253-0000.

Construction Materials source location attachment:

Lentil_161H_Construction_Methods_010719_20190109110237.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drill cuttings, mud, salts, and other chemicals

Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: Steel mud tanks

Safe containmant attachment:

Waste disposal type: BURIAL ONSITE **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Petro Waste Environmental's Texas Railroad Commission approved (STF-0101, P012235, P012236) disposal site at Orla, Texas.

Waste type: SEWAGE

Waste content description: Human waste

Amount of waste: 10 barrels

Waste disposal frequency : Weekly

Safe containment description: Chemical toilets

Safe containmant attachment:

Waste disposal type: OTHER **Disposal location ownership:** OTHER

Disposal type description: Public

Disposal location description: Chemical toilets will be hauled to Carlsbad wastewater treatment plant.

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Waste type: GARBAGE

Waste content description: Trash

Amount of waste: 10 barrels

Waste disposal frequency : Weekly

Safe containment description: Portable trash cage

Safe containmant attachment:

Waste disposal type: OTHER **Disposal location ownership:** OTHER

Disposal type description: Public

Disposal location description: Portable trash cage will be hauled to the Eddy County landfill.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Steel tanks on pad

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Lentil_161H_Well_Site_Layout_v2_100919_20191101114501.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** LENTIL FEDERAL

Multiple Well Pad Number: 161H

Recontouring attachment:

Lentil_161H_Interim_Rec_010719_20190109110609.pdf

Lentil_161H_Recontour_plats_20190109110618.pdf

Drainage/Erosion control construction: Crowned and ditched

Drainage/Erosion control reclamation: Harrowed on the contour

Well pad proposed disturbance (acres): 5.11	**Well pad interim reclamation (acres):** 1.65	**Well pad long term disturbance (acres):** 3.46
Road proposed disturbance (acres): 0.02	**Road interim reclamation (acres):** 0	**Road long term disturbance (acres):** 0.02
Powerline proposed disturbance (acres): 0	**Powerline interim reclamation (acres):** 0	**Powerline long term disturbance (acres):** 0
Pipeline proposed disturbance (acres): 0.06	**Pipeline interim reclamation (acres):** 0.06	**Pipeline long term disturbance (acres):** 0
Other proposed disturbance (acres): 0	**Other interim reclamation (acres):** 0	**Other long term disturbance (acres):** 0
Total proposed disturbance: 5.19	**Total interim reclamation:** 1.71	**Total long term disturbance:** 3.48

Disturbance Comments: Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas.

Reconstruction method: Interim reclamation will shrink the well pad 32% by removing caliche and reclaiming the northwest 70' and southwest 100', leaving 3.46 acres for producing 2 wells and tractor-trailer turn arounds.

Topsoil redistribution: Enough stockpiled topsoil will be retained to cover the remainder of the pad when the wells are plugged. Once the last well is plugged, then the remainder of the pad and new road will be similarly reclaimed. Noxious weeds will be controlled.

Soil treatment: None

Existing Vegetation at the well pad:

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary	
Seed Type	Pounds/Acre

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: To BLM standards

Weed treatment plan attachment:

Monitoring plan description: To BLM standards

Monitoring plan attachment:

Success standards: To BLM satisfaction

Pit closure description: No pit

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: TAP ROCK OPERATING LLC

Well Name: LENTIL FEDERAL **Well Number:** 161H

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

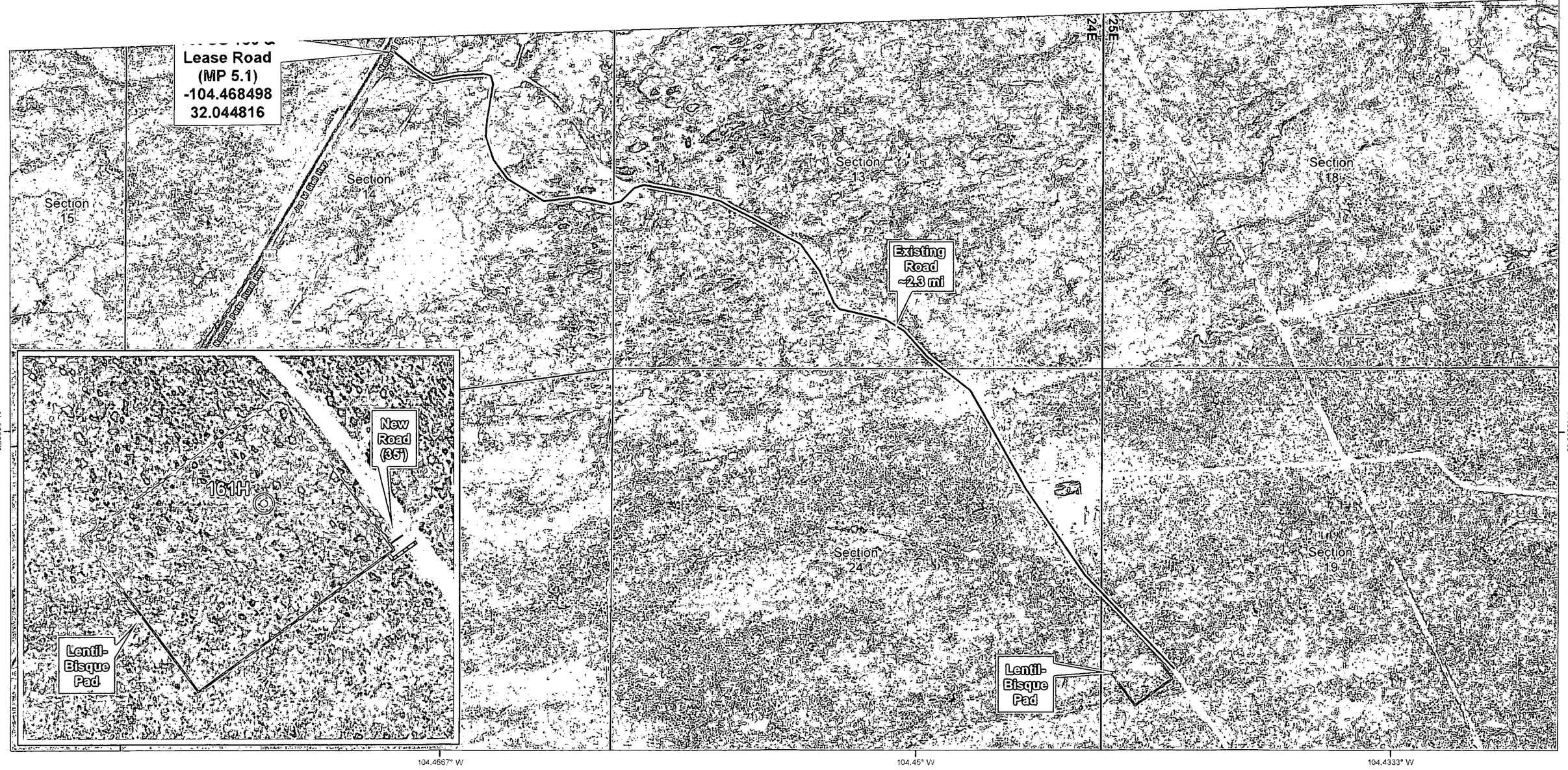
SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: On-site inspection was held with Matt Wirth (BLM) on May 7, 2018. Lone Mountain will file an archaeology report.

Other SUPO Attachment

Lentil_161H_SUPO_111219_20191112115003.pdf



Taprock Operating LLC

Bisque-Lentil Well Pad
Plan of Development Map

Sec. 19, Township 26S, Range 25E
Eddy County, New Mexico

- Lentil #161H SHL
- Proposed Well Pad
- Proposed Road
- Proposed Gas Line

1:12,500
0 630 1,260
Feet

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS

Prepared by Permits West, Inc., December 14, 2018
for Taprock Operating, LLC