

RECEIVED

MAY 16 2018

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

5. Lease Serial No.  
NMNM116044

6. If Indian, Allottee or Tribe Name

1a. Type of work:  DRILL  REENTER

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

1b. Type of Well:  Oil Well  Gas Well  Other  Single Zone  Multiple Zone

8. Lease Name and Well No. **321444**  
DOUBLE DIAMOND FED COM 228H

2. Name of Operator  
TAP ROCK OPERATING LLC

9. API Well No.  
**30-015-44980**

3a. Address  
602 Park Point Drive Suite 200 Golden CO 80

3b. Phone No. (include area code)  
**372043**  
(720)460-3316

10. Field and Pool, or Exploratory  
PURPLE SAGE WOLFCAMP

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*  
At surface SESE / 350 FSL / 910 FEL / LAT 32.210959 / LONG -103.7430052  
At proposed prod. zone NENE / 200 FNL / 330 FEL / LAT 32.2240899 / LONG -103.7411338

11. Sec., T. R. M. or Blk. and Survey or Area  
SEC 14 / T24S / R31E / NMP

14. Distance in miles and direction from nearest town or post office\*  
19 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)  
305 feet

16. No. of acres in lease  
320

17. Spacing Unit dedicated to this well  
320

18. Distance from proposed location\* to nearest well, drilling, completed, 668 feet applied for, on this lease, ft.

19. Proposed Depth  
12494 feet / 17334 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
3586 feet

22. Approximate date work will start\*  
04/01/2018

23. Estimated duration  
90 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the BLM.

25. Signature  
(Electronic Submission)

Name (Printed/Typed)  
Brian Wood / Ph: (505)466-8120

Date  
02/12/2018

Title  
President

Approved by (Signature)  
(Electronic Submission)

Name (Printed/Typed)  
Cody Layton / Ph: (575)234-5959

Date  
04/27/2018

Title  
Supervisor Multiple Resources

Office  
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.

(Continued on page 2)

\*(Instructions on page 2)

**APPROVED WITH CONDITIONS**  
Approval Date: 04/27/2018

*R. Klein*  
5-18-2018

## 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 1:** 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 well, 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 directionally 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.

## 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 well 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 will 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 collects this information to allow 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 Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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(Form 3160-3, page 2)

**Approval Date: 04/27/2018**

## **Additional Operator Remarks**

### **Location of Well**

1. SHL: SESE / 350 FSL / 910 FEL / TWSP: 24S / RANGE: 31E / SECTION: 14 / LAT: 32.210959 / LONG: -103.7430052 ( TVD: 0 feet, MD: 0 feet )  
PPP: SENE / 2640 FNL / 332 FEL / TWSP: 24S / RANGE: 31E / SECTION: 14 / LAT: 32.217352 / LONG: -103.741104 ( TVD: 12494 feet, MD: 14887 feet )  
PPP: SESE / 350 FSL / 910 FEL / TWSP: 24S / RANGE: 31E / SECTION: 14 / LAT: 32.210959 / LONG: -103.7430052 ( TVD: 0 feet, MD: 0 feet )  
BHL: NENE / 200 FNL / 330 FEL / TWSP: 24S / RANGE: 31E / SECTION: 14 / LAT: 32.2240899 / LONG: -103.7411338 ( TVD: 12494 feet, MD: 17334 feet )

## **BLM Point of Contact**

Name: Judith Yeager

Title: Legal Instruments Examiner

Phone: 5752345936

Email: [jyeager@blm.gov](mailto:jyeager@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.

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**Approval Date: 04/27/2018**

(Form 3160-3, page 4)

**PECOS DISTRICT  
DRILLING CONDITIONS OF APPROVAL**

<b>OPERATOR'S NAME:</b>	<b>Tap Rock Operating LLC</b>
<b>LEASE NO.:</b>	<b>NMNM116044</b>
<b>WELL NAME &amp; NO.:</b>	<b>Double Diamond Fed Com 228H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>350'/S &amp; 910'/E</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>200'/N &amp; 330'/E</b>
<b>LOCATION:</b>	<b>Section 14, T.24 S., R.31 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input type="radio"/> None	<input checked="" type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP

**A. Hydrogen Sulfide**

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

**B. CASING**

1. The **13-3/8** inch surface casing shall be set at approximately **1000** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement).

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

**Operator shall filled 1/3<sup>rd</sup> casing with fluid while running 1<sup>st</sup> and 2<sup>nd</sup> intermediate casings to maintain collapse safety factor.**

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above.

**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**

**Variance for annular spacing between 7 5/8 x 9 5/8 inch casing is approved.**

3. The minimum required fill of cement behind the 7-5/8 inch production casing is:
  - Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.

**Variance for annular spacing between 7 5/8 x 5 1/2 inch casing is approved.**

4. The minimum required fill of cement behind the 5-1/2 x 4 1/2 inch production casing is: Cement should tie-back 500' into the previous casing. 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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 9-5/8 intermediate casing shoe shall be **5000 (5M)** psi.
4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 7-5/8 intermediate casing shoe shall be **10,000 (10M)** psi.

## 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)

Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

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 2<sup>nd</sup> 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 integrity 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 integrity 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. 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.
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. The results of the test shall be reported to the appropriate BLM office.
- 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. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore 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.

#### **Waste Minimization Plan (WMP)**

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

**ZS 042418**



Stevens, Zota <zstevens@blm.gov>

## [EXTERNAL] Double Diamond Casing Variance Request

2 messages

**Doug Sproul** <dsproul@taprk.com>  
To: "zstevens@blm.gov" <zstevens@blm.gov>

Mon, Apr 23, 2018 at 8:57 PM

Hi Zota;

I'm sending you this e-mail as follow-up per our phone conversation last week regarding running 7-5/8" BTC inside 9-5/8" BTC, Tap Rock is requesting a variance to be less than the 0.422" standoff regulation per Onshore Order No. 2 for the casing programs of the wells listed below for which we have applications processing:

- Double Diamond 158H
- Double Diamond 224H
- Double Diamond 228H
- Double Diamond 238H

Please do let me know if any issues arise that need to be resolved, and thank you for your help.

**Doug Sproul**  
 Drilling Manager  
 Tap Rock Resources  
 602 Park Point DR  
 Suite 200  
 Golden, CO 80401  
 Cell: (303) 653-3518  
 dsproul@taprk.com



**Stevens, Zota** <zstevens@blm.gov>  
To: Doug Sproul <dsproul@taprk.com>

Tue, Apr 24, 2018 at 7:28 AM

4/24/2018

DEPARTMENT OF THE INTERIOR - BUREAU OF LAND MANAGEMENT Double Diamond Casing Variance Request

Dear Doug,

Thanks for the the variance. Also i need a variance for the 5.5 x 7.625 because the spacing is 0.41 not .422.

Thanks.

Zota Stevens  
Petroleum Engineer  
Bureau of Land Management  
620 E Greene St.  
Carlsbad, NM 88220  
E-mail: [zstevens@blm.gov](mailto:zstevens@blm.gov)  
Office: (575) 234-2228

Fax: (575) 234-5927

[Quoted text hidden]



Stevens, Zota <zstevens@blm.gov>

**[EXTERNAL] Double Diamond 5-1/2" TXP Casing Clearance Variance Request**

1 message

**Doug Sproul** <dsproul@taprk.com>  
To: "zstevens@blm.gov" <zstevens@blm.gov>

Tue, Apr 24, 2018 at 9:37 AM

Good Morning Zota;

Tap Rock is requesting a variance to be less than the 0.422" standoff regulation per Onshore Order No. 2 for the casing programs of the wells listed below for which we have applications processing. Specifically, we wish to run 5-1/2" 20# TXP inside 7-5/8" 29.7# BTC for our 4-string Wolfcamp wells.

- Double Diamond 158H
- Double Diamond 224H
- Double Diamond 228H
- Double Diamond 238H

Thank you!

**Doug Sproul**  
 Drilling Manager  
 Tap Rock Resources  
 602 Park Point DR  
 Suite 200  
 Golden, CO 80401  
 Cell: (303) 653-3518  
 dsproul@taprk.com



**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

<b>OPERATOR'S NAME:</b>	Tap Rock Operating LLC
<b>LEASE NO.:</b>	NMNM116044
<b>WELL NAME &amp; NO.:</b>	Double Diamond Fed Com 228H
<b>SURFACE HOLE FOOTAGE:</b>	350'/S & 910'/E
<b>BOTTOM HOLE FOOTAGE:</b>	200'/N & 330'/E
<b>LOCATION:</b>	Section 14, T.24 S., R.31 E., NMPM
<b>COUNTY:</b>	Eddy County, New Mexico

**TABLE OF CONTENTS**

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.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
  - Range
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **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 and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator 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 shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **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)

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

**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. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

### **Cattle Guard Requirement**

Any new or existing cattle guards on the access 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. Once the road is abandoned, the fence would be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

### **Livestock Watering Requirement**

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action.

Any damage to fences, cattle guards, and pipelines or structures that provide water to livestock during construction, throughout the life of the project, and caused by its operation, must be immediately corrected by Tap Rock. Tap Rock must notify the grazing allottee or the private surface landowner and the BLM-CFO (575-234-5972) if any damage occurs to pipelines or structures that provide water to livestock.



## **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.

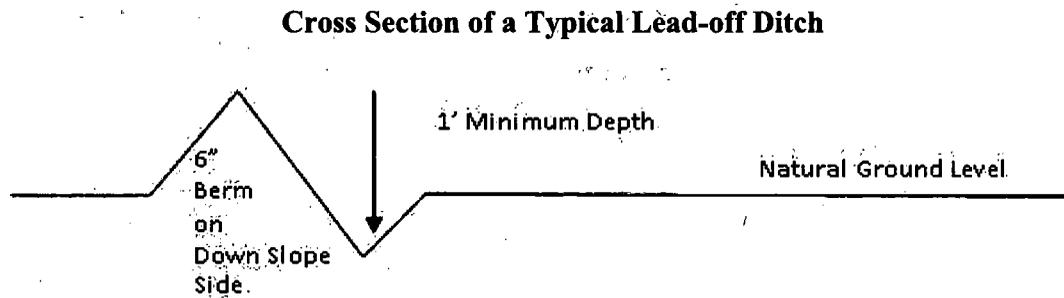
**Turnouts**

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.



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:

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

#### **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
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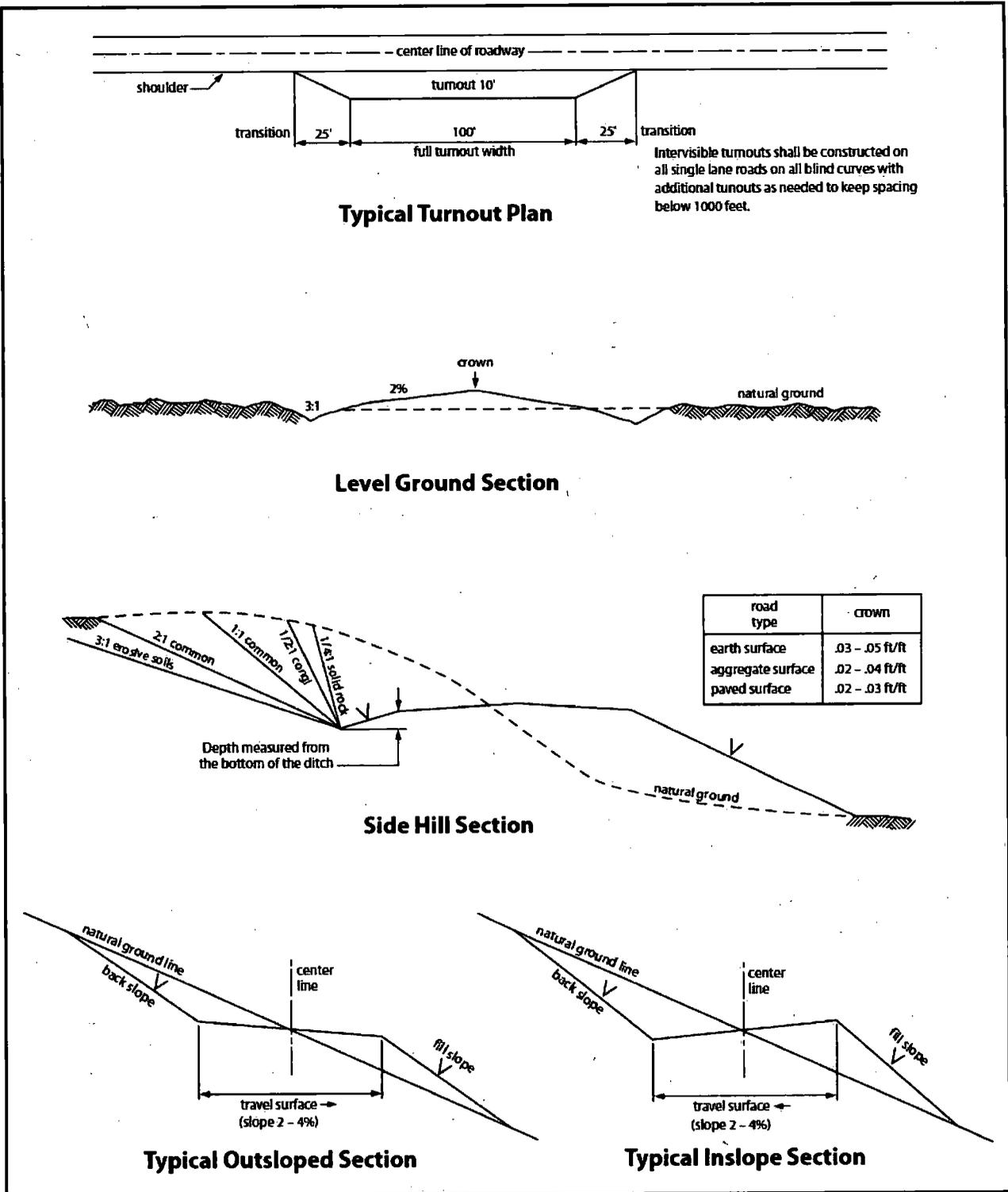


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## **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).

### **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 for LPC Sand/Shinnery 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 will be tested and the viability testing of seed shall 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 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). 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. 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:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

\*Pounds of pure live seed:

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

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

<b>OPERATOR'S NAME:</b>	Tap Rock Operating LLC
<b>LEASE NO.:</b>	NMNM116044
<b>WELL NAME &amp; NO.:</b>	Double Diamond Fed Com 228H
<b>SURFACE HOLE FOOTAGE:</b>	350'S & 910'E
<b>BOTTOM HOLE FOOTAGE:</b>	200'N & 330'E
<b>LOCATION:</b>	Section 14, T.24 S., R.31 E., NMPM
<b>COUNTY:</b>	Eddy County, New Mexico

**TABLE OF CONTENTS**

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.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
  - Range
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **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 and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator 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 shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **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)

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

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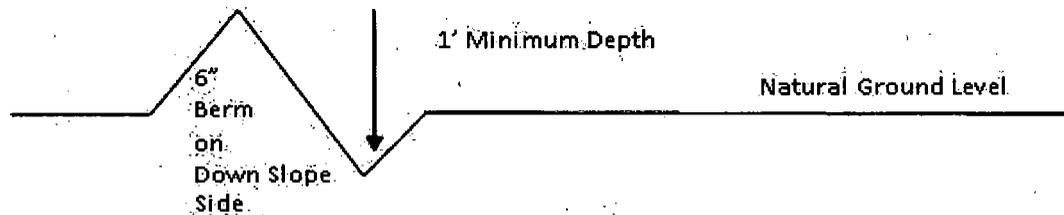
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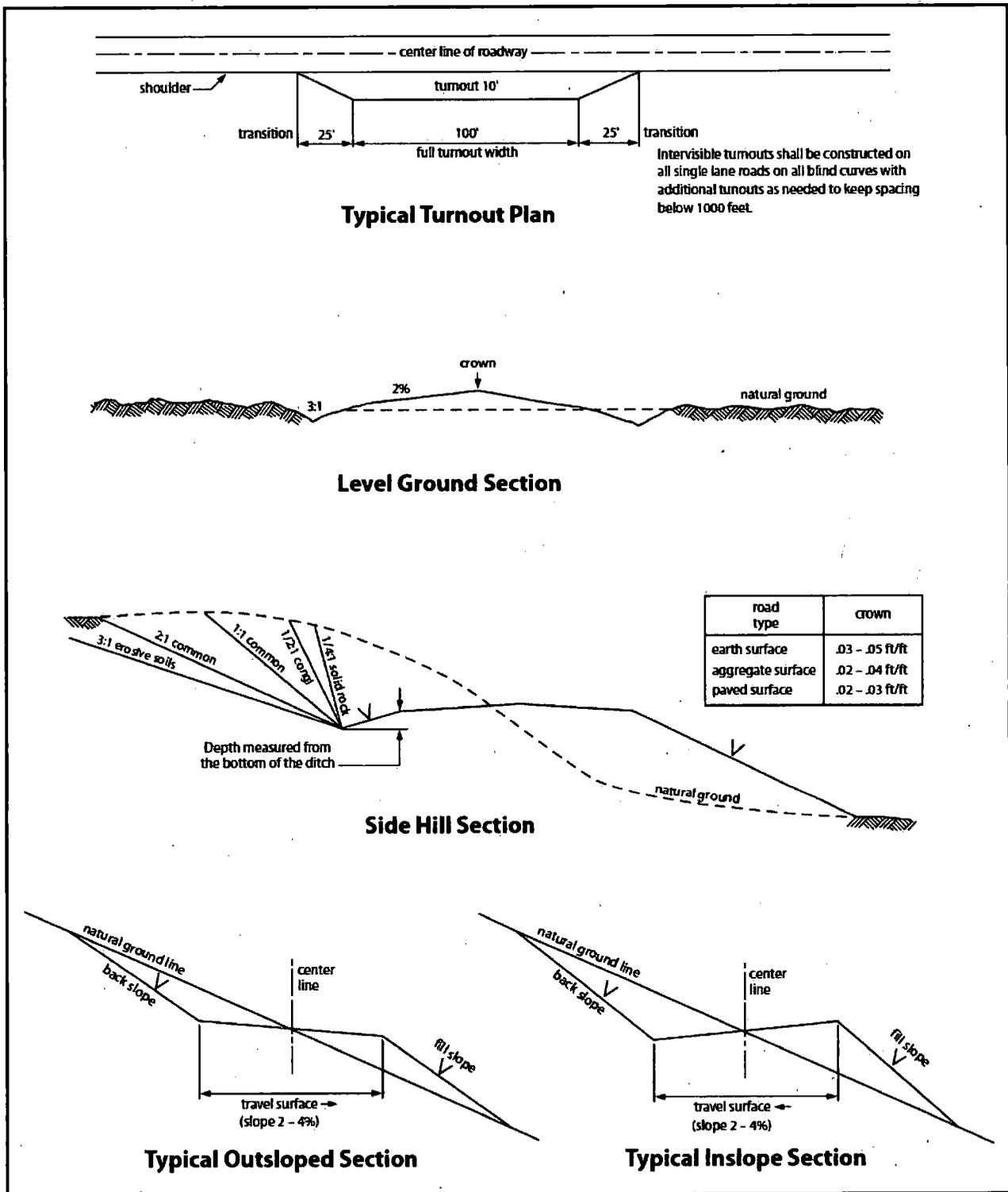


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Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

**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 for LPC Sand/Shinnery 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 will be tested and the viability testing of seed shall 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 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). 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. 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:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

\*Pounds of pure live seed:

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



**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:** 02/05/2018

**Title:** President

**Street Address:** 37 Verano Loop

**City:** Santa Fe

**State:** NM

**Zip:** 87508

**Phone:** (505)466-8120

**Email address:** afmss@permitswest.com

**Field Representative**

**Representative Name:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**



APD ID: 10400027206

Submission Date: 02/12/2018

Highlighted data reflects the most recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: DOUBLE DIAMOND FED COM

Well Number: 228H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

### Section 1 - General

APD ID: 10400027206

Tie to previous NOS?

Submission Date: 02/12/2018

BLM Office: CARLSBAD

User: Brian Wood

Title: President

Federal/Indian APD: FED

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

Lease number: NMNM116044

Lease Acres: 320

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

Mater Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: DOUBLE DIAMOND FED COM

Well Number: 228H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: PURPLE SAGE  
WOLFCAMP

Pool Name:

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

Operator Name: TAP ROCK OPERATING LLC

Well Name: DOUBLE DIAMOND FED COM

Well Number: 228H

Describe other minerals:

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:

Number: 238H

Well Class: HORIZONTAL

DOUBLE DIAMOND

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: 19 Miles

Distance to nearest well: 668 FT

Distance to lease line: 305 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: DD\_228H\_Plat\_20180212124256.pdf

Well work start Date: 04/01/2018

Duration: 90 DAYS

### Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 18329

	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
SHL Leg #1	350	FSL	910	FEL	24S	31E	14	Aliquot SESE	32.21095 9	- 103.7430 052	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 116044	358 6	0	0
KOP Leg #1	350	FSL	910	FEL	24S	31E	14	Aliquot SESE	32.21095 9	- 103.7430 052	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 116044	- 834 2	119 75	119 28
PPP Leg #1	350	FSL	910	FEL	24S	31E	14	Aliquot SESE	32.21095 9	- 103.7430 052	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 116044	358 6	0	0

**Operator Name:** TAP ROCK OPERATING LLC

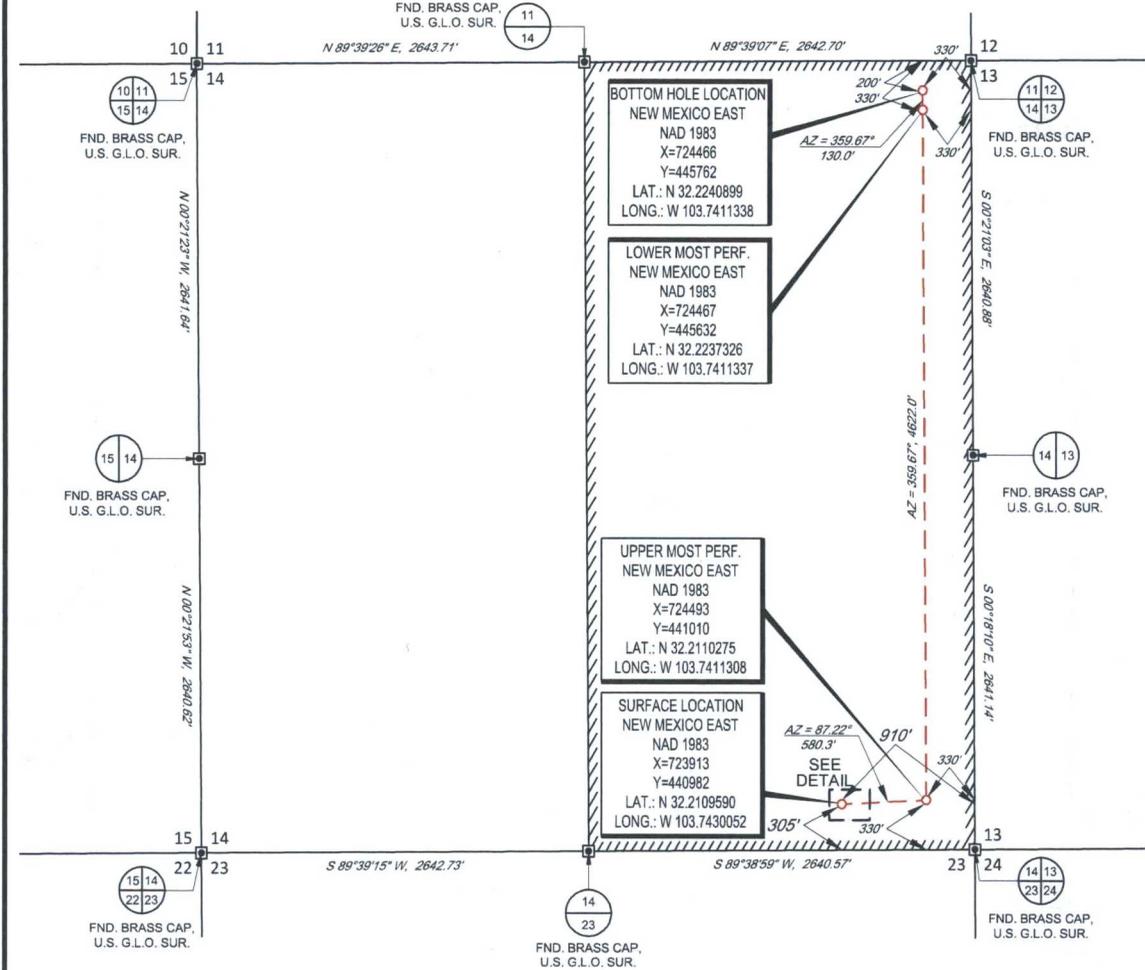
**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

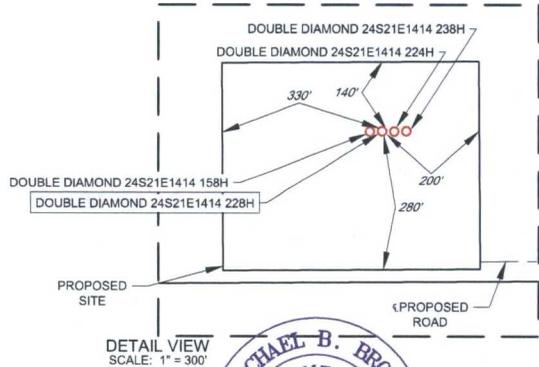
	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	264 0	FNL	332	FEL	24S	31E	14	Aliquot SENE 2	32.21735 2	- 103.7411 04	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 111960	- 890 8	148 87	124 94
EXIT Leg #1	200	FNL	330	FEL	24S	31E	14	Aliquot NENE 99	32.22408 99	- 103.7411 338	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 111960	- 890 8	173 34	124 94
BHL Leg #1	200	FNL	330	FEL	24S	31E	14	Aliquot NENE 99	32.22408 99	- 103.7411 338	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 111960	- 890 8	173 34	124 94

# TAP ROCK EXHIBIT 2A

SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO



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



LEASE NAME & WELL NO.: DOUBLE DIAMOND 24S21E1414 228H

SECTION 14 TWP 24-S RGE 31-E SURVEY N.M.P.M.  
COUNTY EDDY STATE NM  
DESCRIPTION 305' FSL & 910' FEL

**DISTANCE & DIRECTION**  
FROM INT. OF NM-31, & NM-128-E, HEAD EAST ON NM-128 E ±19.6 MILES,  
THENCE SOUTHWEST (RIGHT) ON BUCK JACKSON RD. ±1.1 MILES, THENCE  
SOUTHEAST, (LEFT) ON LEASE RD ±1.6 MILES, THENCE WEST ON PROPOSED  
RD ±215 FEET TO A POINT ±332 FEET SOUTHEAST OF THE LOCATION.

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 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.

**MICHAEL B. BROWN**  
NEW MEXICO  
18329  
PROFESSIONAL SURVEYOR

Michael B. Brown, P.S. No. 18329  
JANUARY 26, 2018

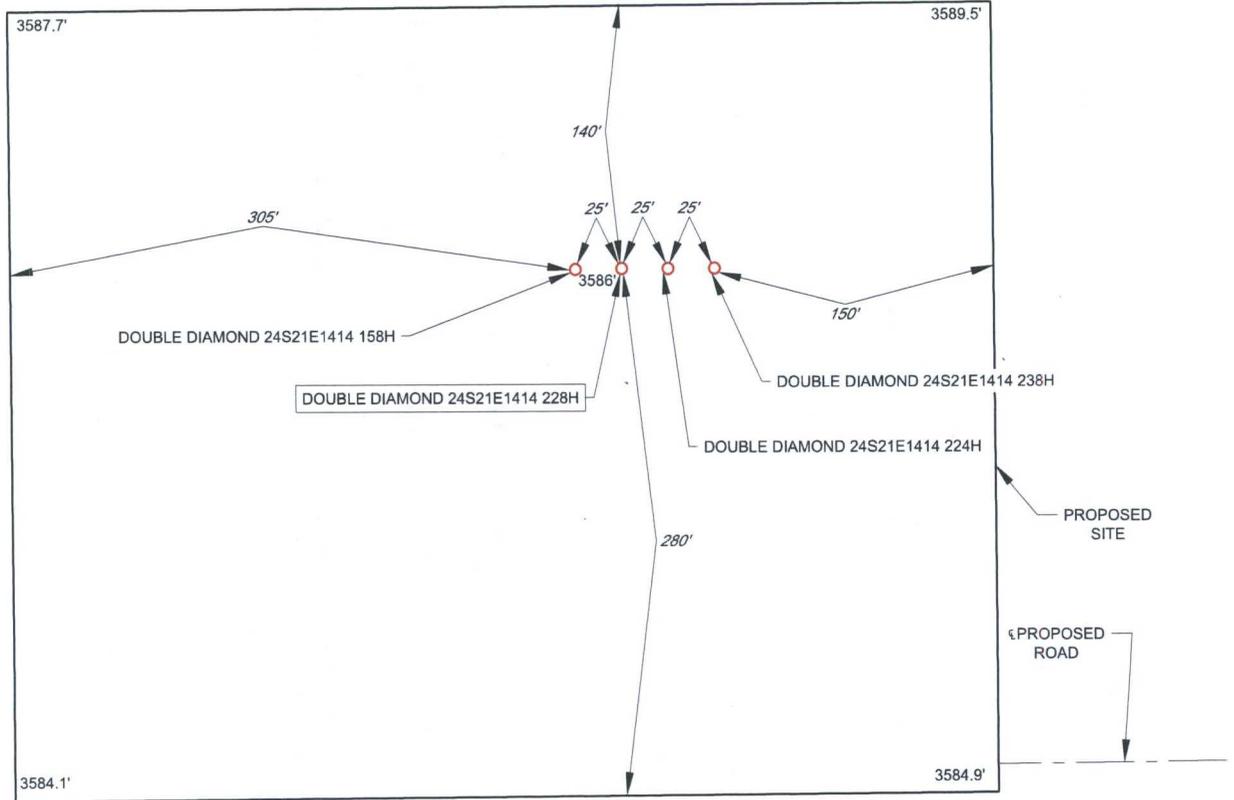
**TOPOGRAPHIC**  
LOYALTY INNOVATION LEGACY  
1400 EVERMAN PARKWAY, Ste. 146 - FT. WORTH, TEXAS 76140  
TELEPHONE: (817) 744-7512 - FAX (817) 744-7554  
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705  
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743  
WWW.TOPOGRAPHIC.COM

EXHIBIT 2B



SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

DETAIL VIEW  
SCALE: 1" = 100'



LEASE NAME & WELL NO.: DOUBLE DIAMOND 24S21E1414 228H  
 228H LATITUDE N 32.2109590 228H LONGITUDE W 103.7430052



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



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

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.

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

APD ID: 10400027206

Submission Date: 02/12/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: DOUBLE DIAMOND FED COM

Well Number: 228H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	---	3586	0	0	OTHER : Quaternary caliche	USEABLE WATER	No
2	RUSTLER ANHYDRITE	2855	731	731		NONE	No
3	SALADO	2519	1067	1067	SALT	NONE	No
4	BASE OF SALT	773	2813	2815		NONE	No
5	BELL CANYON	-1027	4613	4617	SANDSTONE	NATURAL GAS,CO2,OIL	No
6	BRUSHY CANYON	-3137	6723	6727	SANDSTONE	NATURAL GAS,CO2,OIL	No
7	BONE SPRING	-4857	8443	8447	LIMESTONE	NATURAL GAS,CO2,OIL	No
8	BONE SPRING 1ST	-5857	9443	9447	SANDSTONE	NATURAL GAS,CO2,OIL	No
9	BONE SPRING 2ND	-6497	10083	10089	SANDSTONE	NATURAL GAS,CO2,OIL	No
10	BONE SPRING 3RD	-7757	11343	11362	SANDSTONE	NATURAL GAS,CO2,OIL	No
11	WOLFCAMP	-8237	11823	11846	OTHER : A Carbonate	NATURAL GAS,CO2,OIL	No
12	WOLFCAMP	-8417	12003	12042	OTHER : A Fat Carbonate	NATURAL GAS,CO2,OIL	No
13	WOLFCAMP	-8607	12193	12759	OTHER : B1 Carbonate	NATURAL GAS,CO2,OIL	Yes
14	WOLFCAMP	-8607	12193	12232	OTHER : B Carbonate	NATURAL GAS,CO2,OIL	No

## Section 2 - Blowout Prevention

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit Original  
to Appropriate  
District Office

**NM OIL CONSERVATION  
ARTESIA DISTRICT**

**MAY 16 2018**

**GAS CAPTURE PLAN**

**RECEIVED**

Date: 2-2-18

Original

Operator & OGRID No.: Tap Rock Operating, LLC (372043)

Amended - Reason for Amendment: \_\_\_\_\_

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

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

**Well(s)/Production Facility – Name of facility**

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

Well	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Double Diamond Fed Com 158H	30-015-	P-14-24s-31e	305' FSL & 935' FEL	750	<30 days	flare until well clean, then connect
Double Diamond Fed Com 224H	30-015-	P-14-24s-31e	305' FSL & 885' FEL	750	<30 days	flare until well clean, then connect
Double Diamond Fed Com 228H	30-015- <b>44980</b>	P-14-24s-31e	305' FSL & 910' FEL	750	<30 days	flare until well clean, then connect
Double Diamond Fed Com 238H	30-015-	P-14-24s-31e	305' FSL & 860' FEL	750	<30 days	flare until well clean, then connect

**Gathering System and Pipeline Notification**

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. Gas produced from this production facility has not yet been dedicated. However, a possible connection is an existing Agave pipeline that is 1/8 mile northeast. Operator will provide (periodically) to Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Operator and Gas Transporter will have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Gas Transporter Processing Plant at an as yet undetermined location. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

**Flowback Strategy**

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

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

**Alternatives to Reduce Flaring**

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

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

Operator Name: TAP ROCK OPERATING LLC

Well Name: DOUBLE DIAMOND FED COM

Well Number: 228H

Pressure Rating (PSI): 10M

Rating Depth: 13000

Equipment: A 13,000' 10,000-psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and 1 annular preventer will be used below surface casing to TD. An accumulator will be on site. It will comply with Onshore Order 2 requirements for the BOP stack pressure rating. Rotating head will be installed as needed.

Requesting Variance? YES

Variance request: Tap Rock requests a variance to use a co-flex hose between the BOP stack and choke manifold. Co-flex hose certification is attached. Manufacturer does not require the hose to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.

Testing Procedure: Pressure tests will be conducted before drilling out from under all casing strings. BOP will be inspected and operated as required by 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. A third-party company will test the BOPs. Test pressures will be: After surface casing is set and the BOP is nipped up, pressure tests will be made to 250 psi low and 2000 psi high. Test intermediate 1 casing to 250 psi low and 3000 psi high. Test intermediate 2 casing to 250 psi low and 7500 psi high. Annular preventer will be tested to 250 psi low and 1000 psi high on the surface casing and 250 psi low and 1500 psi high on both intermediate strings. In the case of running a speed head with landing mandrel for the 1st and 2nd intermediate casing the initial, after surface casing is set, BOP test pressures will be 250 psi low and 3000 psi high with well head seals tested to 5000 psi once the first intermediate casing has been landed and cemented. BOP may then be lifted to install the C-section of the wellhead. Tap Rock will then nipple the BOP back up and pressure tests will be made to 250 psi low and 5000 psi high. Annular preventer will be tested to 250 psi low and 1500 psi high.

Choke Diagram Attachment:

DD\_228H\_Choke\_032918\_20180330162550.pdf

BOP Diagram Attachment:

DD\_228H\_BOP\_032918\_20180330162658.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	1000	0	1000	3586		1000	HCP-110	54.5	OTHER - BTC	1.3	1.15	DRY	1.51	DRY	1.51
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	4000	0	3997	3586		4000	P-110	29.7	OTHER - BTC	1.3	1.15	DRY	1.51	DRY	1.51
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4700	0	4693	3586		4700	J-55	40	OTHER - BTC	1.13	1.15	DRY	1.51	DRY	1.51
4	PRODUCTION	6.125	5.5	NEW	API	Y	0	11975	0	11967			11975	P-110	20	OTHER - BTC	1.3	1.115	DRY	1.51	DRY	1.51
5	INTERMEDIATE	8.75	7.625	NEW	API	Y	4000	11975	3997	11973			7975	P-110	29.7	OTHER - Flush	1.3	1.15	DRY	1.51	DRY	1.51
6	INTERMEDIATE	8.75	7.0	NEW	API	Y	11975	12675	11973	12467			700	P-110	29	OTHER - BTC	1.3	1.15	DRY	1.51	DRY	1.51

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

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
7	PRODUCTI ON	6.12 5	4.5	NEW	API	Y	11975	17300	11967	12500			5325	P- 110	13.5	OTHER - BTC	1.3	1.15	DRY	1.51	DRY	1.51

**Casing Attachments**

**Casing ID:** 1      **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

DD\_228H\_Casing\_Design\_Assumptions\_20180212132945.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

DD\_228H\_7.625\_BTC\_Casing\_Spec\_20180212133558.PDF

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

DD\_228H\_Casing\_Design\_Assumptions\_20180212133136.pdf

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

**Casing Attachments**

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

DD\_228H\_Casing\_Design\_Assumptions\_20180212133057.pdf

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

DD\_228H\_7.625\_P110\_Casing\_Spec\_20180212133247.pdf

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

DD\_228H\_Casing\_Design\_Assumptions\_20180212133641.pdf

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

DD\_228H\_5.5in\_Casing\_Spec\_20180212133956.PDF

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

DD\_228H\_Casing\_Design\_Assumptions\_20180212134143.pdf

---

Operator Name: TAP ROCK OPERATING LLC

Well Name: DOUBLE DIAMOND FED COM

Well Number: 228H

### Casing Attachments

Casing ID: 6 String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

DD\_228H\_7\_BTC\_Casing\_Spec\_20180212133902.PDF

Casing Design Assumptions and Worksheet(s):

DD\_228H\_Casing\_Design\_Assumptions\_20180212142546.pdf

Casing ID: 7 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

DD\_228H\_4.5\_BTC\_Casing\_Spec\_20180212142529.PDF

Casing Design Assumptions and Worksheet(s):

DD\_228H\_Casing\_Design\_Assumptions\_20180212134343.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
SURFACE	Lead		0	1000	1000	1.38	14.8	1380	100	Class C	5% NaCl + LCM

INTERMEDIATE	Lead		0	4000	823	2.35	11.5	1934	35	TXI	Fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Tail		0	4000	100	1.39	13.2	139	35	TXI	fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Lead		0	4700	1300	1.81	13.5	2353	100	Class C	Bentonite + 1% CaCl2 + 8% NaCl + LCM

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		0	4700	427	1.38	14.8	589	100	Class C	5% NaCl + LCM
PRODUCTION	Lead		0	1197 5	470	1.17	15.8	549	10	Class H	fluid loss + dispersant + retarder + LCM
PRODUCTION	Tail		0	1197 5	470	1.17	15.8	549	10	Class H	fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Lead		4000	1197 5	823	2.35	11.5	1934	35	TXI	fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Tail		4000	1197 5	100	1.39	13.2	139	35	TXI	fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Lead		1197 5	1267 5	823	2.35	11.5	1934	35	TXI	fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Tail		1197 5	1267 5	100	1.39	13.2	139	35	TXI	fluid loss + dispersant + retarder + LCM
PRODUCTION	Lead		1197 5	1730 0	470	1.17	15.8	549	10	Class H	fluid loss + dispersant + retarder + LCM
PRODUCTION	Tail		1197 5	1730 0	470	1.17	15.8	549	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 on site. 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

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

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
1000	4700	OTHER : Brine water	10	10							
0	1000	OTHER : Fresh water spud	8.3	8.3							
4700	1267 5	OTHER : Fresh water & cut brine	9	9							
1267 5	1730 0	OIL-BASED MUD	12.5	12.5							

### Section 6 - Test, Logging, Coring

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

A 2-person mud logging program will be used from 4700' MD to TD. Triple combo logs (density, porosity, resistivity, GR) will be run in the pilot hole. GR will be collected through the MWD tools from intermediate casing to TD. CBL with CCL will be run as far as gravity will let it fall to TOC.

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

CBL,GR,MWD

**Coring operation description for the well:**

No core or drill stem test is planned.

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 8700

**Anticipated Surface Pressure:** 5951.32

**Anticipated Bottom Hole Temperature(F):** 180

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

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

DD\_228H\_H2S\_Plan\_20180212142221.pdf

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

## Section 8 - Other Information

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

DD\_228H\_Horizontal\_Drill\_Plan\_20180212145433.pdf

**Other proposed operations facets description:**

Deficiency letter dated 3/29/18 requested:

- 1) Revised Choke/BOP diagrams to reflect 10M system - see attached;
- 2) Indication that multibowl wellhead will be used - see revised Speedhead Specs diagram

Addressed 3/31/18

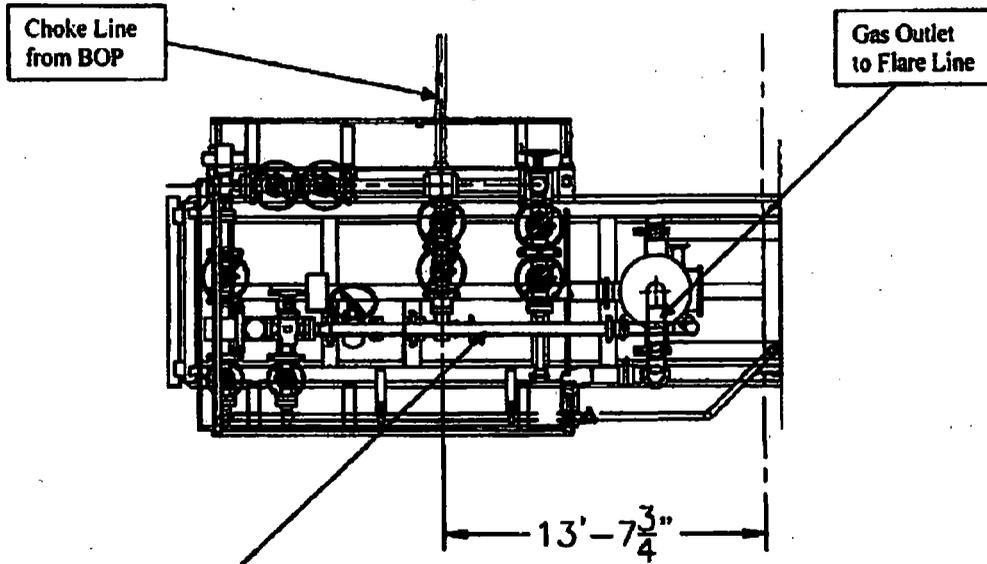
**Other proposed operations facets attachment:**

DD\_228H\_General\_Drill\_Plan\_20180330162942.pdf

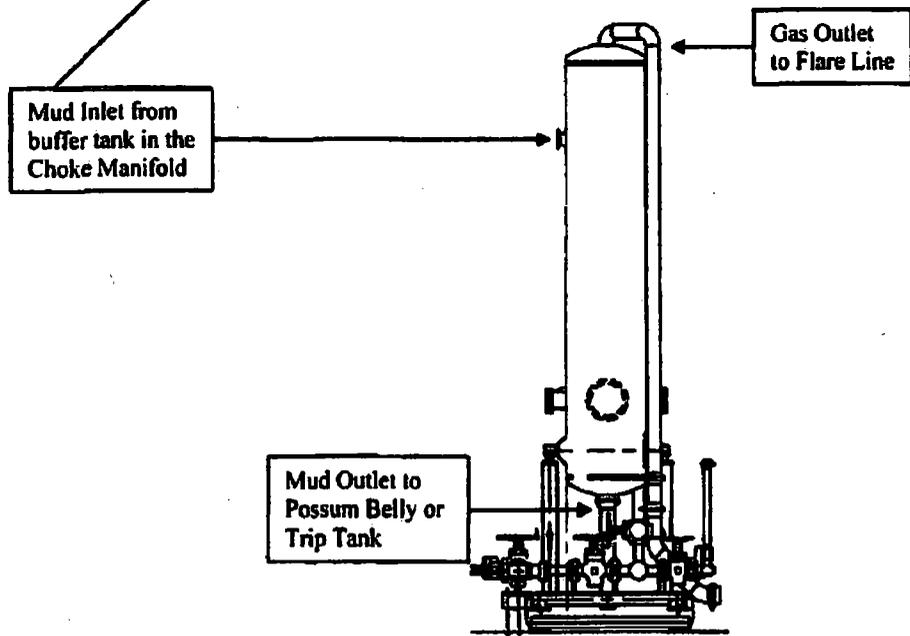
DD\_228H\_Speedhead\_Specs\_033018\_20180330163242.pdf

**Other Variance attachment:**

**Choke Manifold – Gas Separator (Top View)**



**Choke Manifold – Gas Separator (Side View)**

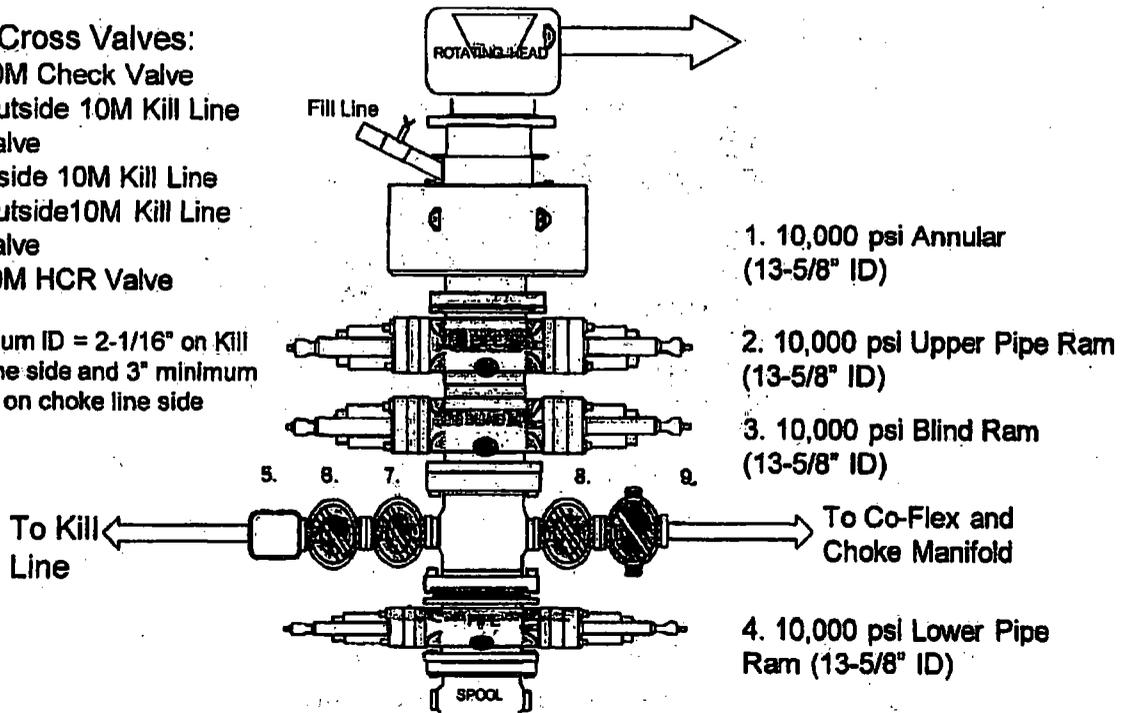


10,000 psi BOP Stack

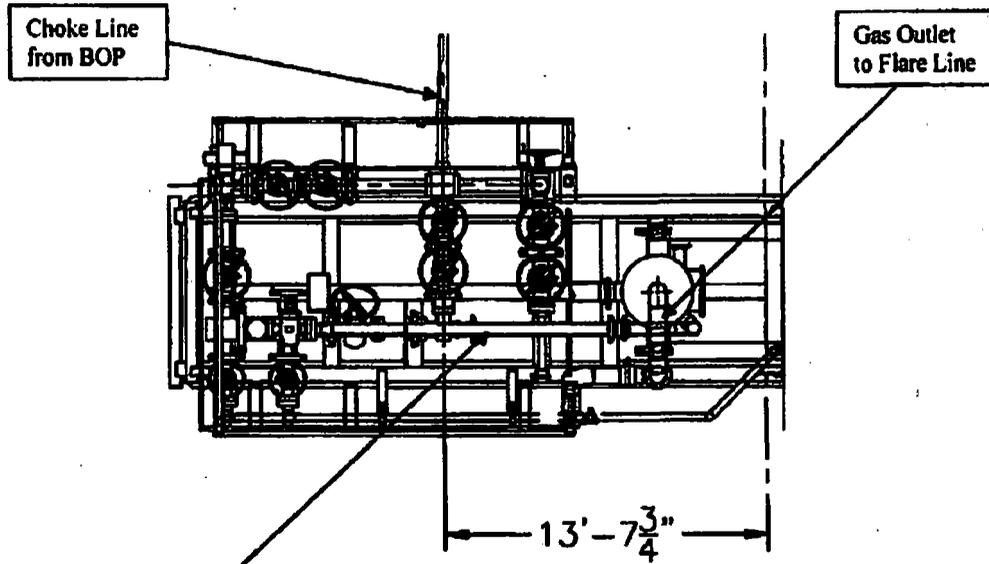
Mud Cross Valves:

- 5. 10M Check Valve
- 6. Outside 10M Kill Line Valve
- 7. Inside 10M Kill Line Valve
- 8. Outside 10M Kill Line Valve
- 9. 10M HCR Valve

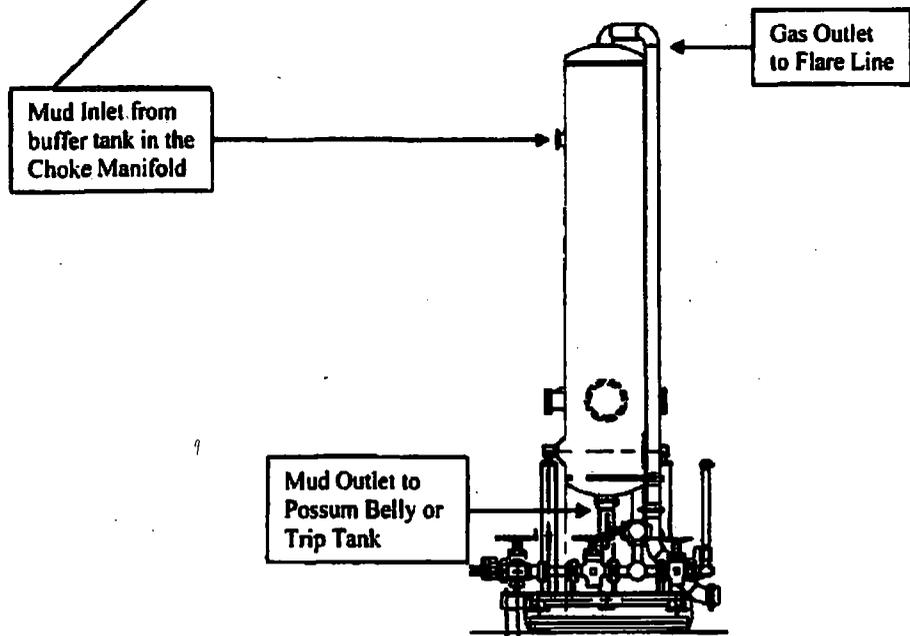
\*Minimum ID = 2-1/16" on Kill Line side and 3" minimum ID on choke line side



**Choke Manifold – Gas Separator (Top View)**



**Choke Manifold – Gas Separator (Side View)**





ContiTech

# Hydrostatic Test Certificate

<b>Certificate Number</b> 938562	<b>COM Order Reference</b> 938562	<b>Customer Name &amp; Address</b>	
<b>Customer Purchase Order No:</b>	740043386	HELMERICH & PAYNE DRILLING CO 1434 SOUTH BOULDER AVE TULSA, OK 74119 USA	
<b>Project:</b> HOW			
<b>Test Center Address</b>		<b>Accepted by COM Inspection</b>	<b>Accepted by Client Inspection</b>
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	Qty	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	58838	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



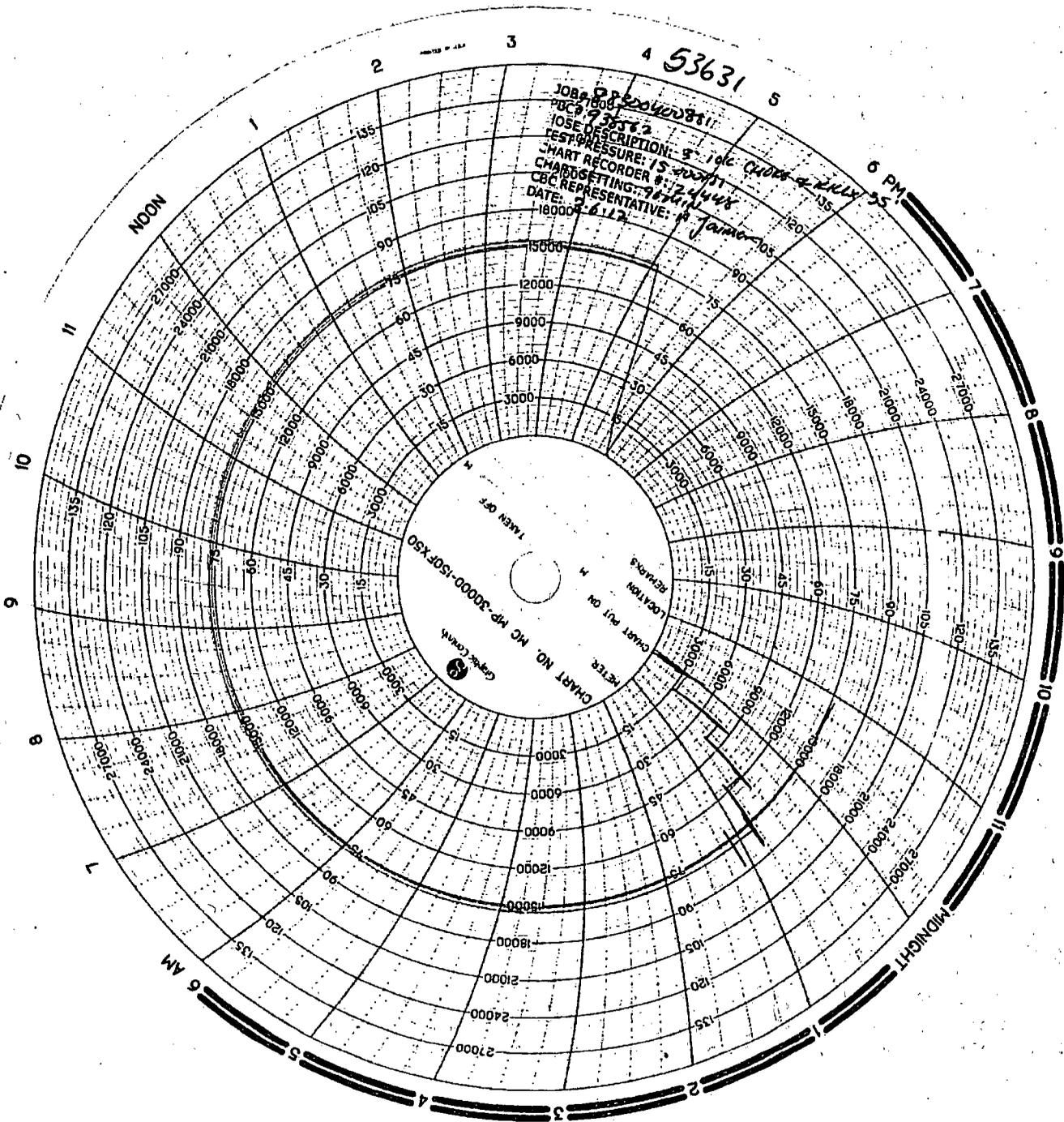
# Certificate of Conformity

ContiTech

<b>Certificate Number</b> 938562	<b>COM Order Reference</b> 938562	<b>Customer Name &amp; Address</b>	
<b>Customer Purchase Order No:</b>	740043386	HELMERICH & PAYNE DRILLING CO 1434 SOUTH BOULDER AVE TULSA, OK 74119 USA	
<b>Project:</b>	HOW		
<b>Test Center Address</b>	<b>Accepted by COM Inspection</b>	<b>Accepted by Client Inspection</b>	
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	Qty	Serial Number	Specifications
20		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	53831	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



# 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

<b>Hose Manufacturer</b>	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**

<b>End A:</b> 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	<b>End B:</b> 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
• No damage	• No damage
<b>Material:</b> Carbon Steel	<b>Material:</b> Carbon Steel
<b>Seal Face:</b> BX155	<b>Seal Face:</b> BX155
<b>Length Before Hydro Test:</b> 35'	<b>Length After Hydro test:</b> 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
- 2<sup>nd</sup> 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.

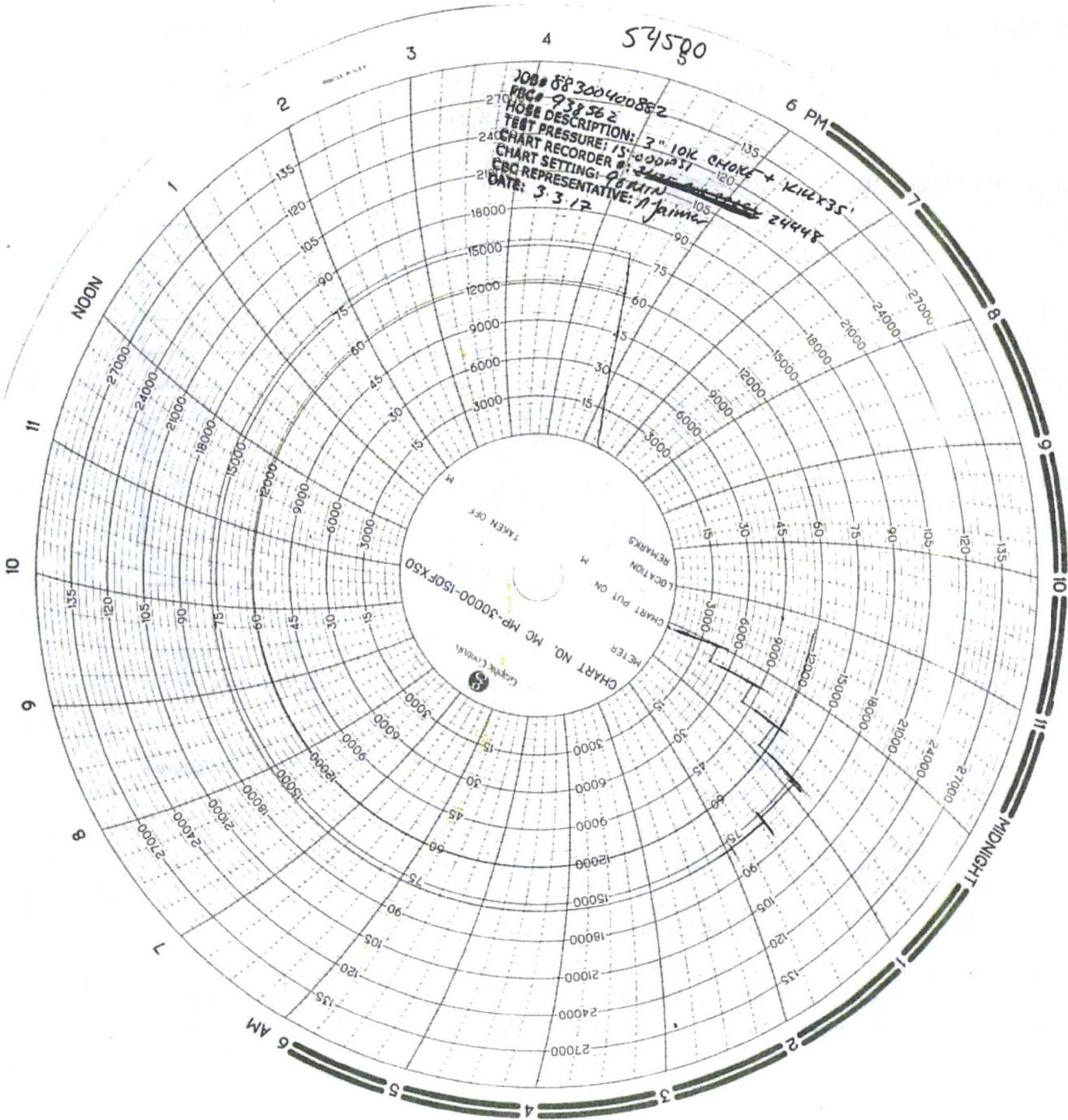
<b>External Damage Post – Hydro test</b>	
Approx. Distance from End A	3'
Width	8"
Length	3"
Depth	To hose body
Notes	Broken armor



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

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

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# 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

<b>Hose Manufacturer</b>	Contitech Rubber Industrial
--------------------------	-----------------------------

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

### Connections

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

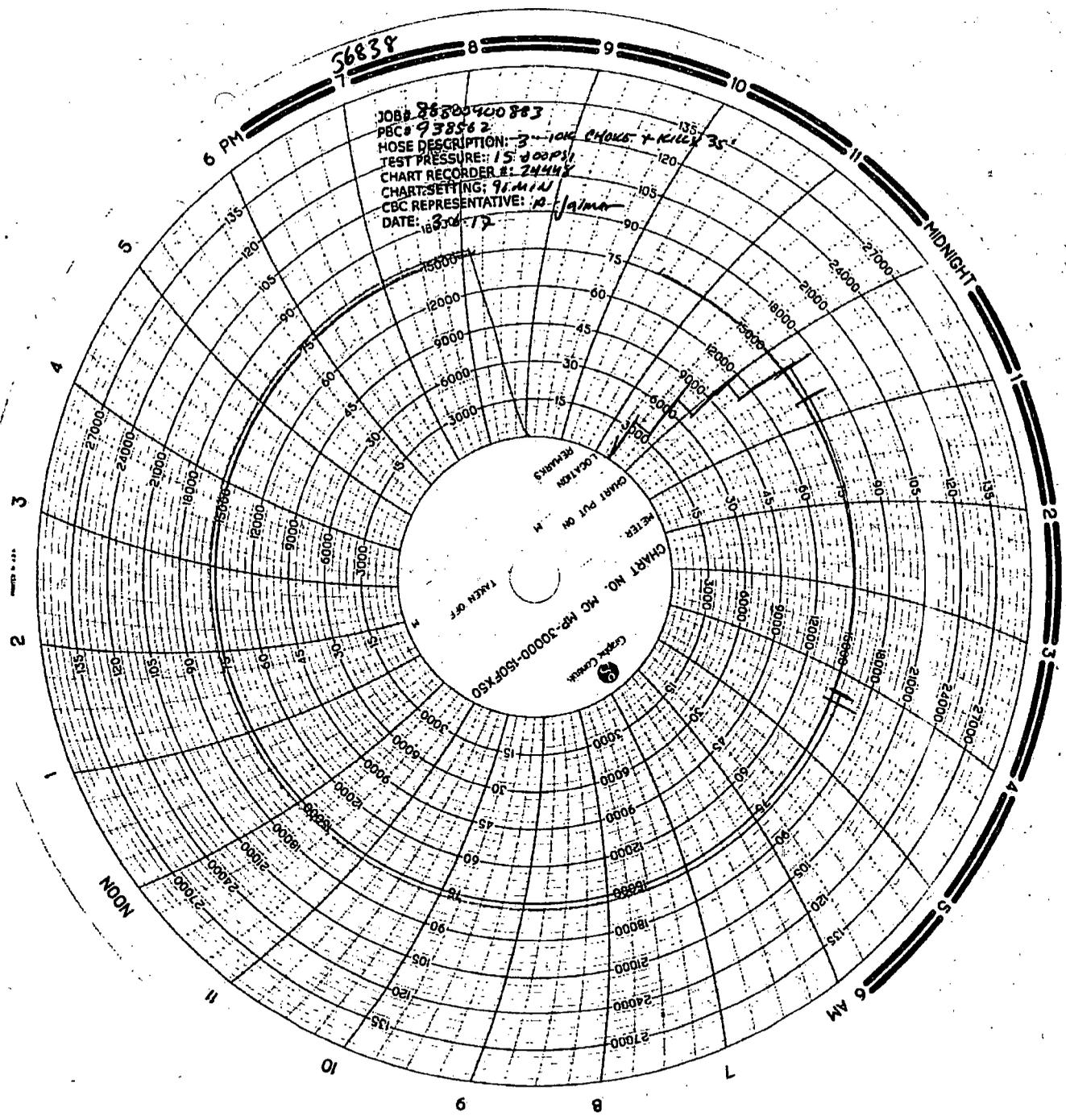
**Recommendations:** In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

- 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
- 2<sup>nd</sup> 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# 26800400883  
PEC# 938562  
HOSE DESCRIPTION: 3" - 100' CHANS. + KILLY 35'  
TEST PRESSURE: 15' 000PSI  
CHART RECORDER #: 24448  
CHART SETTING: 9.1 MIU  
CBC REPRESENTATIVE: R. Janna  
DATE: 10/30/12



NOON

MIDNIGHT

6 AM

6 PM

# 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

<b>Hose Manufacturer</b>	Contitech Rubber Industrial
--------------------------	-----------------------------

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

**Connections**

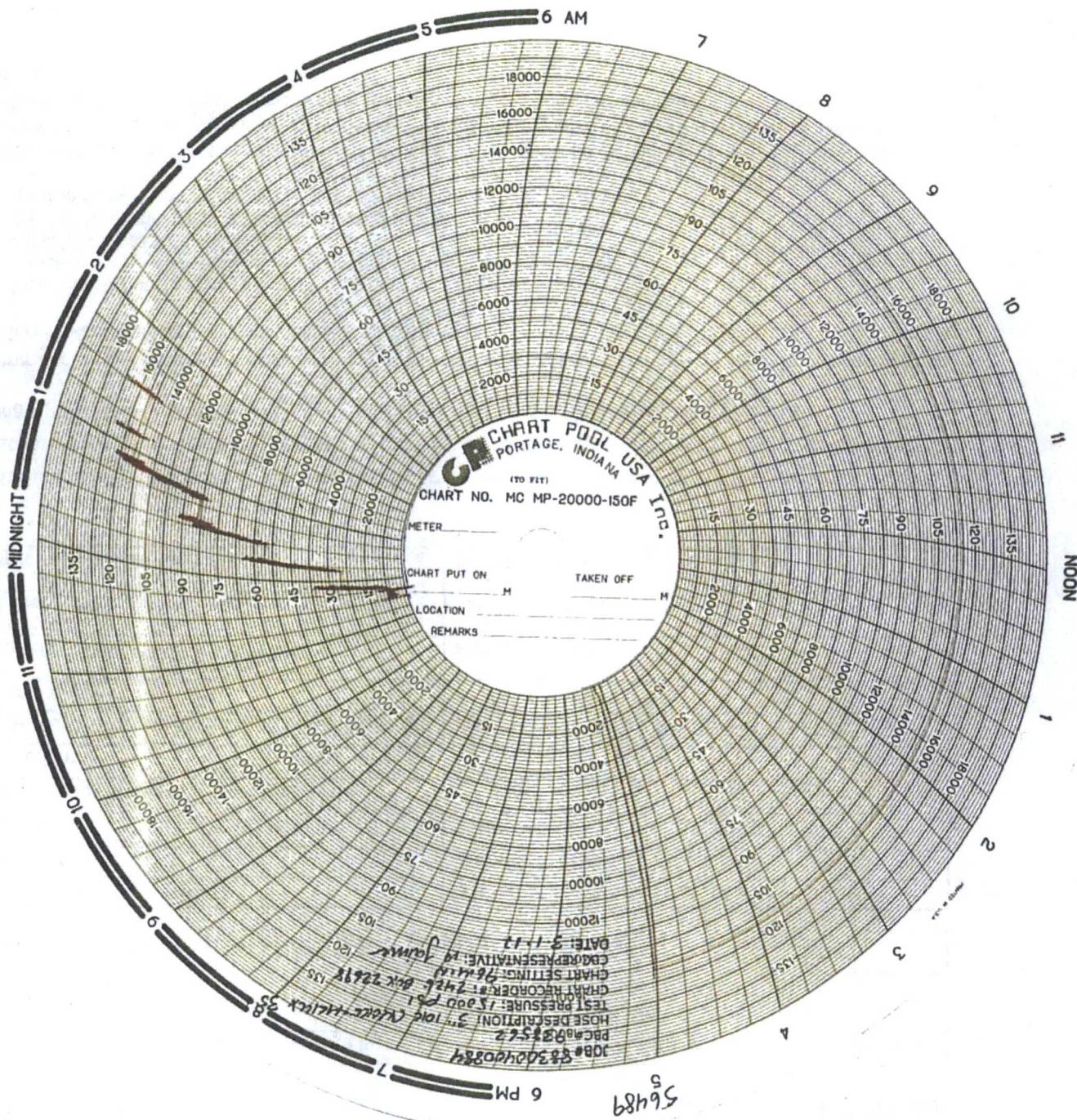
<b>End A:</b> 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	<b>End B:</b> 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
• No damage	• No damage
<b>Material:</b> Carbon Steel	<b>Material:</b> Carbon Steel
<b>Seal Face:</b> BX155	<b>Seal Face:</b> BX155
<b>Length Before Hydro Test:</b> 35'	<b>Length After Hydro test:</b> 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
- 2<sup>nd</sup> 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.



JOB# 8830400884  
 P&G# 025572  
 HOSE DESCRIPTION: 3" long (Work - Milk) 58  
 TEST PRESSURE: 1500 PSI  
 CHART RECORD: 742, 2018  
 CHART SETTINGS: 76 min  
 CD REPRESENTATIVE: R Janner  
 DATE: 3-1-12

6 PM 56489

# 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

<b>Hose Manufacturer</b>	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
- 2<sup>nd</sup> 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.

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

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

Page 1 of 1  
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# 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

<b>Hose Manufacturer</b>	Contitech Rubber Industrial
--------------------------	-----------------------------

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

**Connections**

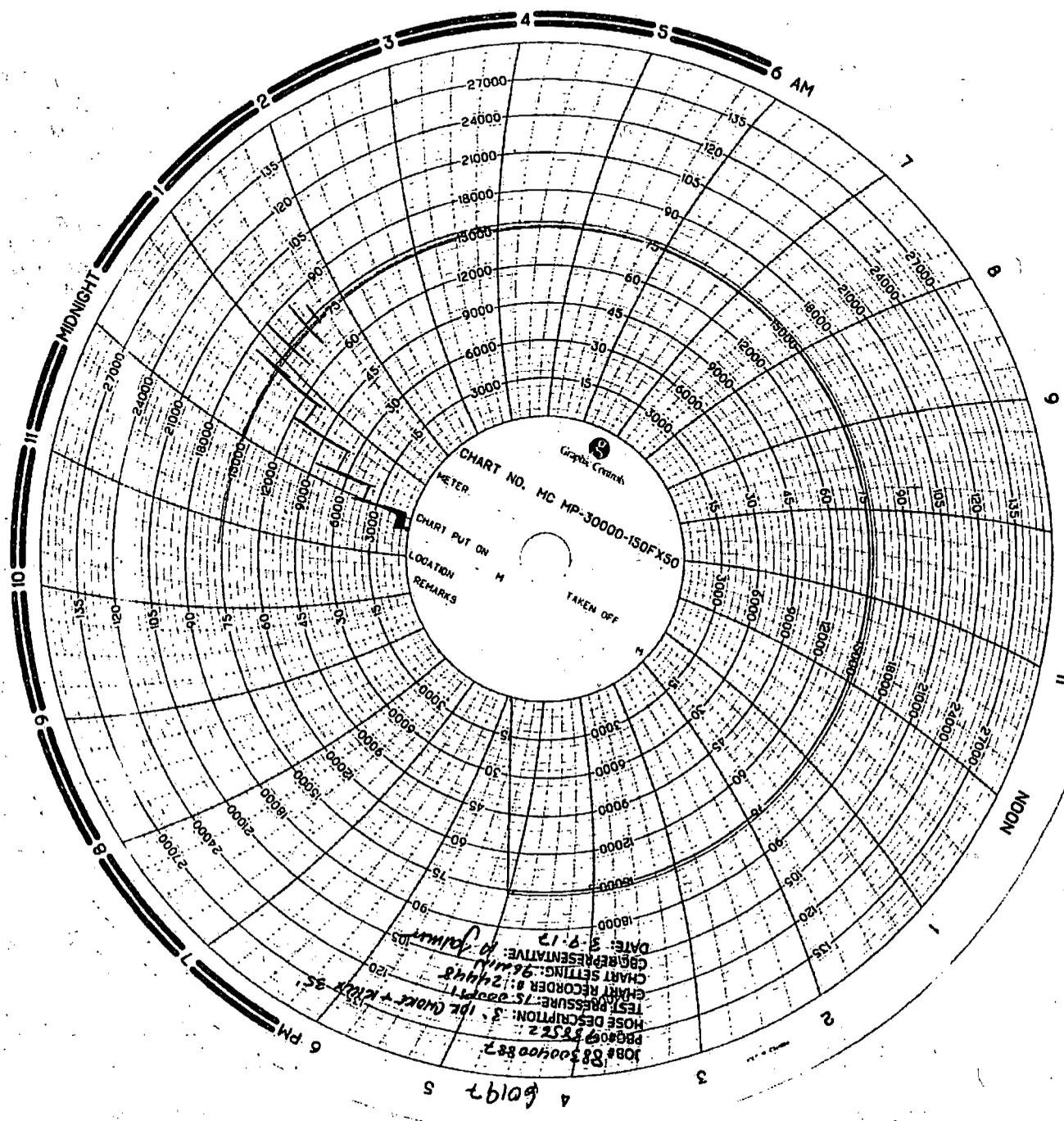
<b>End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange</b>	<b>End B: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange</b>
• No damage	• No damage
<b>Material: Carbon Steel</b>	<b>Material: Carbon Steel</b>
<b>Seal Face: BX155</b>	<b>Seal Face: BX155</b>
<b>Length Before Hydro Test: 35'</b>	<b>Length After Hydro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

**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
- 2<sup>nd</sup> 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.



# 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

<b>Hose Manufacturer</b>	Contitech Rubber Industrial
--------------------------	-----------------------------

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

**Connections**

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

**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
- 2<sup>nd</sup> 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.

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

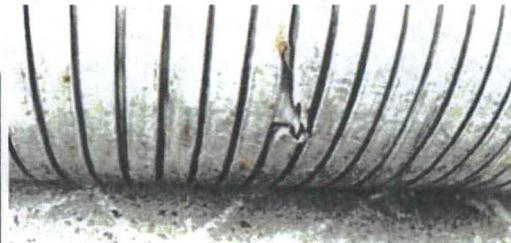


# Hose Inspection Report

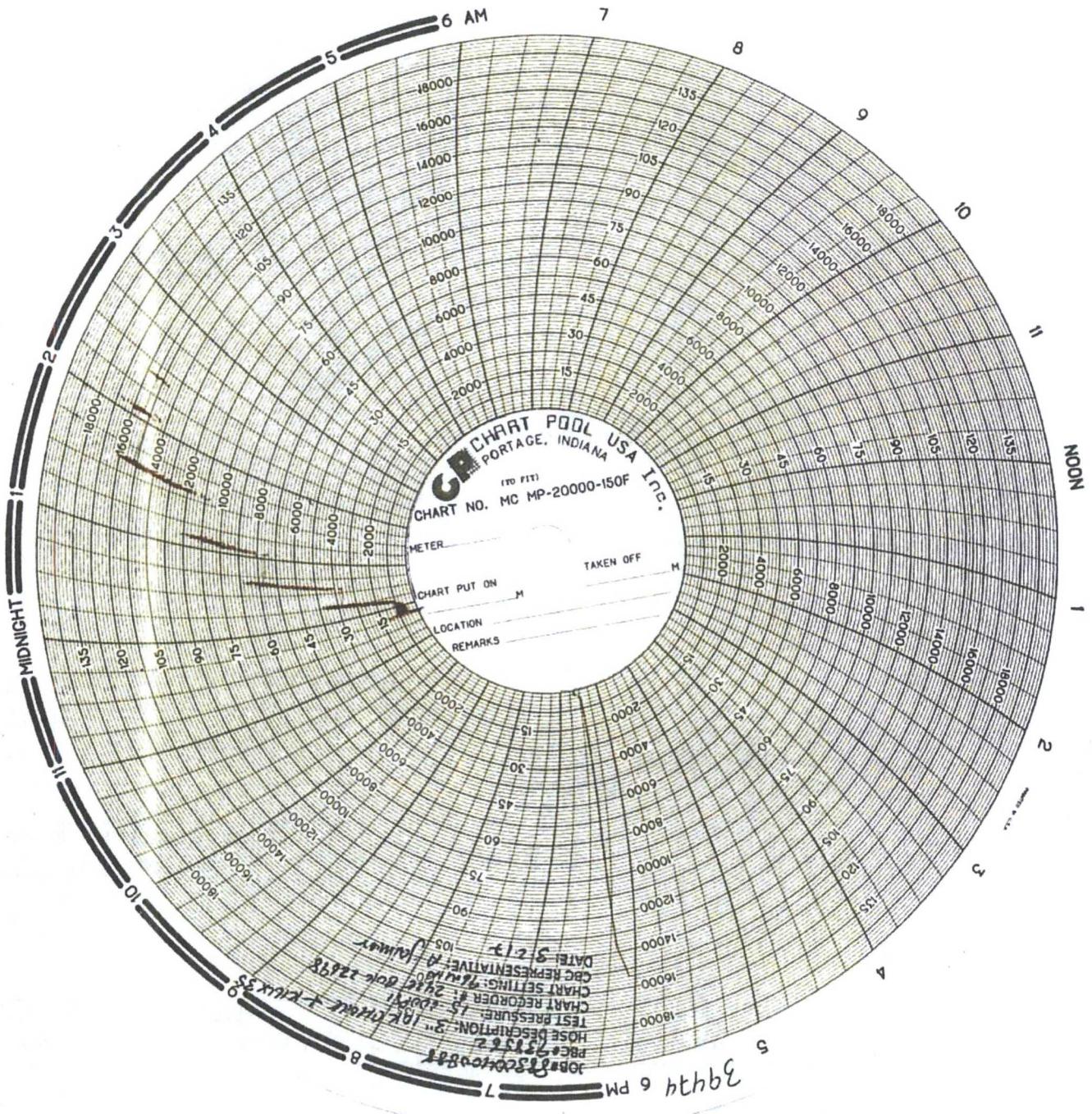
ContiTech Oil & Marine

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



PASS



**CHART POOL USA Inc.**  
 PORTAGE, INDIANA  
 (70 FIT)  
 CHART NO. MC MP-20000-150F

METER \_\_\_\_\_  
 CHART PUT ON \_\_\_\_\_ M  
 TAKEN OFF \_\_\_\_\_ M  
 LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_

JOB # 283040881  
 PCE 25362  
 HOSE DESCRIPTION: 3" IR CHART - KKK 35  
 TEST PRESSURE: 15 - 20 PSI  
 CHART SETTING: 18 PSI  
 CHART REPRESENTATIVE: J. J. JAWAY  
 DATE: 5/13/73

3:47 PM

# 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

<b>Hose Manufacturer</b>	Contitech Rubber Industrial
--------------------------	-----------------------------

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

**Connections**

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

**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
- 2<sup>nd</sup> 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

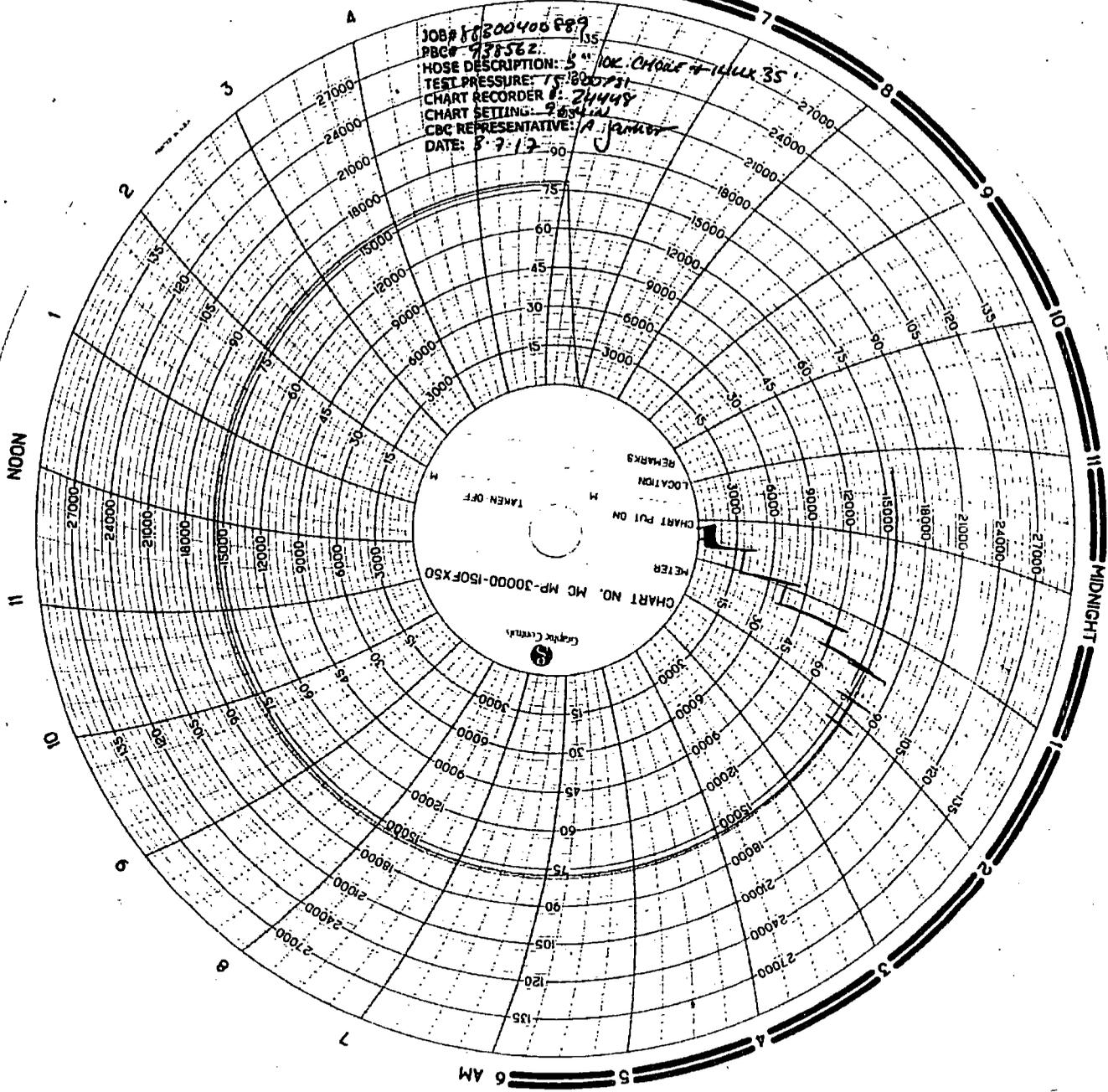


Issued By: Alejandro Jaimes  
Date: 03/10/2017

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

5 60887 6 PM

JOB# 10300400 689  
PBC# 978562  
HOSE DESCRIPTION: 3" 10K CHOLE #1411X 35'  
TEST PRESSURE: 15,000 PSI  
CHART RECORDER #: 214448  
CHART SETTING: 9.5 PSI  
CBC REPRESENTATIVE: A. Janner  
DATE: 5-7-00



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# 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

<b>Hose Manufacturer</b>	Contitech Rubber Industrial
--------------------------	-----------------------------

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

**Connections**

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

**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
- 2<sup>nd</sup> 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.

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

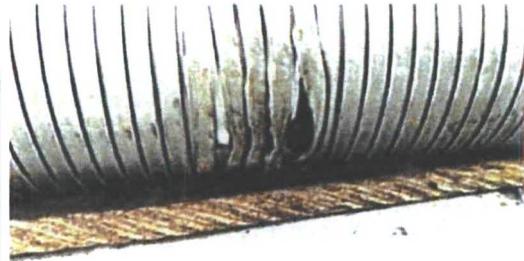


# Hose Inspection Report

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



PASS



## 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
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#### 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

## 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
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#### 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

# 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	<b>COUPLING</b>	<b>PIPE BODY</b>
Grade	P110*	Drift	API Standard	Body: White	1st Band: White
		Type	Casing	1st Band: -	2nd Band: -
				2nd Band: -	3rd Band: -
				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
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## OPERATION LIMIT TORQUES

Operating Torque	47000 ft-lbs	Yield Torque	70000 ft-lbs		
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### 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](http://www.tenaris.com)

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## 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
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#### 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	<b>P110</b>	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 <sup>(1)</sup>	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
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**OPERATION LIMIT TORQUES**

Operating Torque	21500 ft-lbs	Yield Torque	23900 ft-lbs		
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### **Casing Design Assumptions**

- Gas gravity 0.7
- Pore pressure gradient .468 psi/ft above the Wolfcamp, .676 psi/ft Wolfcamp and below
- .676 psi/ft fracture gradient above the Wolfcamp, .832 psi/ft Wolfcamp and below.
- 60°F average surface temperature and 1.5°/100ft temperature gradient
- Cementing loads based on slurries listed in Cement table, and post cement static loading
- Strings landed at neutral weight
- Gas kicks assumed at each casing shoe
- External pressure calculated with fluid gradients and pore pressure
- Production string load tested with completion fluid density and rate
- Tubing leak tested in production scenario

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## Hydrogen Sulfide Drilling

### Operations Plan

#### Tap Rock Resources

#### 1 H2S safety instructions to the following:

- Characteristics of H2S
- Physical effects and hazards
- Principal and operation of H2S detectors, warning system and briefing areas
- Evacuation procedures, routes and first aid
- Proper use of safety equipment & life support systems
- Essential personnel meeting medical evaluation criteria will receive additional training on the proper use of 30min pressure demand air packs

#### 2 H2S Detection and Alarm Systems:

- H2S sensor/detectors to be located on the drilling rig floor, in the base of the sub structure / cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may be placed as deemed necessary
- An audio alarm system will be installed on the derrick floor and in the doghouse

#### 3 Windsocks and / Wind Streamers:

- Windsocks at mud pit area should be high enough to be visible
- Windsock on the rig floor and / top of doghouse should be high enough to be visible

#### 4 Condition Flags and Signs:

- Warning sign on access road to location
- Flags to be displayed on sign at entrance to location
  - Green Flag – Normal Safe Operation Condition
  - Yellow Flag – Potential Pressure and Danger
  - Red Flag – Danger (H2S present in dangerous concentrations) Only H2S trained personnel admitted on location

#### 5 Well Control Equipment:

- See Drilling Operations Plan Schematics

#### 6 Communication:

- While working under masks chalkboards will be used for communications
- Hand signals will be used where chalk board is inappropriate
- Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.



**7 Drilling Stem Testing:**

- No DST cores are planned at this time

8 Drilling contractor supervisor will be required to be familiar with the effects H2S has on tubulars good and other mechanical equipment

9 If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H2S scavengers if necessary

**11 Emergency Contacts**

<b>Emergency Contacts</b>		
Carlsbad Police Department	575.887.7551	911
Carlsbad Medical Center	575.887.4100	911
Eddy County Fire Service	575.628.5450	911
Eddy County Sherriff	575.887.7551	911
Lea County Fire Service	575.391.2983	911
Lea County Sherriff	575.396.3611	911
Jal Police Department	575.395.2121	911
Jal Fire Department	575.395.2221	911
Tap Rock - Doug Sproul - Drilling	303-653-3518	



SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

DETAIL VIEW  
SCALE: 1" = 100'

highest ground  
to the northeast

flare line (straight)  
& flare >150'  
from well head

windsocks on  
rig floor & at  
mud tanks

laydown  
(V-door)  
to South

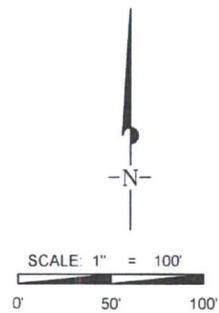
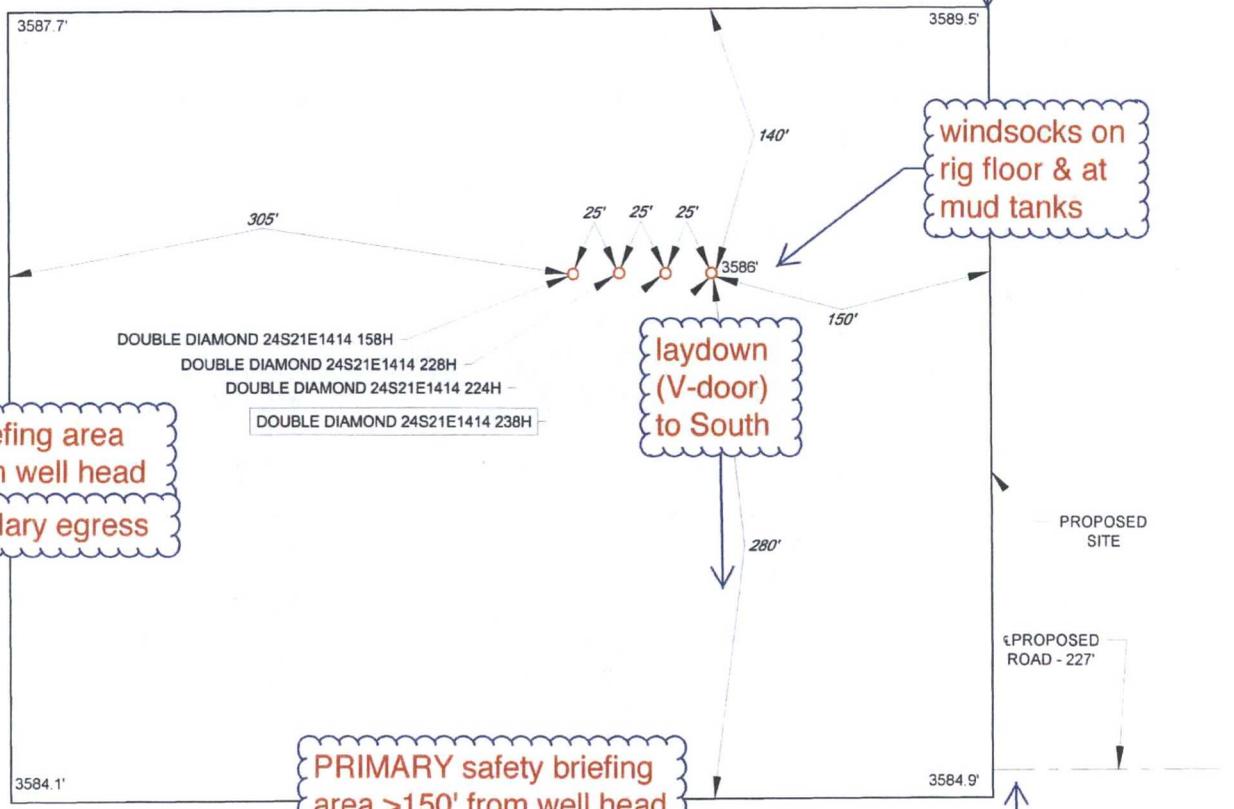
safety briefing area  
>150' from well head  
secondary egress

PRIMARY safety briefing  
area >150' from well head

PRIMARY egress  
(exit) route

warning signs  
& windsock

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.

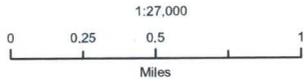
**TOPOGRAPHIC**  
LOYALTY INNOVATION LEGACY  
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140  
TELEPHONE: (817) 744-7512 • FAX: (817) 744-7554  
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705  
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX: (432) 682-1743  
WWW.TOPOGRAPHIC.COM

# Taprock Operating LLC

Double Diamond Fed Com  
24S31E #228H  
H<sub>2</sub>S Contingency Plan:  
2 Mile Radius Map

Sec. 14, Township 24S, Range 31E  
Eddy County, New Mexico

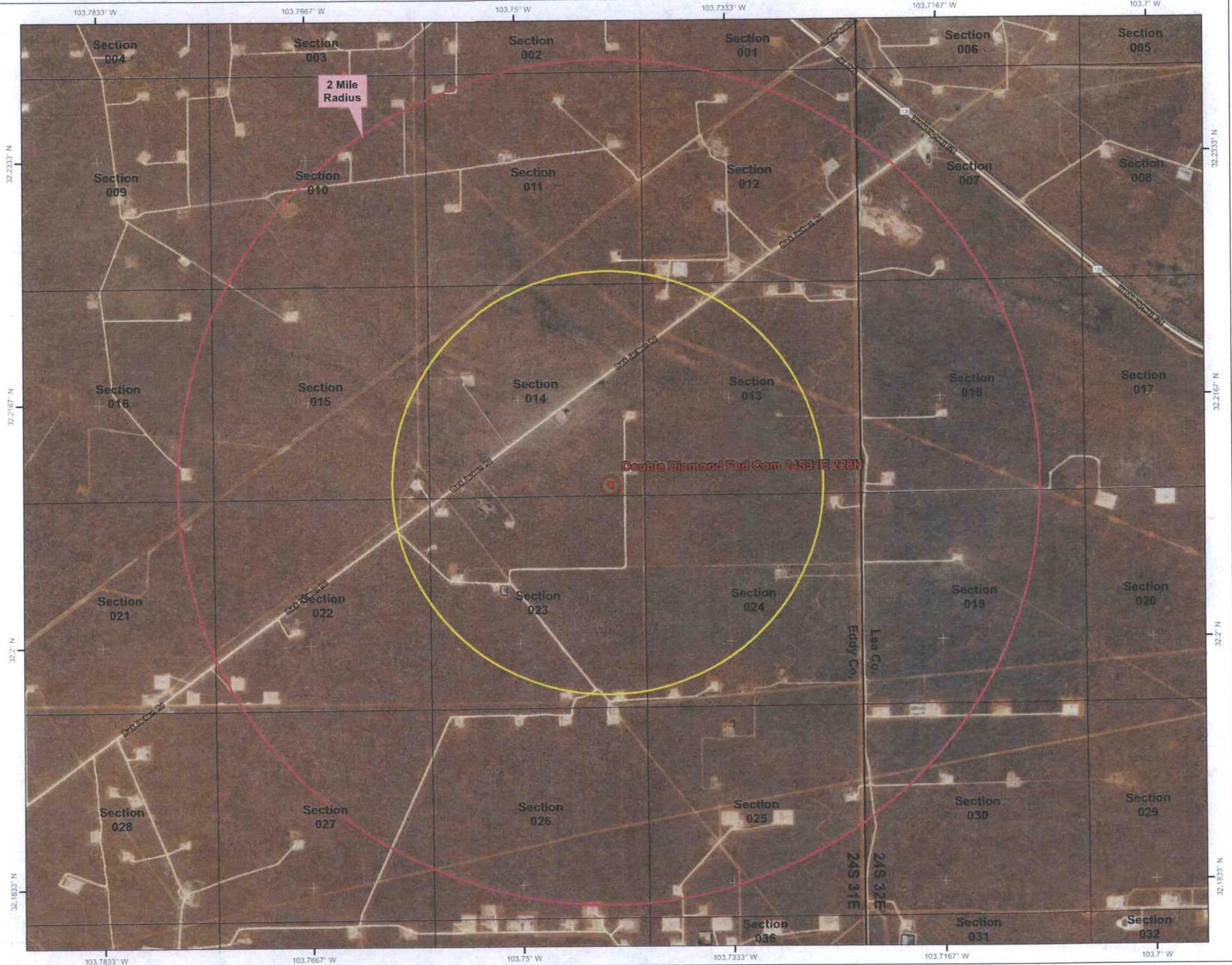
 Surface Hole Location



NAD 1983 New Mexico State Plane East  
FIPS 3001 Feet



Prepared by Permits West, Inc., December 27, 2017  
for Taprock Operating, LLC





Well: Double Diamond 24S 21E 1414 Well No. 228H  
 Site: Section 14-T24S-R31E  
 Project: Eddy County, New Mexico NAD83 NM east  
 Design: rev1

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	V/Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	KOP Begin 1 1/2'100' build
3	1800.00	3.00	75.00	1799.86	2.03	7.58	1.00	2.89	Begin 3.00° tangent
4	4400.00	3.00	75.00	4396.30	37.25	139.02	0.00	52.98	Begin 1 1/2'100' drop
5	4700.00	0.00	75.00	4696.16	39.28	146.61	1.00	55.87	Begin vertical hold
6	8303.84	0.00	75.00	8300.00	39.28	146.61	0.00	55.87	Begin 1.5'100' build
7	8979.54	10.14	123.73	8972.19	6.18	196.18	1.50	28.68	Begin 10.14° tangent
8	11270.93	10.14	123.73	11227.81	-217.74	531.53	0.00	-155.22	Begin 1.5'100' drop
9	11946.63	0.00	359.67	11900.00	-250.84	581.10	1.50	-182.40	Begin vertical hold
10	11975.04	0.00	359.67	11928.41	-250.84	581.10	0.00	-182.40	Begin 10'100' build
11	12675.04	70.00	359.67	12466.81	126.15	578.93	10.00	191.84	Begin 8'100' build
12	12927.56	90.20	359.68	12510.00	373.62	577.53	8.00	437.51	Begin 90.20° lateral
13	17334.05	90.20	359.68	12494.50	4780.01	553.00	0.00	4811.89	PBHL/TD 17334.05 MD/12494.50 TVD



Azimuths to Grid North  
 True North: -0.31°  
 Magnetic North: 6.66°

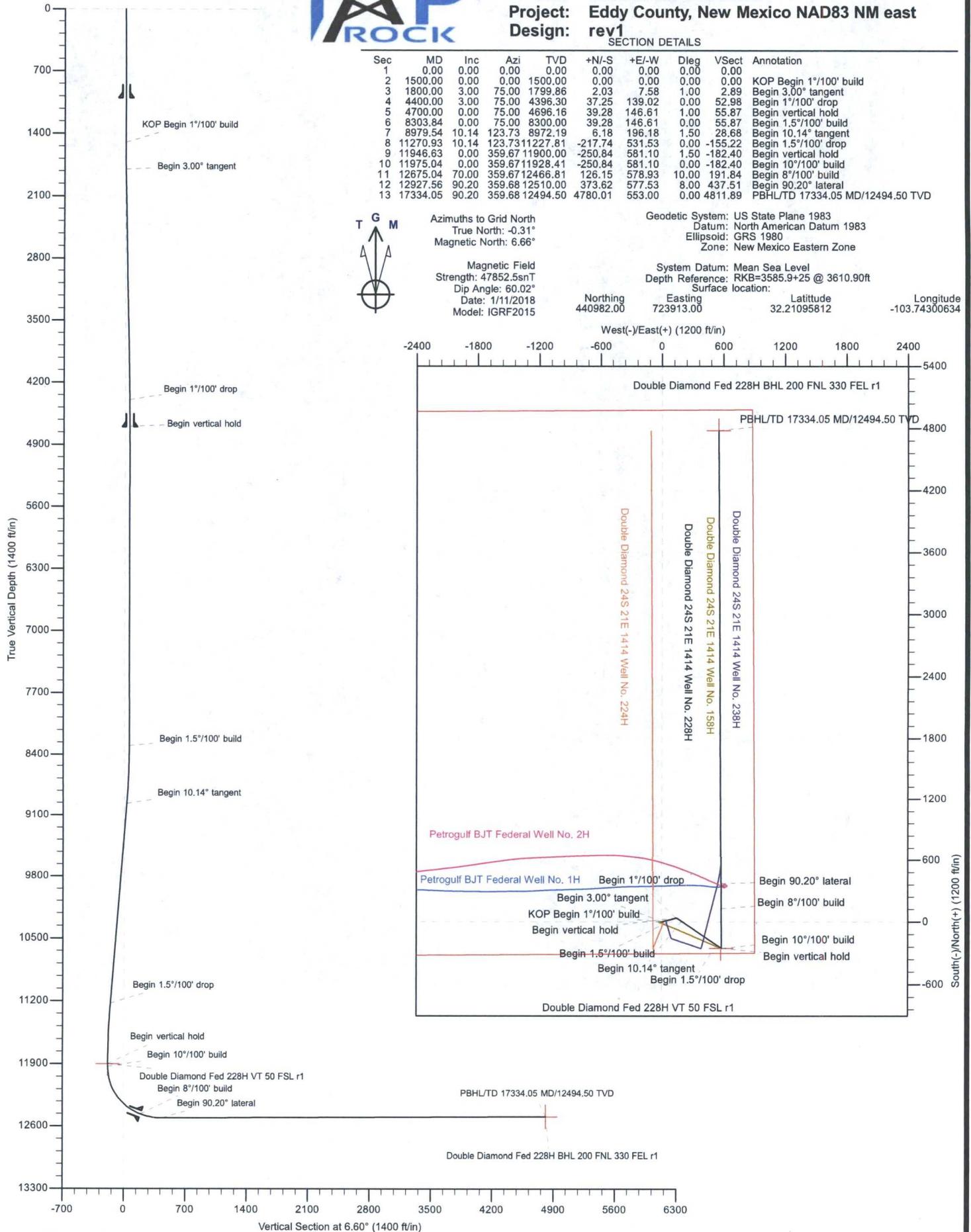
Magnetic Field  
 Strength: 47852.5snT  
 Dip Angle: 60.02°  
 Date: 1/11/2018  
 Model: IGRF2015

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=3585.9+25 @ 3610.90ft  
 Surface location:

Northing: 440982.00      Easting: 723913.00      Latitude: 32.21095812      Longitude: -103.74300634

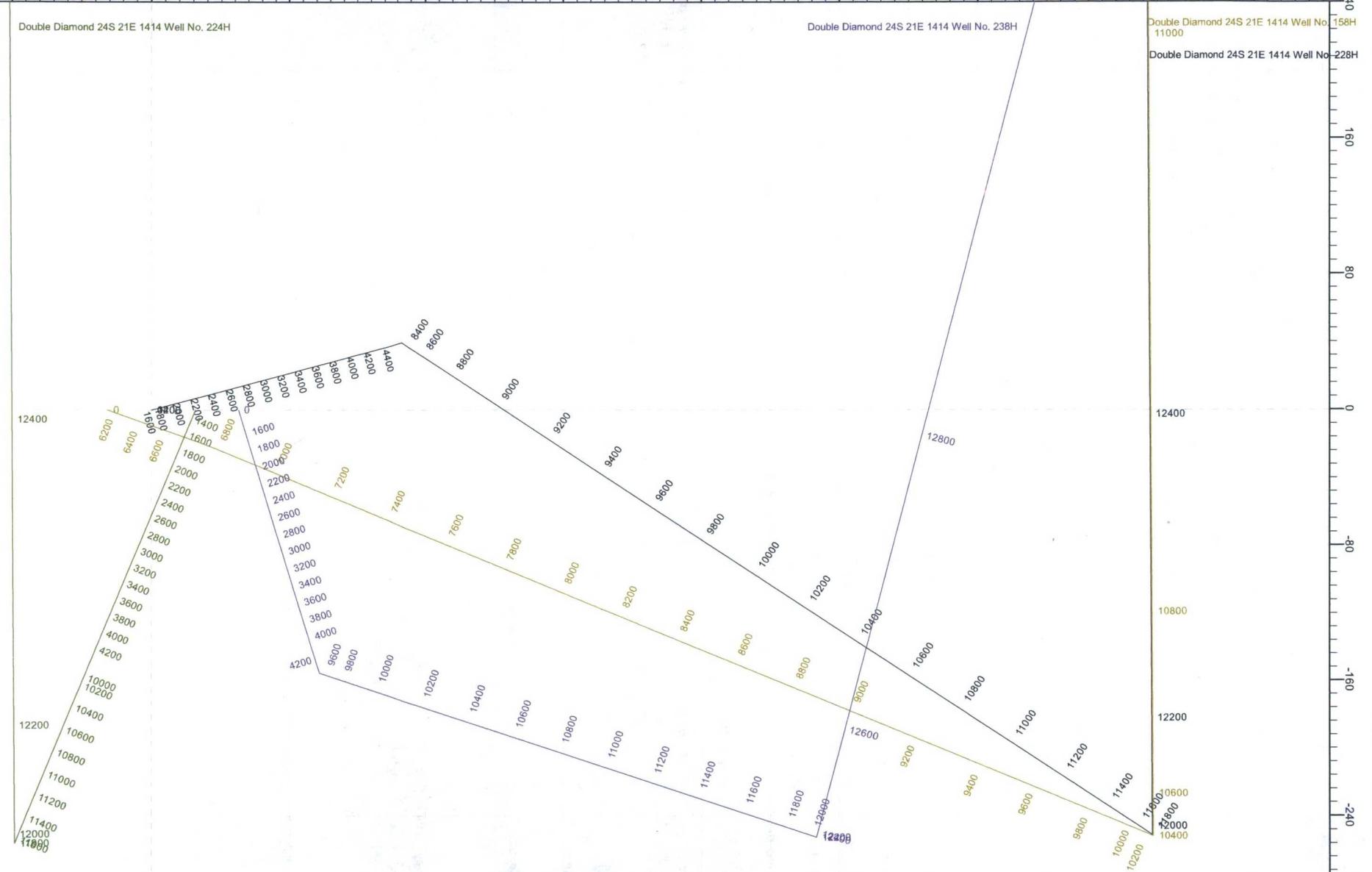
West(-)/East(+) (1200 ft/in)





Project: Eddy County, New Mexico NAD83 NM east  
Site: Section 14-T24S-R31E  
Well: Double Diamond 24S 21E 1414 Well No. 228H  
Wellbore: Original Hole  
Design: rev1

West(-)/East(+) (80 ft/in)



12400  
12200  
10800  
11000  
11200  
11400  
12000  
11000

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12200  
12400



South(-)/North(+) (80 ft/in)

Note: All lease lines and hard lines are estimates only and are subject to customers approval.



Planning Report

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

<b>Project</b>	Eddy County, New Mexico NAD83 NM east		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	Section 14-T24S-R31E				
<b>Site Position:</b>		<b>Northing:</b>	443,306.73 usft	<b>Latitude:</b>	32.21737448
<b>From:</b>	Map	<b>Easting:</b>	722,167.73 usft	<b>Longitude:</b>	-103.74860823
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.31 °

<b>Well</b>	Double Diamond 24S 21E 1414 Well No. 228H, Surf loc: 305 FSL 910 FEL Sec14-T24S-R31E					
<b>Well Position</b>	<b>+N-S</b>	-2,324.73 ft	<b>Northing:</b>	440,982.00 usft	<b>Latitude:</b>	32.21095812
	<b>+E-W</b>	1,745.27 ft	<b>Easting:</b>	723,913.00 usft	<b>Longitude:</b>	-103.74300634
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	3,585.90 ft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	1/11/2018	6.97	60.02	47,852.48244200

<b>Design</b>	rev1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N-S (ft)</b>	<b>+E-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	6.60	

<b>Plan Survey Tool Program</b>	<b>Date</b>	1/28/2018			
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	8,300.00 rev1 (Original Hole)	GYRO-NS OWSG Gyrocompass Gyro		
2	8,300.00	17,334.05 rev1 (Original Hole)	MWD OWSG MWD - Standard		



Planning Report

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	3.00	75.00	1,799.86	2.03	7.58	1.00	1.00	0.00	75.00	
4,400.00	3.00	75.00	4,396.30	37.25	139.02	0.00	0.00	0.00	0.00	
4,700.00	0.00	75.00	4,696.16	39.28	146.61	1.00	-1.00	0.00	180.00	
8,303.84	0.00	75.00	8,300.00	39.28	146.61	0.00	0.00	0.00	75.00	
8,979.54	10.14	123.73	8,972.19	6.18	196.18	1.50	1.50	7.21	123.73	
11,270.93	10.14	123.73	11,227.81	-217.74	531.53	0.00	0.00	0.00	0.00	
11,946.63	0.00	359.67	11,900.00	-250.84	581.10	1.50	-1.50	0.00	180.00	Double Diamond Fed
11,975.04	0.00	359.67	11,928.41	-250.84	581.10	0.00	0.00	0.00	359.67	
12,675.04	70.00	359.67	12,466.81	126.15	578.93	10.00	10.00	0.00	-0.33	
12,927.56	90.20	359.68	12,510.00	373.62	577.53	8.00	8.00	0.00	0.03	
17,334.05	90.20	359.68	12,494.50	4,780.01	553.00	0.00	0.00	0.00	0.00	Double Diamond Fed



Planning Report

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>KOP Begin 1°/100' build</b>									
1,600.00	1.00	75.00	1,599.99	0.23	0.84	0.32	1.00	1.00	0.00
1,700.00	2.00	75.00	1,699.96	0.90	3.37	1.28	1.00	1.00	0.00
1,800.00	3.00	75.00	1,799.86	2.03	7.58	2.89	1.00	1.00	0.00
<b>Begin 3.00° tangent</b>									
1,900.00	3.00	75.00	1,899.73	3.39	12.64	4.82	0.00	0.00	0.00
2,000.00	3.00	75.00	1,999.59	4.74	17.70	6.74	0.00	0.00	0.00
2,100.00	3.00	75.00	2,099.45	6.10	22.75	8.67	0.00	0.00	0.00
2,200.00	3.00	75.00	2,199.31	7.45	27.81	10.60	0.00	0.00	0.00
2,300.00	3.00	75.00	2,299.18	8.81	32.86	12.52	0.00	0.00	0.00
2,400.00	3.00	75.00	2,399.04	10.16	37.92	14.45	0.00	0.00	0.00
2,500.00	3.00	75.00	2,498.90	11.51	42.97	16.38	0.00	0.00	0.00
2,600.00	3.00	75.00	2,598.77	12.87	48.03	18.30	0.00	0.00	0.00
2,700.00	3.00	75.00	2,698.63	14.22	53.08	20.23	0.00	0.00	0.00
2,800.00	3.00	75.00	2,798.49	15.58	58.14	22.16	0.00	0.00	0.00
2,900.00	3.00	75.00	2,898.36	16.93	63.19	24.08	0.00	0.00	0.00
3,000.00	3.00	75.00	2,998.22	18.29	68.25	26.01	0.00	0.00	0.00
3,100.00	3.00	75.00	3,098.08	19.64	73.30	27.93	0.00	0.00	0.00
3,200.00	3.00	75.00	3,197.94	21.00	78.36	29.86	0.00	0.00	0.00
3,300.00	3.00	75.00	3,297.81	22.35	83.41	31.79	0.00	0.00	0.00
3,400.00	3.00	75.00	3,397.67	23.71	88.47	33.71	0.00	0.00	0.00
3,500.00	3.00	75.00	3,497.53	25.06	93.52	35.64	0.00	0.00	0.00
3,600.00	3.00	75.00	3,597.40	26.41	98.58	37.57	0.00	0.00	0.00
3,700.00	3.00	75.00	3,697.26	27.77	103.63	39.49	0.00	0.00	0.00
3,800.00	3.00	75.00	3,797.12	29.12	108.69	41.42	0.00	0.00	0.00
3,900.00	3.00	75.00	3,896.99	30.48	113.75	43.35	0.00	0.00	0.00
4,000.00	3.00	75.00	3,996.85	31.83	118.80	45.27	0.00	0.00	0.00
4,100.00	3.00	75.00	4,096.71	33.19	123.86	47.20	0.00	0.00	0.00
4,200.00	3.00	75.00	4,196.57	34.54	128.91	49.13	0.00	0.00	0.00
4,300.00	3.00	75.00	4,296.44	35.90	133.97	51.05	0.00	0.00	0.00
4,400.00	3.00	75.00	4,396.30	37.25	139.02	52.98	0.00	0.00	0.00
<b>Begin 1°/100' drop</b>									
4,500.00	2.00	75.00	4,496.20	38.38	143.23	54.58	1.00	-1.00	0.00
4,600.00	1.00	75.00	4,596.17	39.06	145.76	55.55	1.00	-1.00	0.00
4,700.00	0.00	75.00	4,696.16	39.28	146.61	55.87	1.00	-1.00	0.00
<b>Begin vertical hold</b>									



Planning Report

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,800.00	0.00	75.00	4,796.16	39.28	146.61	55.87	0.00	0.00	0.00
4,900.00	0.00	75.00	4,896.16	39.28	146.61	55.87	0.00	0.00	0.00
5,000.00	0.00	75.00	4,996.16	39.28	146.61	55.87	0.00	0.00	0.00
5,100.00	0.00	75.00	5,096.16	39.28	146.61	55.87	0.00	0.00	0.00
5,200.00	0.00	75.00	5,196.16	39.28	146.61	55.87	0.00	0.00	0.00
5,300.00	0.00	75.00	5,296.16	39.28	146.61	55.87	0.00	0.00	0.00
5,400.00	0.00	75.00	5,396.16	39.28	146.61	55.87	0.00	0.00	0.00
5,500.00	0.00	75.00	5,496.16	39.28	146.61	55.87	0.00	0.00	0.00
5,600.00	0.00	75.00	5,596.16	39.28	146.61	55.87	0.00	0.00	0.00
5,700.00	0.00	75.00	5,696.16	39.28	146.61	55.87	0.00	0.00	0.00
5,800.00	0.00	75.00	5,796.16	39.28	146.61	55.87	0.00	0.00	0.00
5,900.00	0.00	75.00	5,896.16	39.28	146.61	55.87	0.00	0.00	0.00
6,000.00	0.00	75.00	5,996.16	39.28	146.61	55.87	0.00	0.00	0.00
6,100.00	0.00	75.00	6,096.16	39.28	146.61	55.87	0.00	0.00	0.00
6,200.00	0.00	75.00	6,196.16	39.28	146.61	55.87	0.00	0.00	0.00
6,300.00	0.00	75.00	6,296.16	39.28	146.61	55.87	0.00	0.00	0.00
6,400.00	0.00	75.00	6,396.16	39.28	146.61	55.87	0.00	0.00	0.00
6,500.00	0.00	0.00	6,496.16	39.28	146.61	55.87	0.00	0.00	0.00
6,600.00	0.00	75.00	6,596.16	39.28	146.61	55.87	0.00	0.00	0.00
6,700.00	0.00	0.00	6,696.16	39.28	146.61	55.87	0.00	0.00	0.00
6,800.00	0.00	75.00	6,796.16	39.28	146.61	55.87	0.00	0.00	0.00
6,900.00	0.00	0.00	6,896.16	39.28	146.61	55.87	0.00	0.00	0.00
7,000.00	0.00	75.00	6,996.16	39.28	146.61	55.87	0.00	0.00	0.00
7,100.00	0.00	0.00	7,096.16	39.28	146.61	55.87	0.00	0.00	0.00
7,200.00	0.00	75.00	7,196.16	39.28	146.61	55.87	0.00	0.00	0.00
7,300.00	0.00	0.00	7,296.16	39.28	146.61	55.87	0.00	0.00	0.00
7,400.00	0.00	75.00	7,396.16	39.28	146.61	55.87	0.00	0.00	0.00
7,500.00	0.00	0.00	7,496.16	39.28	146.61	55.87	0.00	0.00	0.00
7,600.00	0.00	75.00	7,596.16	39.28	146.61	55.87	0.00	0.00	0.00
7,700.00	0.00	0.00	7,696.16	39.28	146.61	55.87	0.00	0.00	0.00
7,800.00	0.00	75.00	7,796.16	39.28	146.61	55.87	0.00	0.00	0.00
7,900.00	0.00	0.00	7,896.16	39.28	146.61	55.87	0.00	0.00	0.00
8,000.00	0.00	75.00	7,996.16	39.28	146.61	55.87	0.00	0.00	0.00
8,100.00	0.00	0.00	8,096.16	39.28	146.61	55.87	0.00	0.00	0.00
8,200.00	0.00	75.00	8,196.16	39.28	146.61	55.87	0.00	0.00	0.00
8,300.00	0.00	0.00	8,296.16	39.28	146.61	55.87	0.00	0.00	0.00
8,303.84	0.00	0.00	8,300.00	39.28	146.61	55.87	0.00	0.00	0.00
<b>Begin 1.5°/100' build</b>									
8,400.00	1.44	123.73	8,396.15	38.61	147.61	55.32	1.50	1.50	0.00
8,500.00	2.94	123.73	8,496.08	36.49	150.79	53.57	1.50	1.50	0.00
8,600.00	4.44	123.73	8,595.87	32.91	156.15	50.64	1.50	1.50	0.00
8,700.00	5.94	123.73	8,695.45	27.88	163.68	46.51	1.50	1.50	0.00
8,800.00	7.44	123.73	8,794.77	21.41	173.37	41.19	1.50	1.50	0.00
8,900.00	8.94	123.73	8,893.75	13.50	185.22	34.70	1.50	1.50	0.00
8,979.54	10.14	123.73	8,972.19	6.18	196.18	28.68	1.50	1.50	0.00
<b>Begin 10.14° tangent</b>									
9,000.00	10.14	123.73	8,992.32	4.18	199.17	27.04	0.00	0.00	0.00
9,100.00	10.14	123.73	9,090.76	-5.59	213.81	19.02	0.00	0.00	0.00
9,200.00	10.14	123.73	9,189.20	-15.36	228.44	10.99	0.00	0.00	0.00
9,300.00	10.14	123.73	9,287.64	-25.13	243.08	2.96	0.00	0.00	0.00
9,400.00	10.14	123.73	9,386.08	-34.91	257.71	-5.06	0.00	0.00	0.00
9,500.00	10.14	123.73	9,484.52	-44.68	272.35	-13.09	0.00	0.00	0.00



Planning Report

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,600.00	10.14	123.73	9,582.96	-54.45	286.99	-21.11	0.00	0.00	0.00
9,700.00	10.14	123.73	9,681.40	-64.22	301.62	-29.14	0.00	0.00	0.00
9,800.00	10.14	123.73	9,779.84	-74.00	316.26	-37.16	0.00	0.00	0.00
9,900.00	10.14	123.73	9,878.28	-83.77	330.89	-45.19	0.00	0.00	0.00
10,000.00	10.14	123.73	9,976.72	-93.54	345.53	-53.22	0.00	0.00	0.00
10,100.00	10.14	123.73	10,075.16	-103.31	360.16	-61.24	0.00	0.00	0.00
10,200.00	10.14	123.73	10,173.60	-113.08	374.80	-69.27	0.00	0.00	0.00
10,300.00	10.14	123.73	10,272.04	-122.86	389.43	-77.29	0.00	0.00	0.00
10,400.00	10.14	123.73	10,370.48	-132.63	404.07	-85.32	0.00	0.00	0.00
10,500.00	10.14	123.73	10,468.92	-142.40	418.70	-93.34	0.00	0.00	0.00
10,600.00	10.14	123.73	10,567.36	-152.17	433.34	-101.37	0.00	0.00	0.00
10,700.00	10.14	123.73	10,665.80	-161.95	447.97	-109.40	0.00	0.00	0.00
10,800.00	10.14	123.73	10,764.23	-171.72	462.61	-117.42	0.00	0.00	0.00
10,900.00	10.14	123.73	10,862.67	-181.49	477.24	-125.45	0.00	0.00	0.00
11,000.00	10.14	123.73	10,961.11	-191.26	491.88	-133.47	0.00	0.00	0.00
11,100.00	10.14	123.73	11,059.55	-201.03	506.51	-141.50	0.00	0.00	0.00
11,200.00	10.14	123.73	11,157.99	-210.81	521.15	-149.52	0.00	0.00	0.00
11,270.93	10.14	123.73	11,227.81	-217.74	531.53	-155.22	0.00	0.00	0.00
<b>Begin 1.5°/100' drop</b>									
11,300.00	9.70	123.73	11,256.45	-220.52	535.69	-157.50	1.50	-1.50	0.00
11,400.00	8.20	123.73	11,355.23	-229.16	548.63	-164.60	1.50	-1.50	0.00
11,500.00	6.70	123.73	11,454.38	-236.36	559.41	-170.51	1.50	-1.50	0.00
11,600.00	5.20	123.73	11,553.84	-242.11	568.03	-175.24	1.50	-1.50	0.00
11,700.00	3.70	123.73	11,653.54	-246.42	574.48	-178.77	1.50	-1.50	0.00
11,800.00	2.20	123.73	11,753.40	-249.28	578.76	-181.12	1.50	-1.50	0.00
11,900.00	0.70	123.73	11,853.37	-250.68	580.86	-182.27	1.50	-1.50	0.00
11,946.63	0.00	359.67	11,900.00	-250.84	581.10	-182.40	1.50	-1.50	0.00
<b>Begin vertical hold</b>									
11,975.04	0.00	0.00	11,928.41	-250.84	581.10	-182.40	0.00	0.00	0.00
<b>Begin 10°/100' build</b>									
12,000.00	2.50	359.67	11,953.36	-250.30	581.10	-181.86	10.00	10.00	0.00
12,100.00	12.50	359.67	12,052.38	-237.27	581.02	-168.93	10.00	10.00	0.00
12,200.00	22.50	359.67	12,147.63	-207.24	580.85	-139.12	10.00	10.00	0.00
12,300.00	32.50	359.67	12,236.22	-161.14	580.58	-93.35	10.00	10.00	0.00
12,400.00	42.50	359.67	12,315.46	-100.34	580.23	-33.00	10.00	10.00	0.00
12,500.00	52.50	359.67	12,382.94	-26.72	579.81	40.09	10.00	10.00	0.00
12,600.00	62.50	359.67	12,436.61	57.51	579.33	123.70	10.00	10.00	0.00
12,675.04	70.00	359.67	12,466.81	126.15	578.93	191.84	10.00	10.00	0.00
<b>Begin 8°/100' build</b>									
12,700.00	72.00	359.67	12,474.94	149.74	578.79	215.26	8.00	8.00	0.00
12,800.00	80.00	359.68	12,499.12	246.69	578.24	311.50	8.00	8.00	0.00
12,900.00	88.00	359.68	12,509.57	346.06	577.68	410.15	8.00	8.00	0.00
12,927.56	90.20	359.68	12,510.00	373.62	577.53	437.51	8.00	8.00	0.00
<b>Begin 90.20° lateral</b>									
13,000.00	90.20	359.68	12,509.75	446.05	577.13	509.42	0.00	0.00	0.00
13,100.00	90.20	359.68	12,509.40	546.05	576.57	608.69	0.00	0.00	0.00
13,200.00	90.20	359.68	12,509.04	646.05	576.01	707.96	0.00	0.00	0.00
13,300.00	90.20	359.68	12,508.69	746.05	575.46	807.23	0.00	0.00	0.00
13,400.00	90.20	359.68	12,508.34	846.04	574.90	906.50	0.00	0.00	0.00
13,500.00	90.20	359.68	12,507.99	946.04	574.34	1,005.77	0.00	0.00	0.00
13,600.00	90.20	359.68	12,507.64	1,046.04	573.79	1,105.05	0.00	0.00	0.00



Planning Report

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,700.00	90.20	359.68	12,507.28	1,146.04	573.23	1,204.32	0.00	0.00	0.00
13,800.00	90.20	359.68	12,506.93	1,246.04	572.67	1,303.59	0.00	0.00	0.00
13,900.00	90.20	359.68	12,506.58	1,346.03	572.12	1,402.86	0.00	0.00	0.00
14,000.00	90.20	359.68	12,506.23	1,446.03	571.56	1,502.13	0.00	0.00	0.00
14,100.00	90.20	359.68	12,505.88	1,546.03	571.00	1,601.40	0.00	0.00	0.00
14,200.00	90.20	359.68	12,505.53	1,646.03	570.45	1,700.67	0.00	0.00	0.00
14,300.00	90.20	359.68	12,505.17	1,746.02	569.89	1,799.95	0.00	0.00	0.00
14,400.00	90.20	359.68	12,504.82	1,846.02	569.33	1,899.22	0.00	0.00	0.00
14,500.00	90.20	359.68	12,504.47	1,946.02	568.78	1,998.49	0.00	0.00	0.00
14,600.00	90.20	359.68	12,504.12	2,046.02	568.22	2,097.76	0.00	0.00	0.00
14,700.00	90.20	359.68	12,503.77	2,146.02	567.66	2,197.03	0.00	0.00	0.00
14,800.00	90.20	359.68	12,503.41	2,246.01	567.11	2,296.30	0.00	0.00	0.00
14,900.00	90.20	359.68	12,503.06	2,346.01	566.55	2,395.57	0.00	0.00	0.00
15,000.00	90.20	359.68	12,502.71	2,446.01	565.99	2,494.85	0.00	0.00	0.00
15,100.00	90.20	359.68	12,502.36	2,546.01	565.44	2,594.12	0.00	0.00	0.00
15,200.00	90.20	359.68	12,502.01	2,646.00	564.88	2,693.39	0.00	0.00	0.00
15,300.00	90.20	359.68	12,501.66	2,746.00	564.32	2,792.66	0.00	0.00	0.00
15,400.00	90.20	359.68	12,501.30	2,846.00	563.77	2,891.93	0.00	0.00	0.00
15,500.00	90.20	359.68	12,500.95	2,946.00	563.21	2,991.20	0.00	0.00	0.00
15,600.00	90.20	359.68	12,500.60	3,046.00	562.65	3,090.47	0.00	0.00	0.00
15,700.00	90.20	359.68	12,500.25	3,145.99	562.10	3,189.75	0.00	0.00	0.00
15,800.00	90.20	359.68	12,499.90	3,245.99	561.54	3,289.02	0.00	0.00	0.00
15,900.00	90.20	359.68	12,499.55	3,345.99	560.98	3,388.29	0.00	0.00	0.00
16,000.00	90.20	359.68	12,499.19	3,445.99	560.43	3,487.56	0.00	0.00	0.00
16,100.00	90.20	359.68	12,498.84	3,545.99	559.87	3,586.83	0.00	0.00	0.00
16,200.00	90.20	359.68	12,498.49	3,645.98	559.31	3,686.10	0.00	0.00	0.00
16,300.00	90.20	359.68	12,498.14	3,745.98	558.76	3,785.37	0.00	0.00	0.00
16,400.00	90.20	359.68	12,497.79	3,845.98	558.20	3,884.65	0.00	0.00	0.00
16,500.00	90.20	359.68	12,497.43	3,945.98	557.64	3,983.92	0.00	0.00	0.00
16,600.00	90.20	359.68	12,497.08	4,045.97	557.09	4,083.19	0.00	0.00	0.00
16,700.00	90.20	359.68	12,496.73	4,145.97	556.53	4,182.46	0.00	0.00	0.00
16,800.00	90.20	359.68	12,496.38	4,245.97	555.97	4,281.73	0.00	0.00	0.00
16,900.00	90.20	359.68	12,496.03	4,345.97	555.42	4,381.00	0.00	0.00	0.00
17,000.00	90.20	359.68	12,495.68	4,445.97	554.86	4,480.27	0.00	0.00	0.00
17,100.00	90.20	359.68	12,495.32	4,545.96	554.30	4,579.55	0.00	0.00	0.00
17,200.00	90.20	359.68	12,494.97	4,645.96	553.75	4,678.82	0.00	0.00	0.00
17,300.00	90.20	359.68	12,494.62	4,745.96	553.19	4,778.09	0.00	0.00	0.00
17,334.05	90.20	359.68	12,494.50	4,780.01	553.00	4,811.89	0.00	0.00	0.00

PBHL/TD 17334.05 MD/12494.50 TVD



Planning Report

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Double Diamond Fed 22 - plan hits target center - Point	0.00	0.00	11,900.00	-250.84	581.10	440,731.16	724,494.10	32.21025983	-103.74113201
Double Diamond Fed 22 - plan hits target center - Point	0.00	0.00	12,494.50	4,780.01	553.00	445,762.00	724,466.00	32.22408884	-103.74113323

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(ft)	(ft)		(")	(")	
1,000.00	1,000.00	13 3/8" Casing @ 1000 TVD	13-3/8	17-1/2	
4,703.84	4,700.00	9 5/8" Casing @ 4700 TVD	9-5/8	12-1/4	
12,675.00	12,466.80	7" Casing @ 12675 MD	7	8-3/4	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)		
1,500.00	1,500.00	0.00	0.00	KOP Begin 1°/100' build	
1,800.00	1,799.86	2.03	7.58	Begin 3.00° tangent	
4,400.00	4,396.30	37.25	139.02	Begin 1°/100' drop	
4,700.00	4,696.16	39.28	146.61	Begin vertical hold	
8,303.84	8,300.00	39.28	146.61	Begin 1.5°/100' build	
8,979.54	8,972.19	6.18	196.18	Begin 10.14° tangent	
11,270.93	11,227.81	-217.74	531.53	Begin 1.5°/100' drop	
11,946.63	11,900.00	-250.84	581.10	Begin vertical hold	
11,975.04	11,928.41	-250.84	581.10	Begin 10°/100' build	
12,675.04	12,466.81	126.15	578.93	Begin 8°/100' build	
12,927.56	12,510.00	373.62	577.53	Begin 90.20° lateral	
17,334.05	12,494.50	4,780.01	553.00	PBHL/TD 17334.05 MD/12494.50 TVD	



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

<b>Project</b>	Eddy County, New Mexico NAD83 NM east		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	Section 14-T24S-R31E				
<b>Site Position:</b>		<b>Northing:</b>	443,306.73 usft	<b>Latitude:</b>	32.21737448
<b>From:</b>	Map	<b>Easting:</b>	722,167.73 usft	<b>Longitude:</b>	-103.74860823
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.31 °

<b>Well</b>	Double Diamond 24S 21E 1414 Well No. 228H, Surf loc: 305 FSL 910 FEL Sec14-T24S-R31E					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	440,982.00 usft	<b>Latitude:</b>	32.21095812
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	723,913.00 usft	<b>Longitude:</b>	-103.74300634
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	3,585.90 ft

<b>Wellbore</b>	Original Hole					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>	
	IGRF2015	1/11/2018	6.97	60.02	47,852.48244200	

<b>Design</b>	rev1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	6.60	

<b>Plan Survey Tool Program</b>	<b>Date</b>	1/28/2018			
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	8,300.00 rev1 (Original Hole)	GYRO-NS OWSG Gyrocompass Gyro		
2	8,300.00	17,334.05 rev1 (Original Hole)	MWD OWSG MWD - Standard		



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	3.00	75.00	1,799.86	2.03	7.58	1.00	1.00	0.00	75.00	
4,400.00	3.00	75.00	4,396.30	37.25	139.02	0.00	0.00	0.00	0.00	
4,700.00	0.00	75.00	4,696.16	39.28	146.61	1.00	-1.00	0.00	180.00	
8,303.84	0.00	75.00	8,300.00	39.28	146.61	0.00	0.00	0.00	75.00	
8,979.54	10.14	123.73	8,972.19	6.18	196.18	1.50	1.50	7.21	123.73	
11,270.93	10.14	123.73	11,227.81	-217.74	531.53	0.00	0.00	0.00	0.00	
11,946.63	0.00	359.67	11,900.00	-250.84	581.10	1.50	-1.50	0.00	180.00	Double Diamond Fed
11,975.04	0.00	359.67	11,928.41	-250.84	581.10	0.00	0.00	0.00	359.67	
12,675.04	70.00	359.67	12,466.81	126.15	578.93	10.00	10.00	0.00	-0.33	
12,927.56	90.20	359.68	12,510.00	373.62	577.53	8.00	8.00	0.00	0.03	
17,334.05	90.20	359.68	12,494.50	4,780.01	553.00	0.00	0.00	0.00	0.00	Double Diamond Fed



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
100.00	0.00	0.00	100.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
200.00	0.00	0.00	200.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
300.00	0.00	0.00	300.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
400.00	0.00	0.00	400.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
500.00	0.00	0.00	500.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
600.00	0.00	0.00	600.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
700.00	0.00	0.00	700.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
800.00	0.00	0.00	800.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
900.00	0.00	0.00	900.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	440,982.00	723,913.00	32.21095812	-103.74300634	
<b>KOP Begin 1°/100' build</b>										
1,600.00	1.00	75.00	1,599.99	0.23	0.84	440,982.23	723,913.84	32.21095873	-103.74300362	
1,700.00	2.00	75.00	1,699.96	0.90	3.37	440,982.90	723,916.37	32.21096055	-103.74299543	
1,800.00	3.00	75.00	1,799.86	2.03	7.58	440,984.03	723,920.58	32.21096359	-103.74298179	
<b>Begin 3.00° tangent</b>										
1,900.00	3.00	75.00	1,899.73	3.39	12.64	440,985.39	723,925.64	32.21096724	-103.74296542	
2,000.00	3.00	75.00	1,999.59	4.74	17.70	440,986.74	723,930.69	32.21097089	-103.74294905	
2,100.00	3.00	75.00	2,099.45	6.10	22.75	440,988.10	723,935.75	32.21097453	-103.74293268	
2,200.00	3.00	75.00	2,199.31	7.45	27.81	440,989.45	723,940.80	32.21097818	-103.74291631	
2,300.00	3.00	75.00	2,299.18	8.81	32.86	440,990.80	723,945.86	32.21098183	-103.74289994	
2,400.00	3.00	75.00	2,399.04	10.16	37.92	440,992.16	723,950.91	32.21098547	-103.74288357	
2,500.00	3.00	75.00	2,498.90	11.51	42.97	440,993.51	723,955.97	32.21098912	-103.74286721	
2,600.00	3.00	75.00	2,598.77	12.87	48.03	440,994.87	723,961.02	32.21099277	-103.74285084	
2,700.00	3.00	75.00	2,698.63	14.22	53.08	440,996.22	723,966.08	32.21099641	-103.74283447	
2,800.00	3.00	75.00	2,798.49	15.58	58.14	440,997.58	723,971.13	32.21100006	-103.74281810	
2,900.00	3.00	75.00	2,898.36	16.93	63.19	440,998.93	723,976.19	32.21100371	-103.74280173	
3,000.00	3.00	75.00	2,998.22	18.29	68.25	441,000.29	723,981.24	32.21100736	-103.74278536	
3,100.00	3.00	75.00	3,098.08	19.64	73.30	441,001.64	723,986.30	32.21101100	-103.74276899	
3,200.00	3.00	75.00	3,197.94	21.00	78.36	441,003.00	723,991.35	32.21101465	-103.74275263	
3,300.00	3.00	75.00	3,297.81	22.35	83.41	441,004.35	723,996.41	32.21101830	-103.74273626	
3,400.00	3.00	75.00	3,397.67	23.71	88.47	441,005.70	724,001.46	32.21102194	-103.74271989	
3,500.00	3.00	75.00	3,497.53	25.06	93.52	441,007.06	724,006.52	32.21102559	-103.74270352	
3,600.00	3.00	75.00	3,597.40	26.41	98.58	441,008.41	724,011.58	32.21102924	-103.74268715	
3,700.00	3.00	75.00	3,697.26	27.77	103.63	441,009.77	724,016.63	32.21103288	-103.74267078	
3,800.00	3.00	75.00	3,797.12	29.12	108.69	441,011.12	724,021.69	32.21103653	-103.74265441	
3,900.00	3.00	75.00	3,896.99	30.48	113.75	441,012.48	724,026.74	32.21104018	-103.74263804	
4,000.00	3.00	75.00	3,996.85	31.83	118.80	441,013.83	724,031.80	32.21104383	-103.74262168	
4,100.00	3.00	75.00	4,096.71	33.19	123.86	441,015.19	724,036.85	32.21104747	-103.74260531	
4,200.00	3.00	75.00	4,196.57	34.54	128.91	441,016.54	724,041.91	32.21105112	-103.74258894	
4,300.00	3.00	75.00	4,296.44	35.90	133.97	441,017.90	724,046.96	32.21105477	-103.74257257	
4,400.00	3.00	75.00	4,396.30	37.25	139.02	441,019.25	724,052.02	32.21105841	-103.74255620	
<b>Begin 1°/100' drop</b>										
4,500.00	2.00	75.00	4,496.20	38.38	143.23	441,020.38	724,056.23	32.21106145	-103.74254256	
4,600.00	1.00	75.00	4,596.17	39.06	145.76	441,021.06	724,058.76	32.21106328	-103.74253437	
4,700.00	0.00	75.00	4,696.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164	
<b>Begin vertical hold</b>										



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	0.00	75.00	4,796.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
4,900.00	0.00	75.00	4,896.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,000.00	0.00	75.00	4,996.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,100.00	0.00	75.00	5,096.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,200.00	0.00	75.00	5,196.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,300.00	0.00	75.00	5,296.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,400.00	0.00	75.00	5,396.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,500.00	0.00	75.00	5,496.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,600.00	0.00	75.00	5,596.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,700.00	0.00	75.00	5,696.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,800.00	0.00	75.00	5,796.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
5,900.00	0.00	75.00	5,896.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,000.00	0.00	75.00	5,996.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,100.00	0.00	75.00	6,096.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,200.00	0.00	75.00	6,196.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,300.00	0.00	75.00	6,296.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,400.00	0.00	75.00	6,396.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,500.00	0.00	0.00	6,496.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,600.00	0.00	75.00	6,596.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,700.00	0.00	0.00	6,696.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,800.00	0.00	75.00	6,796.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
6,900.00	0.00	0.00	6,896.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,000.00	0.00	75.00	6,996.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,100.00	0.00	0.00	7,096.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,200.00	0.00	75.00	7,196.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,300.00	0.00	0.00	7,296.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,400.00	0.00	75.00	7,396.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,500.00	0.00	0.00	7,496.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,600.00	0.00	75.00	7,596.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,700.00	0.00	0.00	7,696.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,800.00	0.00	75.00	7,796.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
7,900.00	0.00	0.00	7,896.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
8,000.00	0.00	75.00	7,996.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
8,100.00	0.00	0.00	8,096.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
8,200.00	0.00	75.00	8,196.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
8,300.00	0.00	0.00	8,296.16	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
8,303.84	0.00	0.00	8,300.00	39.28	146.61	441,021.28	724,059.60	32.21106388	-103.74253164
<b>Begin 1.5°/100' build</b>									
8,400.00	1.44	123.73	8,396.15	38.61	147.61	441,020.61	724,060.61	32.21106202	-103.74252840
8,500.00	2.94	123.73	8,496.08	36.49	150.79	441,018.49	724,063.79	32.21105613	-103.74251815
8,600.00	4.44	123.73	8,595.87	32.91	156.15	441,014.91	724,069.15	32.21104622	-103.74250090
8,700.00	5.94	123.73	8,695.45	27.88	163.68	441,009.88	724,076.67	32.21103230	-103.74247666
8,800.00	7.44	123.73	8,794.77	21.41	173.37	441,003.41	724,086.36	32.21101436	-103.74244544
8,900.00	8.94	123.73	8,893.75	13.50	185.22	440,995.50	724,098.21	32.21099243	-103.74240726
8,979.54	10.14	123.73	8,972.19	6.18	196.18	440,988.18	724,109.18	32.21097215	-103.74237195
<b>Begin 10.14° tangent</b>									
9,000.00	10.14	123.73	8,992.32	4.18	199.17	440,986.18	724,112.17	32.21096661	-103.74236230
9,100.00	10.14	123.73	9,090.76	-5.59	213.81	440,976.41	724,126.81	32.21093952	-103.74231516
9,200.00	10.14	123.73	9,189.20	-15.36	228.44	440,966.64	724,141.44	32.21091244	-103.74226802
9,300.00	10.14	123.73	9,287.64	-25.13	243.08	440,956.86	724,156.08	32.21088536	-103.74222087
9,400.00	10.14	123.73	9,386.08	-34.91	257.71	440,947.09	724,170.71	32.21085827	-103.74217373
9,500.00	10.14	123.73	9,484.52	-44.68	272.35	440,937.32	724,185.35	32.21083119	-103.74212658



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,600.00	10.14	123.73	9,582.96	-54.45	286.99	440,927.55	724,199.98	32.21080411	-103.74207944
9,700.00	10.14	123.73	9,681.40	-64.22	301.62	440,917.78	724,214.62	32.21077703	-103.74203230
9,800.00	10.14	123.73	9,779.84	-74.00	316.26	440,908.00	724,229.25	32.21074994	-103.74198515
9,900.00	10.14	123.73	9,878.28	-83.77	330.89	440,898.23	724,243.89	32.21072286	-103.74193801
10,000.00	10.14	123.73	9,976.72	-93.54	345.53	440,888.46	724,258.52	32.21069578	-103.74189086
10,100.00	10.14	123.73	10,075.16	-103.31	360.16	440,878.69	724,273.16	32.21066869	-103.74184372
10,200.00	10.14	123.73	10,173.60	-113.08	374.80	440,868.92	724,287.79	32.21064161	-103.74179658
10,300.00	10.14	123.73	10,272.04	-122.86	389.43	440,859.14	724,302.43	32.21061453	-103.74174943
10,400.00	10.14	123.73	10,370.48	-132.63	404.07	440,849.37	724,317.06	32.21058745	-103.74170229
10,500.00	10.14	123.73	10,468.92	-142.40	418.70	440,839.60	724,331.70	32.21056036	-103.74165515
10,600.00	10.14	123.73	10,567.36	-152.17	433.34	440,829.83	724,346.33	32.21053328	-103.74160800
10,700.00	10.14	123.73	10,665.80	-161.95	447.97	440,820.05	724,360.97	32.21050620	-103.74156086
10,800.00	10.14	123.73	10,764.23	-171.72	462.61	440,810.28	724,375.60	32.21047911	-103.74151371
10,900.00	10.14	123.73	10,862.67	-181.49	477.24	440,800.51	724,390.24	32.21045203	-103.74146657
11,000.00	10.14	123.73	10,961.11	-191.26	491.88	440,790.74	724,404.87	32.21042495	-103.74141943
11,100.00	10.14	123.73	11,059.55	-201.03	506.51	440,780.97	724,419.51	32.21039787	-103.74137228
11,200.00	10.14	123.73	11,157.99	-210.81	521.15	440,771.19	724,434.14	32.21037078	-103.74132514
11,270.93	10.14	123.73	11,227.81	-217.74	531.53	440,764.26	724,444.52	32.21035157	-103.74129170
<b>Begin 1.5°/100' drop</b>									
11,300.00	9.70	123.73	11,256.45	-220.52	535.69	440,761.48	724,448.69	32.21034387	-103.74127829
11,400.00	8.20	123.73	11,355.23	-229.16	548.63	440,752.84	724,461.62	32.21031993	-103.74123662
11,500.00	6.70	123.73	11,454.38	-236.36	559.41	440,745.64	724,472.41	32.21029997	-103.74120188
11,600.00	5.20	123.73	11,553.84	-242.11	568.03	440,739.89	724,481.02	32.21028402	-103.74117412
11,700.00	3.70	123.73	11,653.54	-246.42	574.48	440,735.58	724,487.48	32.21027208	-103.74115333
11,800.00	2.20	123.73	11,753.40	-249.28	578.76	440,732.72	724,491.76	32.21026416	-103.74113955
11,900.00	0.70	123.73	11,853.37	-250.68	580.86	440,731.32	724,493.86	32.21026027	-103.74113277
11,946.63	0.00	359.67	11,900.00	-250.84	581.10	440,731.16	724,494.10	32.21025983	-103.74113201
<b>Begin vertical hold</b>									
11,975.04	0.00	0.00	11,928.41	-250.84	581.10	440,731.16	724,494.10	32.21025983	-103.74113201
<b>Begin 10°/100' build</b>									
12,000.00	2.50	359.67	11,953.36	-250.30	581.10	440,731.70	724,494.09	32.21026133	-103.74113201
12,100.00	12.50	359.67	12,052.38	-237.27	581.02	440,744.73	724,494.02	32.21029714	-103.74113202
12,200.00	22.50	359.67	12,147.63	-207.24	580.85	440,774.76	724,493.85	32.21037967	-103.74113205
12,300.00	32.50	359.67	12,236.22	-161.14	580.58	440,820.86	724,493.58	32.21050642	-103.74113208
12,400.00	42.50	359.67	12,315.46	-100.34	580.23	440,881.66	724,493.23	32.21067353	-103.74113213
12,500.00	52.50	359.67	12,382.94	-26.72	579.81	440,955.28	724,492.81	32.21087592	-103.74113219
12,600.00	62.50	359.67	12,436.61	57.51	579.33	441,039.51	724,492.32	32.21110744	-103.74113226
12,675.04	70.00	359.67	12,466.81	126.15	578.93	441,108.15	724,491.92	32.21129612	-103.74113232
<b>Begin 8°/100' build</b>									
12,700.00	72.00	359.67	12,474.94	149.74	578.79	441,131.74	724,491.79	32.21136097	-103.74113233
12,800.00	80.00	359.68	12,499.12	246.69	578.24	441,228.69	724,491.24	32.21162747	-103.74113239
12,900.00	88.00	359.68	12,509.57	346.06	577.68	441,328.06	724,490.68	32.21190062	-103.74113243
12,927.56	90.20	359.68	12,510.00	373.62	577.53	441,355.62	724,490.52	32.21197637	-103.74113244
<b>Begin 90.20° lateral</b>									
13,000.00	90.20	359.68	12,509.75	446.05	577.13	441,428.05	724,490.12	32.21217548	-103.74113245
13,100.00	90.20	359.68	12,509.40	546.05	576.57	441,528.05	724,489.56	32.21245036	-103.74113247
13,200.00	90.20	359.68	12,509.04	646.05	576.01	441,628.05	724,489.01	32.21272524	-103.74113249
13,300.00	90.20	359.68	12,508.69	746.05	575.46	441,728.04	724,488.45	32.21300012	-103.74113250
13,400.00	90.20	359.68	12,508.34	846.04	574.90	441,828.04	724,487.89	32.21327500	-103.74113252
13,500.00	90.20	359.68	12,507.99	946.04	574.34	441,928.04	724,487.34	32.21354988	-103.74113254
13,600.00	90.20	359.68	12,507.64	1,046.04	573.79	442,028.04	724,486.78	32.21382475	-103.74113256
13,700.00	90.20	359.68	12,507.28	1,146.04	573.23	442,128.03	724,486.22	32.21409963	-103.74113258



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,800.00	90.20	359.68	12,506.93	1,246.04	572.67	442,228.03	724,485.67	32.21437451	-103.74113260
13,900.00	90.20	359.68	12,506.58	1,346.03	572.12	442,328.03	724,485.11	32.21464939	-103.74113261
14,000.00	90.20	359.68	12,506.23	1,446.03	571.56	442,428.03	724,484.55	32.21492427	-103.74113263
14,100.00	90.20	359.68	12,505.88	1,546.03	571.00	442,528.03	724,484.00	32.21519915	-103.74113265
14,200.00	90.20	359.68	12,505.53	1,646.03	570.45	442,628.02	724,483.44	32.21547402	-103.74113267
14,300.00	90.20	359.68	12,505.17	1,746.02	569.89	442,728.02	724,482.88	32.21574890	-103.74113269
14,400.00	90.20	359.68	12,504.82	1,846.02	569.33	442,828.02	724,482.33	32.21602378	-103.74113270
14,500.00	90.20	359.68	12,504.47	1,946.02	568.78	442,928.02	724,481.77	32.21629866	-103.74113272
14,600.00	90.20	359.68	12,504.12	2,046.02	568.22	443,028.01	724,481.21	32.21657354	-103.74113274
14,700.00	90.20	359.68	12,503.77	2,146.02	567.66	443,128.01	724,480.66	32.21684842	-103.74113276
14,800.00	90.20	359.68	12,503.41	2,246.01	567.11	443,228.01	724,480.10	32.21712329	-103.74113278
14,900.00	90.20	359.68	12,503.06	2,346.01	566.55	443,328.01	724,479.54	32.21739817	-103.74113279
15,000.00	90.20	359.68	12,502.71	2,446.01	565.99	443,428.00	724,478.99	32.21767305	-103.74113281
15,100.00	90.20	359.68	12,502.36	2,546.01	565.44	443,528.00	724,478.43	32.21794793	-103.74113283
15,200.00	90.20	359.68	12,502.01	2,646.00	564.88	443,628.00	724,477.88	32.21822281	-103.74113285
15,300.00	90.20	359.68	12,501.66	2,746.00	564.32	443,728.00	724,477.32	32.21849768	-103.74113287
15,400.00	90.20	359.68	12,501.30	2,846.00	563.77	443,827.99	724,476.76	32.21877256	-103.74113288
15,500.00	90.20	359.68	12,500.95	2,946.00	563.21	443,927.99	724,476.21	32.21904744	-103.74113290
15,600.00	90.20	359.68	12,500.60	3,046.00	562.65	444,027.99	724,475.65	32.21932232	-103.74113292
15,700.00	90.20	359.68	12,500.25	3,145.99	562.10	444,127.99	724,475.09	32.21959720	-103.74113294
15,800.00	90.20	359.68	12,499.90	3,245.99	561.54	444,227.99	724,474.54	32.21987207	-103.74113296
15,900.00	90.20	359.68	12,499.55	3,345.99	560.98	444,327.98	724,473.98	32.22014695	-103.74113297
16,000.00	90.20	359.68	12,499.19	3,445.99	560.43	444,427.98	724,473.42	32.22042183	-103.74113299
16,100.00	90.20	359.68	12,498.84	3,545.99	559.87	444,527.98	724,472.87	32.22069671	-103.74113301
16,200.00	90.20	359.68	12,498.49	3,645.98	559.31	444,627.98	724,472.31	32.22097159	-103.74113303
16,300.00	90.20	359.68	12,498.14	3,745.98	558.76	444,727.97	724,471.75	32.22124646	-103.74113305
16,400.00	90.20	359.68	12,497.79	3,845.98	558.20	444,827.97	724,471.20	32.22152134	-103.74113306
16,500.00	90.20	359.68	12,497.43	3,945.98	557.64	444,927.97	724,470.64	32.22179622	-103.74113308
16,600.00	90.20	359.68	12,497.08	4,045.97	557.09	445,027.97	724,470.08	32.22207110	-103.74113310
16,700.00	90.20	359.68	12,496.73	4,145.97	556.53	445,127.96	724,469.53	32.22234598	-103.74113312
16,800.00	90.20	359.68	12,496.38	4,245.97	555.97	445,227.96	724,468.97	32.22262085	-103.74113314
16,900.00	90.20	359.68	12,496.03	4,345.97	555.42	445,327.96	724,468.41	32.22289573	-103.74113315
17,000.00	90.20	359.68	12,495.68	4,445.97	554.86	445,427.96	724,467.86	32.22317061	-103.74113317
17,100.00	90.20	359.68	12,495.32	4,545.96	554.30	445,527.95	724,467.30	32.22344549	-103.74113319
17,200.00	90.20	359.68	12,494.97	4,645.96	553.75	445,627.95	724,466.74	32.22372037	-103.74113321
17,300.00	90.20	359.68	12,494.62	4,745.96	553.19	445,727.95	724,466.19	32.22399524	-103.74113322
17,334.05	90.20	359.68	12,494.50	4,780.01	553.00	445,762.00	724,466.00	32.22408884	-103.74113323

PBHL/TD 17334.05 MD/12494.50 TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Double Diamond Fed 22 - hit/miss target - Shape - Point	0.00	0.00	11,900.00	-250.84	581.10	440,731.16	724,494.10	32.21025983	-103.74113201
Double Diamond Fed 22 - plan hits target center - Point	0.00	0.00	12,494.50	4,780.01	553.00	445,762.00	724,466.00	32.22408884	-103.74113323



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Company:</b>	Tap Rock Operating LLC	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site:</b>	Section 14-T24S-R31E	<b>North Reference:</b>	Grid
<b>Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
1,000.00	1,000.00	13 3/8" Casing @ 1000 TVD	13-3/8	17-1/2	
4,703.84	4,700.00	9 5/8" Casing @ 4700 TVD	9-5/8	12-1/4	
12,675.00	12,466.80	7" Casing @ 12675 MD	7	8-3/4	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,500.00	1,500.00	0.00	0.00	KOP Begin 1°/100' build	
1,800.00	1,799.86	2.03	7.58	Begin 3.00° tangent	
4,400.00	4,396.30	37.25	139.02	Begin 1°/100' drop	
4,700.00	4,696.16	39.28	146.61	Begin vertical hold	
8,303.84	8,300.00	39.28	146.61	Begin 1.5°/100' build	
8,979.54	8,972.19	6.18	196.18	Begin 10.14° tangent	
11,270.93	11,227.81	-217.74	531.53	Begin 1.5°/100' drop	
11,946.63	11,900.00	-250.84	581.10	Begin vertical hold	
11,975.04	11,928.41	-250.84	581.10	Begin 10°/100' build	
12,675.04	12,466.81	126.15	578.93	Begin 8°/100' build	
12,927.56	12,510.00	373.62	577.53	Begin 90.20° lateral	
17,334.05	12,494.50	4,780.01	553.00	PBHL/TD 17334.05 MD/12494.50 TVD	



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	rev1		
<b>Filter type:</b>	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
<b>Interpolation Method:</b>	MD Interval 100.00ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,933.45 ft	<b>Error Surface:</b>	Ellipsoid Separation
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	1/28/2018		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	8,300.00	rev1 (Original Hole)	GYRO-NS	OWSG Gyrocompass Gyro
8,300.00	17,334.05	rev1 (Original Hole)	MWD	OWSG MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Section 14-T24S-R31E						
Double Diamond 24S 21E 1414 Well No. 158H - Original	1,500.00	1,500.10	25.00	14.96	2.491	CC, ES
Double Diamond 24S 21E 1414 Well No. 158H - Original	10,810.83	10,836.07	119.94	61.98	2.069	SF
Double Diamond 24S 21E 1414 Well No. 224H - Original	1,623.80	1,625.10	22.87	11.93	2.091	CC
Double Diamond 24S 21E 1414 Well No. 224H - Original	1,700.00	1,701.09	23.22	11.75	2.024	ES, SF
Double Diamond 24S 21E 1414 Well No. 238H - Original	1,200.00	1,200.10	50.00	42.06	6.296	CC
Double Diamond 24S 21E 1414 Well No. 238H - Original	1,300.00	1,299.84	50.26	41.62	5.818	ES
Double Diamond 24S 21E 1414 Well No. 238H - Original	12,126.44	12,107.38	197.16	130.49	2.957	SF
Petrogulf BJT Federal Well No. 1H - Horizontal - Surveys	8,343.01	8,573.44	314.02	275.22	8.094	CC, ES, SF
Petrogulf BJT Federal Well No. 2H - Original Hole - Surv	8,341.89	8,480.57	458.37	402.14	8.151	CC, ES, SF

<b>Offset Design</b>													<b>Offset Site Error:</b>	0.00 ft
Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 158H - Original Hole - rev0													<b>Offset Well Error:</b>	0.00 ft
Survey Program: 0-GYRO-NS, 6100-MWD														
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>		<b>Distance</b>				<b>Minimum Separation</b>	<b>Separation Factor</b>	<b>Warning</b>				
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>	
0.00	0.00	0.10	0.10	0.00	0.00	-90.00	0.00	-25.00	25.00					
100.00	100.00	100.10	100.10	0.13	0.13	-90.00	0.00	-25.00	25.00	24.74	0.26	95.366		
200.00	200.00	200.10	200.10	0.48	0.48	-90.00	0.00	-25.00	25.00	24.04	0.96	26.034		
300.00	300.00	300.10	300.10	0.83	0.83	-90.00	0.00	-25.00	25.00	23.34	1.66	15.075		
400.00	400.00	400.10	400.10	1.18	1.18	-90.00	0.00	-25.00	25.00	22.64	2.36	10.609		
500.00	500.00	500.10	500.10	1.53	1.53	-90.00	0.00	-25.00	25.00	21.95	3.05	8.184		
600.00	600.00	600.10	600.10	1.88	1.89	-90.00	0.00	-25.00	25.00	21.25	3.75	6.662		
700.00	700.00	700.10	700.10	2.24	2.24	-90.00	0.00	-25.00	25.00	20.55	4.45	5.617		
800.00	800.00	800.10	800.10	2.59	2.59	-90.00	0.00	-25.00	25.00	19.85	5.15	4.855		
900.00	900.00	900.10	900.10	2.94	2.94	-90.00	0.00	-25.00	25.00	19.15	5.85	4.276		
1,000.00	1,000.00	1,000.10	1,000.10	3.29	3.29	-90.00	0.00	-25.00	25.00	18.45	6.55	3.820		
1,100.00	1,100.00	1,100.10	1,100.10	3.64	3.64	-90.00	0.00	-25.00	25.00	17.76	7.24	3.451		
1,200.00	1,200.00	1,200.10	1,200.10	3.99	3.99	-90.00	0.00	-25.00	25.00	17.06	7.94	3.148		
1,300.00	1,300.00	1,300.10	1,300.10	4.34	4.34	-90.00	0.00	-25.00	25.00	16.36	8.64	2.894		
1,400.00	1,400.00	1,400.10	1,400.10	4.69	4.69	-90.00	0.00	-25.00	25.00	15.66	9.34	2.677		
1,500.00	1,500.00	1,500.10	1,500.10	5.04	5.04	-90.00	0.00	-25.00	25.00	14.96	10.04	2.491	CC, ES	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 158H - Original Hole - rev0													Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 6100-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance			Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
1,600.00	1,599.99	1,600.09	1,600.09	5.39	5.39	-165.50	0.00	-25.00	25.84	15.11	10.73	2.408		
1,700.00	1,699.96	1,700.06	1,700.06	5.74	5.74	-166.82	0.00	-25.00	28.39	16.95	11.43	2.483		
1,800.00	1,799.86	1,800.04	1,799.96	6.10	6.09	-168.55	0.00	-25.00	32.65	20.52	12.13	2.691		
1,900.00	1,899.73	1,900.17	1,899.83	6.45	6.44	-170.13	0.00	-25.00	37.79	24.96	12.83	2.945		
2,000.00	1,999.59	2,000.31	1,999.69	6.81	6.79	-171.33	0.00	-25.00	42.96	29.43	13.53	3.175		
2,100.00	2,099.45	2,100.45	2,099.55	7.16	7.15	-172.26	0.00	-25.00	48.14	33.91	14.23	3.383		
2,200.00	2,199.31	2,200.59	2,199.41	7.52	7.50	-173.02	0.00	-25.00	53.33	38.40	14.93	3.572		
2,300.00	2,299.18	2,300.72	2,299.28	7.87	7.85	-173.64	0.00	-25.00	58.53	42.90	15.63	3.744		
2,400.00	2,399.04	2,400.86	2,399.14	8.23	8.20	-174.16	0.00	-25.00	63.73	47.40	16.33	3.902		
2,500.00	2,498.90	2,501.00	2,499.00	8.58	8.55	-174.61	0.00	-25.00	68.94	51.91	17.03	4.048		
2,600.00	2,598.77	2,601.13	2,598.87	8.94	8.90	-174.99	0.00	-25.00	74.15	56.42	17.73	4.182		
2,700.00	2,698.63	2,701.27	2,698.73	9.29	9.25	-175.32	0.00	-25.00	79.37	60.93	18.43	4.306		
2,800.00	2,798.49	2,801.41	2,798.59	9.64	9.60	-175.61	0.00	-25.00	84.58	65.45	19.13	4.421		
2,900.00	2,898.36	2,901.54	2,898.46	9.99	9.95	-175.86	0.00	-25.00	89.80	69.97	19.83	4.528		
3,000.00	2,998.22	3,001.68	2,998.32	10.35	10.31	-176.09	0.00	-25.00	95.02	74.49	20.54	4.627		
3,100.00	3,098.08	3,101.82	3,098.18	10.70	10.66	-176.29	0.00	-25.00	100.25	79.01	21.24	4.721		
3,200.00	3,197.94	3,201.96	3,198.04	11.05	11.01	-176.48	0.00	-25.00	105.47	83.53	21.94	4.808		
3,300.00	3,297.81	3,302.09	3,297.91	11.40	11.36	-176.64	0.00	-25.00	110.69	88.06	22.64	4.890		
3,400.00	3,397.67	3,402.23	3,397.77	11.76	11.71	-176.80	0.00	-25.00	115.92	92.58	23.34	4.967		
3,500.00	3,497.53	3,502.37	3,497.63	12.11	12.06	-176.93	0.00	-25.00	121.14	97.10	24.04	5.039		
3,600.00	3,597.40	3,602.50	3,597.50	12.46	12.41	-177.06	0.00	-25.00	126.37	101.63	24.74	5.108		
3,700.00	3,697.26	3,702.64	3,697.36	12.81	12.76	-177.18	0.00	-25.00	131.60	106.16	25.44	5.172		
3,800.00	3,797.12	3,802.78	3,797.22	13.16	13.11	-177.29	0.00	-25.00	136.83	110.68	26.14	5.234		
3,900.00	3,896.99	3,902.92	3,897.09	13.52	13.47	-177.39	0.00	-25.00	142.05	115.21	26.84	5.292		
4,000.00	3,996.85	4,003.05	3,996.95	13.87	13.82	-177.48	0.00	-25.00	147.28	119.74	27.55	5.347		
4,100.00	4,096.71	4,103.19	4,096.81	14.22	14.17	-177.57	0.00	-25.00	152.51	124.26	28.25	5.399		
4,200.00	4,196.57	4,203.33	4,196.67	14.57	14.52	-177.65	0.00	-25.00	157.74	128.79	28.95	5.449		
4,300.00	4,296.44	4,303.46	4,296.54	14.92	14.87	-177.72	0.00	-25.00	162.97	133.32	29.65	5.496		
4,400.00	4,396.30	4,403.60	4,396.40	15.27	15.22	-177.79	0.00	-25.00	168.20	137.85	30.35	5.542		
4,500.00	4,496.20	4,503.70	4,496.30	15.62	15.57	-177.85	0.00	-25.00	172.56	141.50	31.05	5.557		
4,600.00	4,596.17	4,603.73	4,596.27	15.97	15.92	-177.88	0.00	-25.00	175.17	143.42	31.75	5.517		
4,700.00	4,696.16	4,703.74	4,696.26	16.32	16.27	-102.89	0.00	-25.00	176.05	143.59	32.45	5.425		
4,800.00	4,796.16	4,803.74	4,796.26	16.66	16.62	-102.89	0.00	-25.00	176.05	142.89	33.15	5.311		
4,900.00	4,896.16	4,903.74	4,896.26	17.01	16.98	-102.89	0.00	-25.00	176.05	142.20	33.85	5.201		
5,000.00	4,996.16	5,003.74	4,996.26	17.36	17.33	-102.89	0.00	-25.00	176.05	141.50	34.55	5.096		
5,100.00	5,096.16	5,103.74	5,096.26	17.70	17.68	-102.89	0.00	-25.00	176.05	140.80	35.25	4.995		
5,200.00	5,196.16	5,203.74	5,196.26	18.05	18.03	-102.89	0.00	-25.00	176.05	140.10	35.95	4.898		
5,300.00	5,296.16	5,303.74	5,296.26	18.40	18.38	-102.89	0.00	-25.00	176.05	139.40	36.64	4.804		
5,400.00	5,396.16	5,403.74	5,396.26	18.74	18.73	-102.89	0.00	-25.00	176.05	138.70	37.34	4.714		
5,500.00	5,496.16	5,503.74	5,496.26	19.09	19.08	-102.89	0.00	-25.00	176.05	138.00	38.04	4.628		
5,600.00	5,596.16	5,603.74	5,596.26	19.44	19.43	-102.89	0.00	-25.00	176.05	137.30	38.74	4.544		
5,700.00	5,696.16	5,703.74	5,696.26	19.79	19.78	-102.89	0.00	-25.00	176.05	136.60	39.44	4.464		
5,800.00	5,796.16	5,803.74	5,796.26	20.13	20.13	-102.89	0.00	-25.00	176.05	135.91	40.14	4.386		
5,900.00	5,896.16	5,903.74	5,896.26	20.48	20.48	-102.89	0.00	-25.00	176.05	135.21	40.84	4.311		
6,000.00	5,996.16	6,003.74	5,996.26	20.83	20.83	-102.89	0.00	-25.00	176.05	134.51	41.54	4.238		
6,100.00	6,096.16	6,096.26	6,096.26	21.18	21.16	-102.89	0.00	-25.00	176.05	133.83	42.21	4.171		
6,200.00	6,196.16	6,200.12	6,200.10	21.53	21.35	-103.13	-0.45	-23.77	174.99	132.24	42.75	4.093		
6,300.00	6,296.16	6,303.97	6,303.87	21.87	21.35	-103.88	-1.86	-19.88	171.67	128.58	43.09	3.984		
6,400.00	6,396.16	6,407.52	6,407.19	22.22	21.37	-105.22	-4.23	-13.37	166.15	122.74	43.41	3.827		
6,500.00	6,496.16	6,510.63	6,509.84	22.57	21.39	-107.24	-7.54	-4.28	158.57	114.84	43.73	3.626		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 158H - Original Hole - rev0	Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 6100-MWD														Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
6,600.00	6,596.16	6,613.13	6,611.59	22.92	21.42	-110.13	-11.77	7.34	149.12	105.08	44.04	3.386			
6,700.00	6,696.16	6,714.90	6,712.25	23.27	21.45	-114.16	-16.89	21.41	138.15	93.78	44.37	3.114			
6,800.00	6,796.16	6,814.33	6,810.20	23.62	21.50	-119.67	-22.96	37.36	126.50	81.71	44.79	2.824			
6,900.00	6,896.16	6,912.71	6,907.00	23.97	21.56	-126.59	-29.78	53.59	116.35	71.06	45.28	2.569			
7,000.00	6,996.16	7,011.10	7,003.79	24.31	21.63	-134.66	-36.60	69.83	108.21	62.42	45.80	2.363			
7,100.00	7,096.16	7,109.49	7,100.59	24.66	21.70	-143.79	-43.42	86.06	102.59	56.28	46.31	2.215			
7,200.00	7,196.16	7,207.87	7,197.39	25.01	21.78	-153.66	-50.24	102.29	99.90	53.11	46.79	2.135			
7,235.10	7,231.26	7,242.40	7,231.36	25.14	21.82	-157.21	-52.63	107.99	99.70	52.75	46.95	2.124			
7,300.00	7,296.16	7,306.26	7,294.18	25.36	21.88	-163.75	-57.06	118.52	100.37	53.16	47.22	2.126			
7,400.00	7,396.16	7,404.64	7,390.98	25.71	21.98	-173.45	-63.88	134.76	103.98	56.38	47.59	2.185			
7,500.00	7,496.16	7,503.03	7,487.78	26.06	22.10	-177.72	-70.70	150.99	110.40	62.46	47.94	2.303			
7,600.00	7,596.16	7,601.41	7,584.58	26.41	22.22	-169.99	-77.52	167.22	119.18	70.90	48.28	2.469			
7,700.00	7,696.16	7,700.20	7,681.37	26.76	22.35	-163.40	-84.34	183.46	129.86	81.22	48.64	2.670			
7,800.00	7,796.16	7,798.18	7,778.17	27.11	22.48	-157.86	-91.16	199.69	141.99	92.98	49.01	2.897			
7,900.00	7,896.16	7,903.43	7,874.97	27.46	22.64	-153.21	-97.98	215.92	155.24	105.83	49.41	3.142			
8,000.00	7,996.16	7,994.95	7,971.76	27.81	22.79	-149.30	-104.80	232.16	169.35	119.54	49.81	3.400			
8,100.00	8,096.16	8,106.66	8,068.56	28.16	22.97	-146.00	-111.62	248.39	184.12	133.86	50.26	3.663			
8,200.00	8,196.16	8,208.27	8,165.36	28.51	23.15	-143.19	-118.44	264.62	199.40	148.70	50.70	3.933			
8,300.00	8,296.16	8,290.11	8,262.16	28.68	23.30	-140.79	-125.26	280.86	215.08	164.12	50.97	4.220			
8,400.00	8,396.15	8,388.70	8,359.15	28.70	23.48	-15.00	-132.10	297.12	229.94	178.84	51.10	4.500			
8,500.00	8,496.08	8,487.68	8,456.54	28.70	23.68	-13.34	-138.96	313.45	242.51	191.27	51.24	4.733			
8,600.00	8,595.87	8,586.99	8,554.24	28.72	23.88	-11.97	-145.84	329.84	252.71	201.31	51.39	4.917			
8,700.00	8,695.45	8,686.56	8,652.21	28.74	24.09	-10.83	-152.74	346.27	260.47	208.91	51.56	5.052			
8,800.00	8,794.77	8,786.32	8,750.35	28.76	24.31	-9.85	-159.66	362.73	265.76	214.02	51.74	5.137			
8,900.00	8,893.75	8,886.20	8,848.62	28.79	24.53	-9.01	-166.58	379.21	268.53	216.60	51.92	5.172			
9,000.00	8,992.32	8,986.14	8,946.95	28.83	24.76	-8.27	-173.51	395.70	268.82	216.70	52.12	5.158			
9,100.00	9,090.76	9,086.08	9,045.28	28.88	25.00	-7.55	-180.44	412.19	268.34	216.01	52.33	5.128			
9,200.00	9,189.20	9,186.03	9,143.61	28.93	25.24	-6.83	-187.37	428.68	267.89	215.35	52.54	5.098			
9,300.00	9,287.64	9,285.97	9,241.93	29.00	25.49	-6.11	-194.29	445.17	267.49	214.72	52.77	5.069			
9,400.00	9,386.08	9,385.91	9,340.26	29.06	25.75	-5.38	-201.22	461.66	267.14	214.13	53.00	5.040			
9,500.00	9,484.52	9,485.85	9,438.59	29.14	26.01	-4.66	-208.15	478.15	266.82	213.57	53.25	5.011			
9,600.00	9,582.96	9,585.79	9,536.92	29.22	26.28	-3.93	-215.08	494.64	266.55	213.05	53.50	4.982			
9,700.00	9,681.40	9,685.74	9,635.25	29.31	26.55	-3.20	-222.01	511.13	266.32	212.56	53.76	4.954			
9,800.00	9,779.84	9,786.95	9,734.84	29.41	26.83	-2.47	-229.00	527.79	266.10	212.03	54.06	4.922			
9,900.00	9,878.28	9,894.14	9,840.64	29.51	27.12	-1.78	-235.66	543.63	264.11	209.61	54.50	4.846			
10,000.00	9,976.72	10,001.17	9,946.72	29.62	27.40	-1.22	-241.16	556.71	259.41	204.50	54.91	4.725			
10,100.00	10,075.16	10,107.87	10,052.83	29.74	27.66	-0.77	-245.49	567.02	252.00	196.71	55.30	4.557			
10,200.00	10,173.60	10,214.08	10,158.72	29.86	27.90	-0.43	-248.66	574.56	241.89	186.22	55.67	4.345			
10,300.00	10,272.04	10,319.64	10,264.14	29.99	28.13	-0.21	-250.67	579.36	229.08	173.06	56.01	4.090			
10,400.00	10,370.48	10,424.39	10,368.87	30.13	28.35	-0.11	-251.56	581.47	213.59	157.25	56.34	3.791			
10,500.00	10,468.92	10,532.70	10,477.14	30.27	28.54	-0.29	-250.01	581.58	195.39	138.77	56.62	3.451			
10,600.00	10,567.36	10,647.14	10,589.65	30.42	28.72	-6.20	-230.18	581.47	168.88	112.23	56.65	2.981			
10,700.00	10,665.80	10,746.22	10,682.23	30.58	28.84	-20.42	-195.24	581.27	138.36	81.31	57.04	2.425			
10,800.00	10,764.23	10,828.17	10,753.34	30.74	28.91	-41.77	-154.63	581.03	120.16	62.20	57.96	2.073			
10,810.83	10,774.90	10,836.07	10,759.87	30.76	28.91	-44.22	-150.19	581.01	119.94	61.98	57.96	2.069 SF			
10,900.00	10,862.67	10,894.54	10,806.22	30.90	28.95	-62.80	-114.58	580.80	135.65	79.25	56.39	2.405			
11,000.00	10,961.11	10,948.04	10,845.24	31.08	28.98	-77.75	-78.02	580.59	184.78	131.09	53.70	3.441			
11,100.00	11,059.55	10,991.38	10,874.24	31.26	29.00	-87.21	-45.83	580.41	252.83	200.89	51.95	4.867			
11,200.00	11,157.99	11,026.82	10,896.10	31.44	29.00	-93.24	-17.94	580.25	330.65	279.73	50.92	6.494			
11,300.00	11,256.45	11,050.00	10,909.45	31.63	29.01	-97.19	-1.01	580.14	414.17	364.08	50.09	8.269			
11,400.00	11,355.23	11,081.31	10,926.24	31.82	29.02	-103.17	27.44	579.98	500.95	451.02	49.93	10.033			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 158H - Original Hole - rev0	Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 6100-MWD														Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
11,500.00	11,454.38	11,100.00	10,935.56	32.00	29.02	-107.49	43.63	579.89	590.00	540.36	49.63	11.887			
11,600.00	11,553.84	11,122.80	10,946.21	32.17	29.02	-111.80	63.79	579.77	680.48	630.89	49.60	13.720			
11,700.00	11,653.54	11,150.00	10,957.85	32.34	29.03	-115.86	88.37	579.63	772.16	722.44	49.72	15.530			
11,800.00	11,753.40	11,150.00	10,957.85	32.50	29.03	-119.03	88.37	579.63	864.33	814.82	49.50	17.460			
11,900.00	11,853.37	11,170.38	10,965.81	32.65	29.03	-122.48	107.13	579.52	957.06	907.40	49.66	19.271			
12,000.00	11,953.36	11,189.92	10,972.80	32.79	29.04	0.07	125.38	579.42	1,050.15	1,000.31	49.84	21.069			
12,100.00	12,052.38	11,200.00	10,976.18	32.90	29.04	0.05	134.87	579.37	1,138.82	1,088.96	49.86	22.841			
12,200.00	12,147.63	11,222.96	10,983.38	32.99	29.05	0.04	156.67	579.24	1,219.89	1,169.97	49.92	24.435			
12,300.00	12,236.22	11,250.00	10,990.96	33.05	29.06	0.03	182.63	579.09	1,291.94	1,241.97	49.96	25.858			
12,400.00	12,315.46	11,275.64	10,997.24	33.08	29.07	0.02	207.48	578.95	1,353.79	1,303.82	49.97	27.094			
12,500.00	12,382.94	11,300.00	11,002.37	33.10	29.09	0.02	231.30	578.81	1,404.57	1,354.61	49.96	28.111			
12,600.00	12,436.61	11,350.00	11,010.36	33.09	29.16	0.02	280.64	578.53	1,443.70	1,393.62	50.08	28.828			
12,700.00	12,474.94	11,367.54	11,012.34	33.08	29.19	0.02	298.07	578.43	1,470.20	1,420.09	50.11	29.342			
12,800.00	12,499.12	11,400.00	11,014.88	33.10	29.27	0.02	330.43	578.25	1,486.69	1,436.45	50.24	29.591			
12,900.00	12,509.57	11,441.22	11,016.00	33.43	29.40	0.02	371.63	578.01	1,493.89	1,443.44	50.45	29.612			
13,000.00	12,509.75	11,512.94	11,015.87	33.81	29.68	0.02	443.35	577.61	1,493.98	1,443.25	50.73	29.448			
13,100.00	12,509.40	11,612.94	11,015.68	34.27	30.18	0.02	543.34	577.04	1,493.81	1,442.73	51.08	29.242			
13,200.00	12,509.04	11,712.94	11,015.50	34.79	30.77	0.02	643.34	576.47	1,493.64	1,442.16	51.48	29.013			
13,300.00	12,508.69	11,812.94	11,015.32	35.38	31.45	0.02	743.34	575.90	1,493.47	1,441.55	51.92	28.763			
13,400.00	12,508.34	11,912.94	11,015.14	36.04	32.19	0.02	843.34	575.34	1,493.30	1,440.89	52.41	28.493			
13,500.00	12,507.99	12,012.94	11,014.96	36.75	33.01	0.02	943.34	574.77	1,493.13	1,440.20	52.94	28.206			
13,600.00	12,507.64	12,112.94	11,014.78	37.52	33.88	0.02	1,043.33	574.20	1,492.96	1,439.46	53.51	27.903			
13,700.00	12,507.28	12,212.94	11,014.60	38.34	34.80	0.01	1,143.33	573.63	1,492.79	1,438.68	54.11	27.587			
13,800.00	12,506.93	12,312.94	11,014.41	39.22	35.78	0.01	1,243.33	573.07	1,492.62	1,437.86	54.76	27.258			
13,900.00	12,506.58	12,412.94	11,014.23	40.14	36.81	0.01	1,343.33	572.50	1,492.45	1,437.01	55.44	26.920			
14,000.00	12,506.23	12,512.94	11,014.05	41.11	37.88	0.01	1,443.33	571.93	1,492.28	1,436.12	56.16	26.572			
14,100.00	12,505.88	12,612.94	11,013.87	42.12	38.99	0.01	1,543.32	571.36	1,492.11	1,435.20	56.91	26.217			
14,200.00	12,505.53	12,712.94	11,013.69	43.17	40.13	0.01	1,643.32	570.80	1,491.94	1,434.24	57.70	25.857			
14,300.00	12,505.17	12,812.94	11,013.51	44.26	41.31	0.01	1,743.32	570.23	1,491.77	1,433.25	58.52	25.494			
14,400.00	12,504.82	12,912.94	11,013.33	45.38	42.52	0.01	1,843.32	569.66	1,491.60	1,432.24	59.36	25.127			
14,500.00	12,504.47	13,012.94	11,013.14	46.53	43.76	0.01	1,943.32	569.10	1,491.43	1,431.19	60.24	24.759			
14,600.00	12,504.12	13,112.94	11,012.96	47.71	45.03	0.01	2,043.32	568.53	1,491.26	1,430.12	61.14	24.390			
14,700.00	12,503.77	13,212.94	11,012.78	48.92	46.32	0.01	2,143.31	567.96	1,491.09	1,429.01	62.07	24.022			
14,800.00	12,503.41	13,312.94	11,012.60	50.15	47.63	0.01	2,243.31	567.39	1,490.92	1,427.89	63.03	23.655			
14,900.00	12,503.06	13,412.94	11,012.42	51.41	48.96	0.01	2,343.31	566.83	1,490.75	1,426.74	64.01	23.290			
15,000.00	12,502.71	13,512.94	11,012.24	52.69	50.31	0.01	2,443.31	566.26	1,490.58	1,425.57	65.01	22.928			
15,100.00	12,502.36	13,612.94	11,012.06	53.99	51.68	0.01	2,543.31	565.69	1,490.41	1,424.37	66.03	22.570			
15,200.00	12,502.01	13,712.94	11,011.88	55.30	53.07	0.01	2,643.30	565.12	1,490.23	1,423.15	67.08	22.216			
15,300.00	12,501.66	13,812.94	11,011.69	56.64	54.47	0.01	2,743.30	564.56	1,490.06	1,421.92	68.15	21.866			
15,400.00	12,501.30	13,912.94	11,011.51	57.99	55.88	0.01	2,843.30	563.99	1,489.89	1,420.66	69.23	21.521			
15,500.00	12,500.95	14,012.94	11,011.33	59.36	57.30	0.01	2,943.30	563.42	1,489.72	1,419.39	70.33	21.181			
15,600.00	12,500.60	14,112.94	11,011.15	60.74	58.74	0.01	3,043.30	562.85	1,489.55	1,418.10	71.45	20.847			
15,700.00	12,500.25	14,212.94	11,010.97	62.13	60.19	0.01	3,143.29	562.29	1,489.38	1,416.79	72.59	20.518			
15,800.00	12,499.90	14,312.94	11,010.79	63.54	61.65	0.01	3,243.29	561.72	1,489.21	1,415.47	73.74	20.195			
15,900.00	12,499.55	14,412.94	11,010.61	64.95	63.12	0.01	3,343.29	561.15	1,489.04	1,414.13	74.91	19.878			
16,000.00	12,499.19	14,512.94	11,010.42	66.38	64.59	0.01	3,443.29	560.59	1,488.87	1,412.78	76.09	19.567			
16,100.00	12,498.84	14,612.94	11,010.24	67.82	66.08	0.01	3,543.29	560.02	1,488.70	1,411.42	77.28	19.263			
16,200.00	12,498.49	14,712.94	11,010.06	69.27	67.57	0.00	3,643.28	559.45	1,488.53	1,410.04	78.49	18.964			
16,300.00	12,498.14	14,812.94	11,009.88	70.73	69.07	0.00	3,743.28	558.88	1,488.36	1,408.65	79.71	18.671			
16,400.00	12,497.79	14,912.94	11,009.70	72.19	70.58	0.00	3,843.28	558.32	1,488.19	1,407.24	80.95	18.385			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 158H - Original Hole - rev0													Offset Well Error:	0.00 ft
Survey Program: 0-GYRO-NS, 6100-MWD														
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
16,500.00	12,497.43	15,012.94	11,009.52	73.67	72.09	0.00	3,943.28	557.75	1,488.02	1,405.83	82.19	18.104		
16,600.00	12,497.08	15,112.94	11,009.34	75.15	73.61	0.00	4,043.28	557.18	1,487.85	1,404.40	83.45	17.830		
16,700.00	12,496.73	15,212.94	11,009.16	76.64	75.14	0.00	4,143.27	556.61	1,487.68	1,402.97	84.71	17.562		
16,800.00	12,496.38	15,312.94	11,008.97	78.13	76.67	0.00	4,243.27	556.05	1,487.51	1,401.52	85.99	17.299		
16,900.00	12,496.03	15,412.94	11,008.79	79.63	78.20	0.00	4,343.27	555.48	1,487.34	1,400.07	87.27	17.043		
17,000.00	12,495.68	15,512.94	11,008.61	81.14	79.74	0.00	4,443.27	554.91	1,487.17	1,398.60	88.57	16.792		
17,100.00	12,495.32	15,612.94	11,008.43	82.65	81.29	0.00	4,543.27	554.34	1,487.00	1,397.13	89.87	16.546		
17,200.00	12,494.97	15,712.94	11,008.25	84.17	82.84	0.00	4,643.27	553.78	1,486.83	1,395.65	91.18	16.307		
17,300.00	12,494.62	15,812.94	11,008.07	85.69	84.39	0.00	4,743.26	553.21	1,486.66	1,394.16	92.50	16.072		
17,334.53	12,494.50	15,847.46	11,008.00	86.22	84.93	0.00	4,777.79	553.01	1,486.60	1,393.64	92.96	15.992		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



### Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 224H - Original Hole - rev1													Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 9000-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	1.30	1.30	0.00	0.00	90.00	0.00	25.00	25.00					
100.00	100.00	101.30	101.30	0.13	0.14	90.00	0.00	25.00	25.00	24.73	0.27	93.866		
200.00	200.00	201.30	201.30	0.48	0.49	90.00	0.00	25.00	25.00	24.04	0.96	25.921		
300.00	300.00	301.30	301.30	0.83	0.84	90.00	0.00	25.00	25.00	23.34	1.66	15.037		
400.00	400.00	401.30	401.30	1.18	1.19	90.00	0.00	25.00	25.00	22.64	2.36	10.590		
500.00	500.00	501.30	501.30	1.53	1.54	90.00	0.00	25.00	25.00	21.94	3.06	8.173		
600.00	600.00	601.30	601.30	1.88	1.89	90.00	0.00	25.00	25.00	21.24	3.76	6.654		
700.00	700.00	701.30	701.30	2.24	2.24	90.00	0.00	25.00	25.00	20.54	4.46	5.612		
800.00	800.00	801.30	801.30	2.59	2.59	90.00	0.00	25.00	25.00	19.85	5.15	4.851		
900.00	900.00	901.30	901.30	2.94	2.94	90.00	0.00	25.00	25.00	19.15	5.85	4.272		
1,000.00	1,000.00	1,001.30	1,001.30	3.29	3.29	90.00	0.00	25.00	25.00	18.45	6.55	3.817		
1,100.00	1,100.00	1,101.30	1,101.30	3.64	3.64	90.00	0.00	25.00	25.00	17.75	7.25	3.449		
1,200.00	1,200.00	1,201.30	1,201.30	3.99	3.99	90.00	0.00	25.00	25.00	17.05	7.95	3.146		
1,300.00	1,300.00	1,301.46	1,301.45	4.34	4.34	91.93	-0.83	24.66	24.68	16.03	8.64	2.855		
1,400.00	1,400.00	1,401.55	1,401.51	4.69	4.69	97.90	-3.29	23.67	23.90	14.55	9.35	2.557		
1,500.00	1,500.00	1,501.52	1,501.38	5.04	5.04	108.46	-7.35	22.03	23.22	13.16	10.06	2.309		
1,600.00	1,599.99	1,601.35	1,601.07	5.39	5.40	47.87	-12.20	20.07	22.89	12.12	10.77	2.126		
1,623.80	1,623.79	1,625.10	1,624.79	5.47	5.48	51.79	-13.35	19.60	22.87	11.93	10.94	2.091	CC	
1,700.00	1,699.96	1,701.09	1,700.68	5.74	5.75	65.56	-17.04	18.11	23.22	11.75	11.47	2.024	ES, SF	
1,800.00	1,799.86	1,800.72	1,800.17	6.10	6.11	85.16	-21.87	16.16	25.41	13.24	12.17	2.088		
1,900.00	1,899.73	1,900.28	1,899.59	6.45	6.46	101.87	-26.70	14.20	30.16	17.30	12.87	2.344		
2,000.00	1,999.59	2,000.16	1,999.02	6.81	6.82	113.37	-31.53	12.25	36.73	23.17	13.56	2.708		
2,100.00	2,099.45	2,100.60	2,098.44	7.16	7.17	121.18	-36.36	10.29	44.31	30.05	14.26	3.107		
2,200.00	2,199.31	2,201.04	2,197.87	7.52	7.53	126.65	-41.19	8.34	52.46	37.50	14.96	3.507		
2,300.00	2,299.18	2,301.47	2,297.29	7.87	7.89	130.62	-46.02	6.39	60.97	45.31	15.66	3.893		
2,400.00	2,399.04	2,401.91	2,396.72	8.23	8.24	133.60	-50.85	4.43	69.69	53.33	16.36	4.259		
2,500.00	2,498.90	2,502.35	2,496.14	8.58	8.60	135.92	-55.68	2.48	78.56	61.49	17.07	4.603		
2,600.00	2,598.77	2,602.79	2,595.57	8.94	8.95	137.77	-60.51	0.53	87.53	69.76	17.77	4.926		
2,700.00	2,698.63	2,703.23	2,694.99	9.29	9.30	139.27	-65.34	-1.43	96.57	78.10	18.47	5.228		
2,800.00	2,798.49	2,803.67	2,794.42	9.64	9.66	140.52	-70.18	-3.38	105.67	86.50	19.18	5.511		
2,900.00	2,898.36	2,904.11	2,893.84	9.99	10.01	141.57	-75.01	-5.33	114.81	94.94	19.88	5.776		
3,000.00	2,998.22	3,004.55	2,993.27	10.35	10.37	142.46	-79.84	-7.29	123.99	103.41	20.58	6.024		
3,100.00	3,098.08	3,104.99	3,092.69	10.70	10.72	143.23	-84.67	-9.24	133.19	111.90	21.29	6.257		
3,200.00	3,197.94	3,205.42	3,192.12	11.05	11.07	143.90	-89.50	-11.20	142.41	120.42	21.99	6.476		
3,300.00	3,297.81	3,294.14	3,291.54	11.40	11.38	144.49	-94.33	-13.15	151.64	128.99	22.65	6.695		
3,400.00	3,397.67	3,406.30	3,390.97	11.76	11.78	145.01	-99.16	-15.10	160.89	137.50	23.40	6.877		
3,500.00	3,497.53	3,506.74	3,490.39	12.11	12.13	145.47	-103.99	-17.06	170.16	146.06	24.10	7.061		
3,600.00	3,597.40	3,607.18	3,589.82	12.46	12.48	145.89	-108.82	-19.01	179.43	154.62	24.80	7.234		
3,700.00	3,697.26	3,707.62	3,689.24	12.81	12.84	146.26	-113.65	-20.96	188.71	163.20	25.51	7.398		
3,800.00	3,797.12	3,808.06	3,788.66	13.16	13.19	146.60	-118.48	-22.92	198.00	171.79	26.21	7.554		
3,900.00	3,896.99	3,908.50	3,888.09	13.52	13.54	146.91	-123.31	-24.87	207.29	180.38	26.91	7.702		
4,000.00	3,996.85	4,008.93	3,987.51	13.87	13.89	147.20	-128.14	-26.82	216.59	188.97	27.62	7.842		
4,100.00	4,096.71	4,109.37	4,086.94	14.22	14.25	147.46	-132.97	-28.78	225.89	197.57	28.32	7.976		
4,200.00	4,196.57	4,209.81	4,186.36	14.57	14.60	147.69	-137.80	-30.73	235.20	206.18	29.03	8.103		
4,300.00	4,296.44	4,289.75	4,285.79	14.92	14.88	147.92	-142.63	-32.69	244.52	214.86	29.66	8.245		
4,400.00	4,396.30	4,389.31	4,385.21	15.27	15.23	148.12	-147.46	-34.64	253.83	223.47	30.36	8.361		
4,500.00	4,496.20	4,492.90	4,488.69	15.62	15.59	148.32	-151.79	-36.39	261.74	230.65	31.09	8.419		
4,600.00	4,596.17	4,597.26	4,593.02	15.97	15.95	148.43	-154.41	-37.45	266.49	234.67	31.82	8.376		
4,700.00	4,696.16	4,701.79	4,697.54	16.32	16.31	-136.53	-155.26	-37.79	268.05	235.52	32.53	8.240		
4,706.82	4,702.99	4,708.92	4,704.67	16.34	16.34	-136.53	-155.26	-37.79	268.04	235.46	32.58	8.227		
4,800.00	4,796.16	4,801.71	4,797.46	16.66	16.66	-136.53	-155.26	-37.79	268.05	234.82	33.23	8.067		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design														Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 224H - Original Hole - rev1	Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 9000-MWD															Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance					Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning			
4,900.00	4,896.16	4,901.71	4,897.46	17.01	17.01	-136.53	-155.26	-37.79	268.05	234.12	33.93	7.901				
5,000.00	4,996.16	5,001.71	4,997.46	17.36	17.35	-136.53	-155.26	-37.79	268.05	233.43	34.62	7.742				
5,100.00	5,096.16	5,101.71	5,097.46	17.70	17.70	-136.53	-155.26	-37.79	268.05	232.73	35.32	7.589				
5,200.00	5,196.16	5,201.71	5,197.46	18.05	18.05	-136.53	-155.26	-37.79	268.05	232.03	36.02	7.442				
5,300.00	5,296.16	5,301.71	5,297.46	18.40	18.39	-136.53	-155.26	-37.79	268.05	231.33	36.72	7.300				
5,400.00	5,396.16	5,401.71	5,397.46	18.74	18.74	-136.53	-155.26	-37.79	268.05	230.63	37.42	7.164				
5,500.00	5,496.16	5,501.71	5,497.46	19.09	19.09	-136.53	-155.26	-37.79	268.05	229.93	38.11	7.033				
5,600.00	5,596.16	5,601.71	5,597.46	19.44	19.43	-136.53	-155.26	-37.79	268.05	229.24	38.81	6.906				
5,700.00	5,696.16	5,701.71	5,697.46	19.79	19.78	-136.53	-155.26	-37.79	268.05	228.54	39.51	6.784				
5,800.00	5,796.16	5,801.71	5,797.46	20.13	20.13	-136.53	-155.26	-37.79	268.05	227.84	40.21	6.666				
5,900.00	5,896.16	5,901.71	5,897.46	20.48	20.47	-136.53	-155.26	-37.79	268.05	227.14	40.91	6.552				
6,000.00	5,996.16	6,001.71	5,997.46	20.83	20.82	-136.53	-155.26	-37.79	268.05	226.44	41.61	6.442				
6,100.00	6,096.16	6,101.71	6,097.46	21.18	21.17	-136.53	-155.26	-37.79	268.05	225.74	42.31	6.336				
6,200.00	6,196.16	6,201.71	6,197.46	21.53	21.52	-136.53	-155.26	-37.79	268.05	225.04	43.00	6.233				
6,300.00	6,296.16	6,301.71	6,297.46	21.87	21.86	-136.53	-155.26	-37.79	268.05	224.35	43.70	6.133				
6,400.00	6,396.16	6,401.71	6,397.46	22.22	22.21	-136.53	-155.26	-37.79	268.05	223.65	44.40	6.037				
6,500.00	6,496.16	6,501.71	6,497.46	22.57	22.56	-136.53	-155.26	-37.79	268.05	222.95	45.10	5.943				
6,600.00	6,596.16	6,601.71	6,597.46	22.92	22.91	-136.53	-155.26	-37.79	268.05	222.25	45.80	5.853				
6,700.00	6,696.16	6,701.71	6,697.46	23.27	23.25	-136.53	-155.26	-37.79	268.05	221.55	46.50	5.765				
6,800.00	6,796.16	6,801.71	6,797.46	23.62	23.60	-136.53	-155.26	-37.79	268.05	220.85	47.20	5.679				
6,900.00	6,896.16	6,901.71	6,897.46	23.97	23.95	-136.53	-155.26	-37.79	268.05	220.15	47.90	5.596				
7,000.00	6,996.16	7,001.71	6,997.46	24.31	24.30	-136.53	-155.26	-37.79	268.05	219.45	48.60	5.516				
7,100.00	7,096.16	7,101.71	7,097.46	24.66	24.65	-136.53	-155.26	-37.79	268.05	218.75	49.30	5.437				
7,200.00	7,196.16	7,201.71	7,197.46	25.01	24.99	-136.53	-155.26	-37.79	268.05	218.05	50.00	5.361				
7,300.00	7,296.16	7,301.71	7,297.46	25.36	25.34	-136.53	-155.26	-37.79	268.05	217.35	50.70	5.287				
7,400.00	7,396.16	7,401.71	7,397.46	25.71	25.69	-136.53	-155.26	-37.79	268.05	216.66	51.39	5.216				
7,500.00	7,496.16	7,501.71	7,497.46	26.06	26.04	-136.53	-155.26	-37.79	268.05	215.96	52.09	5.146				
7,600.00	7,596.16	7,601.71	7,597.46	26.41	26.39	-136.53	-155.26	-37.79	268.05	215.26	52.79	5.077				
7,700.00	7,696.16	7,701.71	7,697.46	26.76	26.74	-136.53	-155.26	-37.79	268.05	214.56	53.49	5.011				
7,800.00	7,796.16	7,801.71	7,797.46	27.11	27.08	-136.53	-155.26	-37.79	268.05	213.86	54.19	4.946				
7,900.00	7,896.16	7,901.71	7,897.46	27.46	27.43	-136.53	-155.26	-37.79	268.05	213.16	54.89	4.883				
8,000.00	7,996.16	8,001.71	7,997.46	27.81	27.78	-136.53	-155.26	-37.79	268.05	212.46	55.59	4.822				
8,100.00	8,096.16	8,101.71	8,097.46	28.16	28.13	-136.53	-155.26	-37.79	268.05	211.76	56.29	4.762				
8,200.00	8,196.16	8,201.71	8,197.46	28.51	28.48	-136.53	-155.26	-37.79	268.05	211.06	56.99	4.703				
8,300.00	8,296.16	8,301.71	8,297.46	28.86	28.83	-136.53	-155.26	-37.79	268.05	210.35	57.52	4.660				
8,400.00	8,396.15	8,401.70	8,397.45	28.70	29.18	99.99	-155.26	-37.79	268.26	210.38	57.88	4.635				
8,500.00	8,496.08	8,501.63	8,497.38	28.70	29.53	100.78	-155.26	-37.79	268.95	210.71	58.24	4.618				
8,600.00	8,595.87	8,601.41	8,597.17	28.72	29.88	102.10	-155.26	-37.79	270.23	211.63	58.60	4.612				
8,700.00	8,695.45	8,701.00	8,696.75	28.74	30.23	103.92	-155.26	-37.79	272.27	213.31	58.97	4.617				
8,800.00	8,794.77	8,800.32	8,796.07	28.76	30.58	106.22	-155.26	-37.79	275.32	215.99	59.34	4.640				
8,900.00	8,893.75	8,900.71	8,895.05	28.79	30.93	108.94	-155.26	-37.79	279.67	219.95	59.72	4.683				
9,000.00	8,992.32	9,002.13	8,993.62	28.83	31.28	112.02	-155.26	-37.79	285.61	225.51	60.11	4.752				
9,100.00	9,090.76	9,103.69	9,092.06	28.88	31.45	115.17	-155.26	-37.79	292.75	232.43	60.32	4.853				
9,200.00	9,189.20	9,205.25	9,190.50	28.93	31.46	118.17	-155.26	-37.79	300.76	240.38	60.38	4.981				
9,300.00	9,287.64	9,306.81	9,288.94	29.00	31.46	121.01	-155.26	-37.79	309.55	249.11	60.44	5.122				
9,400.00	9,386.08	9,408.37	9,387.38	29.06	31.48	123.69	-155.26	-37.79	319.08	258.56	60.51	5.273				
9,500.00	9,484.52	9,509.93	9,485.82	29.14	31.49	126.21	-155.26	-37.79	329.27	268.67	60.59	5.434				
9,600.00	9,582.96	9,588.51	9,584.26	29.22	31.51	128.58	-155.26	-37.79	340.06	279.38	60.68	5.604				
9,700.00	9,681.40	9,686.95	9,682.70	29.31	31.53	130.81	-155.26	-37.79	351.41	290.63	60.78	5.782				
9,800.00	9,779.84	9,785.39	9,781.14	29.41	31.56	132.89	-155.26	-37.79	363.25	302.37	60.88	5.966				

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 224H - Original Hole - rev1													Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 9000-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
9,900.00	9,878.28	9,883.83	9,879.58	29.51	31.59	134.84	-155.26	-37.79	375.55	314.55	61.00	6.157		
10,000.00	9,976.72	9,982.27	9,978.02	29.62	31.63	136.67	-155.26	-37.79	388.26	327.14	61.12	6.352		
10,100.00	10,075.16	10,076.94	10,072.69	29.74	31.67	138.23	-155.90	-38.05	401.69	340.44	61.25	6.558		
10,200.00	10,173.60	10,170.59	10,166.29	29.86	31.71	139.41	-158.62	-39.15	416.53	355.15	61.38	6.786		
10,300.00	10,272.04	10,264.21	10,259.76	29.99	31.75	140.23	-163.46	-41.11	432.66	371.14	61.52	7.033		
10,400.00	10,370.48	10,362.14	10,357.45	30.13	31.80	140.87	-169.86	-43.70	449.54	387.86	61.68	7.288		
10,500.00	10,468.92	10,460.59	10,455.65	30.27	31.86	141.46	-176.30	-46.31	466.47	404.61	61.85	7.541		
10,600.00	10,567.36	10,559.03	10,553.85	30.42	31.91	142.01	-182.74	-48.91	483.44	421.41	62.03	7.793		
10,700.00	10,665.80	10,657.48	10,652.05	30.58	31.98	142.53	-189.18	-51.52	500.46	438.23	62.22	8.043		
10,800.00	10,764.23	10,755.92	10,750.25	30.74	32.04	143.01	-195.63	-54.13	517.51	455.09	62.42	8.290		
10,900.00	10,862.67	10,854.37	10,848.45	30.90	32.11	143.46	-202.07	-56.73	534.60	471.97	62.63	8.536		
11,000.00	10,961.11	10,952.81	10,946.65	31.08	32.19	143.88	-208.51	-59.34	551.71	488.87	62.84	8.779		
11,100.00	11,059.55	11,051.26	11,044.85	31.26	32.26	144.27	-214.95	-61.95	568.85	505.78	63.07	9.020		
11,200.00	11,157.99	11,149.71	11,143.05	31.44	32.35	144.65	-221.40	-64.55	586.02	522.72	63.30	9.258		
11,300.00	11,256.45	11,248.17	11,241.27	31.63	32.43	145.03	-227.84	-67.16	603.12	539.58	63.54	9.492		
11,400.00	11,355.23	11,346.93	11,339.78	31.82	32.52	145.39	-234.30	-69.78	618.65	554.86	63.79	9.699		
11,500.00	11,454.38	11,446.02	11,438.62	32.00	32.62	145.58	-240.79	-72.40	632.06	568.02	64.04	9.870		
11,600.00	11,553.84	11,545.89	11,538.24	32.17	32.72	145.62	-247.32	-75.04	643.31	579.02	64.30	10.006		
11,700.00	11,653.54	11,652.46	11,644.65	32.34	32.83	145.63	-252.71	-77.22	651.82	587.25	64.57	10.095		
11,800.00	11,753.40	11,759.35	11,751.50	32.50	32.94	145.71	-255.36	-78.29	657.09	592.26	64.83	10.136		
11,900.00	11,853.37	11,862.52	11,854.67	32.65	33.05	145.84	-255.64	-78.41	659.29	594.22	65.08	10.131		
12,000.00	11,953.36	11,962.56	11,954.70	32.79	33.15	-90.08	-255.04	-78.41	659.53	594.22	65.31	10.098		
12,100.00	12,052.38	12,062.71	12,053.83	32.90	33.24	-90.06	-241.75	-78.49	659.53	594.01	65.52	10.066		
12,200.00	12,147.63	12,162.80	12,149.10	32.99	33.34	-90.04	-211.44	-78.66	659.53	593.82	65.70	10.038		
12,300.00	12,236.22	12,262.85	12,237.60	33.05	33.44	-90.01	-165.06	-78.93	659.53	593.65	65.87	10.012		
12,350.31	12,277.41	12,313.16	12,278.71	33.06	33.49	-90.00	-136.08	-79.10	659.53	593.56	65.97	9.998		
12,400.00	12,315.46	12,362.85	12,316.67	33.08	33.55	-89.99	-104.04	-79.28	659.53	593.47	66.06	9.984		
12,500.00	12,382.94	12,462.80	12,383.90	33.10	33.70	-89.96	-30.26	-79.71	659.53	593.23	66.30	9.948		
12,600.00	12,436.61	12,562.70	12,437.29	33.09	33.90	-89.94	54.03	-80.19	659.53	592.92	66.61	9.901		
12,700.00	12,474.94	12,662.58	12,475.36	33.08	34.16	-89.92	146.24	-80.72	659.53	592.50	67.03	9.839		
12,800.00	12,499.12	12,762.46	12,499.33	33.10	34.48	-89.90	243.11	-81.28	659.53	591.96	67.57	9.780		
12,900.00	12,509.57	12,862.31	12,509.61	33.43	34.87	-89.89	342.35	-81.85	659.54	591.30	68.24	9.664		
13,000.00	12,509.75	12,962.27	12,509.75	33.81	35.33	-89.89	442.31	-82.41	659.55	590.50	69.05	9.551		
13,100.00	12,509.40	13,062.27	12,509.41	34.27	35.85	-89.89	542.30	-82.98	659.56	589.56	70.01	9.422		
13,200.00	12,509.04	13,162.27	12,509.07	34.79	36.44	-89.89	642.30	-83.55	659.57	588.47	71.10	9.277		
13,300.00	12,508.69	13,262.27	12,508.73	35.38	37.10	-89.89	742.30	-84.11	659.58	587.26	72.32	9.120		
13,400.00	12,508.34	13,362.27	12,508.39	36.04	37.81	-89.89	842.30	-84.68	659.59	585.91	73.68	8.952		
13,500.00	12,507.99	13,462.27	12,508.05	36.75	38.59	-89.89	942.30	-85.25	659.60	584.45	75.16	8.776		
13,600.00	12,507.64	13,562.27	12,507.71	37.52	39.41	-89.89	1,042.29	-85.82	659.61	582.87	76.75	8.595		
13,700.00	12,507.28	13,662.27	12,507.37	38.34	40.29	-89.89	1,142.29	-86.38	659.63	581.18	78.44	8.409		
13,800.00	12,506.93	13,762.27	12,507.03	39.22	41.22	-89.90	1,242.29	-86.95	659.64	579.40	80.24	8.221		
13,900.00	12,506.58	13,862.27	12,506.69	40.14	42.19	-89.90	1,342.29	-87.52	659.65	577.51	82.13	8.032		
14,000.00	12,506.23	13,962.27	12,506.35	41.11	43.20	-89.90	1,442.28	-88.09	659.66	575.55	84.11	7.843		
14,100.00	12,505.88	14,062.27	12,506.01	42.12	44.25	-89.90	1,542.28	-88.65	659.67	573.50	86.17	7.655		
14,200.00	12,505.53	14,162.27	12,505.67	43.17	45.34	-89.90	1,642.28	-89.22	659.68	571.37	88.31	7.470		
14,300.00	12,505.17	14,262.27	12,505.33	44.26	46.46	-89.90	1,742.28	-89.79	659.69	569.17	90.51	7.288		
14,400.00	12,504.82	14,362.27	12,504.99	45.38	47.61	-89.90	1,842.28	-90.36	659.70	566.91	92.79	7.110		
14,500.00	12,504.47	14,462.27	12,504.65	46.53	48.79	-89.90	1,942.27	-90.92	659.71	564.59	95.12	6.936		
14,600.00	12,504.12	14,562.27	12,504.31	47.71	50.00	-89.90	2,042.27	-91.49	659.72	562.21	97.51	6.766		
14,700.00	12,503.77	14,662.27	12,503.97	48.92	51.23	-89.90	2,142.27	-92.06	659.73	559.78	99.95	6.601		
14,800.00	12,503.41	14,762.27	12,503.62	50.15	52.49	-89.91	2,242.27	-92.62	659.74	557.30	102.44	6.440		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 224H - Original Hole - rev1													Offset Well Error:	0.00 ft
Survey Program: 0-GYRO-NS, 9000-MWD														
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
14,900.00	12,503.06	14,862.27	12,503.28	51.41	53.76	-89.91	2,342.26	-93.19	659.75	554.78	104.98	6.285		
15,000.00	12,502.71	14,962.27	12,502.94	52.69	55.06	-89.91	2,442.26	-93.76	659.76	552.21	107.55	6.134		
15,100.00	12,502.36	15,062.27	12,502.60	53.99	56.38	-89.91	2,542.26	-94.33	659.78	549.60	110.17	5.989		
15,200.00	12,502.01	15,162.27	12,502.26	55.30	57.71	-89.91	2,642.26	-94.89	659.79	546.96	112.82	5.848		
15,300.00	12,501.66	15,262.27	12,501.92	56.64	59.06	-89.91	2,742.26	-95.46	659.80	544.29	115.51	5.712		
15,400.00	12,501.30	15,362.27	12,501.58	57.99	60.42	-89.91	2,842.25	-96.03	659.81	541.58	118.23	5.581		
15,500.00	12,500.95	15,462.27	12,501.24	59.36	61.80	-89.91	2,942.25	-96.60	659.82	538.84	120.97	5.454		
15,600.00	12,500.60	15,562.27	12,500.90	60.74	63.19	-89.91	3,042.25	-97.16	659.83	536.08	123.75	5.332		
15,700.00	12,500.25	15,662.27	12,500.56	62.13	64.59	-89.91	3,142.25	-97.73	659.84	533.29	126.55	5.214		
15,800.00	12,499.90	15,762.27	12,500.22	63.54	66.01	-89.92	3,242.24	-98.30	659.85	530.48	129.37	5.100		
15,900.00	12,499.55	15,862.27	12,499.88	64.95	67.44	-89.92	3,342.24	-98.87	659.86	527.64	132.22	4.991		
16,000.00	12,499.19	15,962.27	12,499.54	66.38	68.87	-89.92	3,442.24	-99.43	659.87	524.79	135.08	4.885		
16,100.00	12,498.84	16,062.27	12,499.20	67.82	70.32	-89.92	3,542.24	-100.00	659.88	521.91	137.97	4.783		
16,200.00	12,498.49	16,162.27	12,498.86	69.27	71.77	-89.92	3,642.24	-100.57	659.89	519.02	140.88	4.684		
16,300.00	12,498.14	16,262.27	12,498.52	70.73	73.23	-89.92	3,742.23	-101.14	659.90	516.11	143.80	4.589		
16,400.00	12,497.79	16,362.27	12,498.18	72.19	74.71	-89.92	3,842.23	-101.70	659.91	513.18	146.74	4.497		
16,500.00	12,497.43	16,462.27	12,497.84	73.67	76.18	-89.92	3,942.23	-102.27	659.92	510.23	149.69	4.409		
16,600.00	12,497.08	16,562.27	12,497.50	75.15	77.67	-89.92	4,042.23	-102.84	659.94	507.28	152.66	4.323		
16,700.00	12,496.73	16,662.27	12,497.16	76.64	79.16	-89.92	4,142.23	-103.40	659.95	504.30	155.64	4.240		
16,800.00	12,496.38	16,762.27	12,496.82	78.13	80.66	-89.93	4,242.22	-103.97	659.96	501.32	158.64	4.160		
16,900.00	12,496.03	16,862.27	12,496.48	79.63	82.16	-89.93	4,342.22	-104.54	659.97	498.32	161.64	4.083		
17,000.00	12,495.68	16,962.27	12,496.14	81.14	83.67	-89.93	4,442.22	-105.11	659.98	495.32	164.66	4.008		
17,100.00	12,495.32	17,062.27	12,495.80	82.65	85.19	-89.93	4,542.22	-105.67	659.99	492.30	167.69	3.936		
17,200.00	12,494.97	17,162.27	12,495.46	84.17	86.71	-89.93	4,642.21	-106.24	660.00	489.27	170.73	3.866		
17,300.00	12,494.62	17,262.27	12,495.12	85.69	88.24	-89.93	4,742.21	-106.81	660.01	486.23	173.78	3.798		
17,334.53	12,494.50	17,296.80	12,495.00	86.22	88.76	-89.93	4,776.74	-107.00	660.01	485.18	174.83	3.775		



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 238H - Original Hole - rev1		Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 9500-MWD															Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
0.00	0.00	0.10	0.10	0.00	0.00	90.00	0.00	50.00	50.00	49.74	0.26	190.732				
100.00	100.00	100.10	100.10	0.13	0.13	90.00	0.00	50.00	50.00	49.04	0.96	52.068				
200.00	200.00	200.10	200.10	0.48	0.48	90.00	0.00	50.00	50.00	48.34	1.66	30.149				
300.00	300.00	300.10	300.10	0.83	0.83	90.00	0.00	50.00	50.00	47.64	2.36	21.218				
400.00	400.00	400.10	400.10	1.18	1.18	90.00	0.00	50.00	50.00	46.95	3.05	16.368				
500.00	500.00	500.10	500.10	1.53	1.53	90.00	0.00	50.00	50.00	46.25	3.75	13.323				
600.00	600.00	600.10	600.10	1.88	1.89	90.00	0.00	50.00	50.00	45.55	4.45	11.234				
700.00	700.00	700.10	700.10	2.24	2.24	90.00	0.00	50.00	50.00	44.85	5.15	9.711				
800.00	800.00	800.10	800.10	2.59	2.59	90.00	0.00	50.00	50.00	44.15	5.85	8.551				
900.00	900.00	900.10	900.10	2.94	2.94	90.00	0.00	50.00	50.00	43.45	6.55	7.639				
1,000.00	1,000.00	1,000.10	1,000.10	3.29	3.29	90.00	0.00	50.00	50.00	42.76	7.24	6.903				
1,100.00	1,100.00	1,100.10	1,100.10	3.64	3.64	90.00	0.00	50.00	50.00	42.06	7.94	6.296 CC				
1,200.00	1,200.00	1,200.10	1,200.10	3.99	3.99	90.00	0.00	50.00	50.00	41.62	8.64	5.818 ES				
1,300.00	1,300.00	1,299.84	1,299.83	4.34	4.34	90.95	-0.83	50.25	50.26	41.79	9.34	5.475				
1,400.00	1,400.00	1,399.51	1,399.47	4.69	4.68	93.73	-3.32	51.02	51.13	42.78	10.05	5.258				
1,500.00	1,500.00	1,500.94	1,498.92	5.04	5.04	98.12	-7.46	52.28	52.82	43.73	10.75	5.067				
1,600.00	1,599.99	1,601.08	1,598.65	5.39	5.39	28.46	-12.46	53.81	54.48	43.69	11.45	4.814				
1,700.00	1,699.96	1,701.25	1,698.34	5.74	5.75	34.44	-17.46	55.34	55.14	42.91	12.16	4.529				
1,800.00	1,799.86	1,801.47	1,797.98	6.10	6.11	41.39	-22.45	56.86	55.06	42.62	12.39	4.441				
1,834.13	1,833.94	1,832.57	1,831.97	6.22	6.22	43.96	-24.15	57.38	55.01	42.35	12.86	4.294				
1,900.00	1,899.73	1,901.74	1,897.58	6.45	6.47	48.92	-27.44	58.39	55.21	42.75	13.56	4.152				
2,000.00	1,999.59	2,002.00	1,997.18	6.81	6.82	56.29	-32.43	59.92	56.31	44.03	14.27	4.087				
2,100.00	2,099.45	2,102.27	2,096.78	7.16	7.18	63.27	-37.43	61.44	58.30	46.12	14.97	4.081				
2,200.00	2,199.31	2,202.53	2,196.38	7.52	7.54	69.70	-42.42	62.97	61.09	48.91	15.68	4.120				
2,300.00	2,299.18	2,302.79	2,295.98	7.87	7.89	75.50	-47.41	64.49	64.59	48.91	16.38	4.192				
2,400.00	2,399.04	2,403.06	2,395.57	8.23	8.24	80.67	-52.40	66.02	68.68	56.17	17.09	4.287				
2,500.00	2,498.90	2,503.32	2,495.17	8.58	8.60	85.22	-57.39	67.55	73.26	60.48	17.77	4.404				
2,600.00	2,598.77	2,596.41	2,594.77	8.94	8.93	89.22	-62.38	69.07	78.25	65.07	18.50	4.517				
2,700.00	2,698.63	2,703.85	2,694.37	9.29	9.31	92.72	-67.38	70.60	83.57	69.96	19.21	4.643				
2,800.00	2,798.49	2,804.12	2,793.97	9.64	9.66	95.80	-72.37	72.12	89.17	75.08	19.91	4.771				
2,900.00	2,898.36	2,904.38	2,893.57	9.99	10.01	98.51	-77.36	73.65	94.99	80.39	20.62	4.899				
3,000.00	2,998.22	3,004.65	2,993.17	10.35	10.36	100.90	-82.35	75.18	101.01	85.89	21.29	5.035				
3,100.00	3,098.08	3,095.09	3,092.77	10.70	10.68	103.01	-87.34	76.70	107.17	91.44	22.03	5.151				
3,200.00	3,197.94	3,205.17	3,192.37	11.05	11.07	104.90	-92.33	78.23	113.47	97.15	22.73	5.274				
3,300.00	3,297.81	3,305.44	3,291.97	11.40	11.42	106.59	-97.33	79.76	119.88	102.94	23.44	5.392				
3,400.00	3,397.67	3,405.70	3,391.56	11.76	11.77	108.10	-102.32	81.28	126.38	108.82	24.14	5.508				
3,500.00	3,497.53	3,505.97	3,491.16	12.11	12.13	109.47	-107.31	82.81	132.96	114.76	24.85	5.619				
3,600.00	3,597.40	3,606.23	3,590.76	12.46	12.48	110.70	-112.30	84.33	139.61	120.76	25.55	5.727				
3,700.00	3,697.26	3,706.50	3,690.36	12.81	12.83	111.83	-117.29	85.86	146.31	126.82	26.25	5.831				
3,800.00	3,797.12	3,806.76	3,789.96	13.16	13.18	112.85	-122.28	87.39	153.07	132.92	26.96	5.931				
3,900.00	3,896.99	3,907.02	3,889.56	13.52	13.53	113.79	-127.28	88.91	159.87	139.11	27.61	6.038				
4,000.00	3,996.85	3,992.71	3,989.16	13.87	13.83	114.65	-132.27	90.44	166.71	145.23	28.36	6.120				
4,100.00	4,096.71	4,107.55	4,088.76	14.22	14.24	115.44	-137.26	91.96	173.59	151.43	29.07	6.209				
4,200.00	4,196.57	4,207.82	4,188.36	14.57	14.59	116.17	-142.25	93.49	180.50	157.72	29.71	6.308				
4,300.00	4,296.44	4,291.92	4,287.96	14.92	14.88	116.85	-147.24	95.02	187.43	163.29	30.44	6.365				
4,400.00	4,396.30	4,394.43	4,390.36	15.27	15.24	117.61	-151.63	96.36	193.73	166.96	31.16	6.359				
4,500.00	4,496.20	4,497.35	4,493.24	15.62	15.60	118.41	-154.28	97.17	198.11	168.27	31.86	6.281				
4,600.00	4,596.17	4,600.39	4,596.28	15.97	15.96	118.97	-155.16	97.44	200.14	168.00	32.56	6.160				
4,700.00	4,696.16	4,700.37	4,696.26	16.32	16.30	-165.81	-155.16	97.44	200.56	167.31	33.25	6.031				
4,800.00	4,796.16	4,800.37	4,796.26	16.66	16.65	-165.81	-155.16	97.44	200.56	166.61	33.95	5.908				
4,900.00	4,896.16	4,900.37	4,896.26	17.01	17.00	-165.81	-155.16	97.44	200.56							

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 238H - Original Hole - rev1													Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 9500-MWD													Offset Well Error:	0.00 ft
Reference				Offset			Semi Major Axis		Distance				Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,000.00	4,996.16	5,000.37	4,996.26	17.36	17.34	-165.81	-155.16	97.44	200.56	165.91	34.65	5.789		
5,100.00	5,096.16	5,100.37	5,096.26	17.70	17.69	-165.81	-155.16	97.44	200.56	165.22	35.34	5.675		
5,200.00	5,196.16	5,200.37	5,196.26	18.05	18.04	-165.81	-155.16	97.44	200.56	164.52	36.04	5.565		
5,300.00	5,296.16	5,300.37	5,296.26	18.40	18.38	-165.81	-155.16	97.44	200.56	163.83	36.73	5.460		
5,400.00	5,396.16	5,400.37	5,396.26	18.74	18.73	-165.81	-155.16	97.44	200.56	163.13	37.43	5.358		
5,500.00	5,496.16	5,500.37	5,496.26	19.09	19.08	-165.81	-155.16	97.44	200.56	162.43	38.13	5.260		
5,600.00	5,596.16	5,600.37	5,596.26	19.44	19.42	-165.81	-155.16	97.44	200.56	161.74	38.82	5.166		
5,700.00	5,696.16	5,700.37	5,696.26	19.79	19.77	-165.81	-155.16	97.44	200.56	161.04	39.52	5.075		
5,800.00	5,796.16	5,800.37	5,796.26	20.13	20.12	-165.81	-155.16	97.44	200.56	160.34	40.22	4.987		
5,900.00	5,896.16	5,900.37	5,896.26	20.48	20.47	-165.81	-155.16	97.44	200.56	159.65	40.91	4.902		
6,000.00	5,996.16	6,000.37	5,996.26	20.83	20.81	-165.81	-155.16	97.44	200.56	158.95	41.61	4.820		
6,100.00	6,096.16	6,100.37	6,096.26	21.18	21.16	-165.81	-155.16	97.44	200.56	158.25	42.31	4.741		
6,200.00	6,196.16	6,200.37	6,196.26	21.53	21.51	-165.81	-155.16	97.44	200.56	157.55	43.00	4.664		
6,300.00	6,296.16	6,300.37	6,296.26	21.87	21.86	-165.81	-155.16	97.44	200.56	156.86	43.70	4.589		
6,400.00	6,396.16	6,400.37	6,396.26	22.22	22.20	-165.81	-155.16	97.44	200.56	156.16	44.40	4.517		
6,500.00	6,496.16	6,500.37	6,496.26	22.57	22.55	-165.81	-155.16	97.44	200.56	155.46	45.10	4.447		
6,600.00	6,596.16	6,600.37	6,596.26	22.92	22.90	-165.81	-155.16	97.44	200.56	154.77	45.79	4.380		
6,700.00	6,696.16	6,700.37	6,696.26	23.27	23.25	-165.81	-155.16	97.44	200.56	154.07	46.49	4.314		
6,800.00	6,796.16	6,800.37	6,796.26	23.62	23.59	-165.81	-155.16	97.44	200.56	153.37	47.19	4.250		
6,900.00	6,896.16	6,900.37	6,896.26	23.97	23.94	-165.81	-155.16	97.44	200.56	152.67	47.89	4.188		
7,000.00	6,996.16	7,000.37	6,996.26	24.31	24.29	-165.81	-155.16	97.44	200.56	151.97	48.58	4.128		
7,100.00	7,096.16	7,100.37	7,096.26	24.66	24.64	-165.81	-155.16	97.44	200.56	151.28	49.28	4.070		
7,200.00	7,196.16	7,200.37	7,196.26	25.01	24.99	-165.81	-155.16	97.44	200.56	150.58	49.98	4.013		
7,300.00	7,296.16	7,300.37	7,296.26	25.36	25.33	-165.81	-155.16	97.44	200.56	149.88	50.68	3.958		
7,400.00	7,396.16	7,400.37	7,396.26	25.71	25.68	-165.81	-155.16	97.44	200.56	149.18	51.38	3.904		
7,500.00	7,496.16	7,500.37	7,496.26	26.06	26.03	-165.81	-155.16	97.44	200.56	148.49	52.07	3.851		
7,600.00	7,596.16	7,600.37	7,596.26	26.41	26.38	-165.81	-155.16	97.44	200.56	147.79	52.77	3.800		
7,700.00	7,696.16	7,700.37	7,696.26	26.76	26.73	-165.81	-155.16	97.44	200.56	147.09	53.47	3.751		
7,800.00	7,796.16	7,800.37	7,796.26	27.11	27.08	-165.81	-155.16	97.44	200.56	146.39	54.17	3.703		
7,900.00	7,896.16	7,900.37	7,896.26	27.46	27.43	-165.81	-155.16	97.44	200.56	145.69	54.87	3.655		
8,000.00	7,996.16	8,000.37	7,996.26	27.81	27.77	-165.81	-155.16	97.44	200.56	145.00	55.56	3.609		
8,100.00	8,096.16	8,100.37	8,096.26	28.16	28.12	-165.81	-155.16	97.44	200.56	144.30	56.26	3.565		
8,200.00	8,196.16	8,200.37	8,196.26	28.51	28.47	-165.81	-155.16	97.44	200.56	143.60	56.96	3.521		
8,300.00	8,296.16	8,300.37	8,296.26	28.86	28.82	-165.81	-155.16	97.44	200.56	143.07	57.49	3.489		
8,400.00	8,396.15	8,400.36	8,396.25	28.70	29.17	70.79	-155.16	97.44	200.16	142.31	57.85	3.460		
8,500.00	8,496.08	8,500.29	8,496.18	28.70	29.52	71.85	-155.16	97.44	198.93	140.73	58.20	3.418		
8,600.00	8,595.87	8,600.08	8,595.97	28.72	29.87	73.65	-155.16	97.44	197.02	138.45	58.57	3.364		
8,700.00	8,695.45	8,700.34	8,695.55	28.74	30.22	76.23	-155.16	97.44	194.66	135.72	58.94	3.303		
8,800.00	8,794.77	8,801.02	8,794.87	28.76	30.58	79.62	-155.16	97.44	192.20	132.89	59.32	3.240		
8,900.00	8,893.75	8,902.04	8,893.85	28.79	30.93	83.84	-155.16	97.44	190.13	130.43	59.70	3.185		
9,000.00	8,992.32	9,003.46	8,992.42	28.83	31.29	88.84	-155.16	97.44	189.05	128.95	60.10	3.146		
9,022.00	9,013.98	9,018.19	9,014.08	28.84	31.34	90.00	-155.16	97.44	189.01	128.85	60.16	3.142		
9,100.00	9,090.76	9,105.02	9,090.86	28.88	31.64	94.09	-155.16	97.44	189.51	129.01	60.50	3.132		
9,200.00	9,189.20	9,206.59	9,189.30	28.93	32.00	99.27	-155.16	97.44	191.59	130.68	60.91	3.146		
9,300.00	9,287.64	9,308.15	9,287.74	29.00	32.35	104.29	-155.16	97.44	195.24	133.92	61.32	3.184		
9,400.00	9,386.08	9,409.71	9,386.18	29.06	32.69	109.11	-155.16	97.44	200.37	138.65	61.72	3.246		
9,500.00	9,484.52	9,488.73	9,484.62	29.14	32.83	113.66	-155.16	97.44	206.88	144.95	61.93	3.341		
9,600.00	9,582.96	9,590.49	9,586.37	29.22	32.86	117.86	-155.47	98.36	214.00	151.97	62.03	3.450		
9,700.00	9,681.40	9,693.62	9,689.43	29.31	32.87	121.35	-156.66	101.89	220.23	158.13	62.09	3.547		
9,800.00	9,779.84	9,797.43	9,793.03	29.41	32.88	124.18	-158.76	108.10	225.13	162.99	62.14	3.623		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 238H - Original Hole - rev1	Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS. 9500-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Tooface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
9,900.00	9,878.28	9,901.77	9,896.95	29.51	32.90	126.47	-161.77	117.03	228.40	166.22	62.18	3.673		
10,000.00	9,976.72	10,006.50	10,000.94	29.62	32.92	128.26	-165.71	128.69	229.79	167.60	62.20	3.695		
10,100.00	10,075.16	10,107.95	10,101.41	29.74	32.95	129.68	-170.19	141.99	229.69	167.40	62.28	3.688		
10,200.00	10,173.60	10,207.79	10,200.28	29.86	32.98	131.05	-174.66	155.21	229.60	167.19	62.41	3.679		
10,215.56	10,188.92	10,223.33	10,215.67	29.88	32.98	131.27	-175.35	157.27	229.60	167.17	62.43	3.678		
10,300.00	10,272.04	10,307.64	10,299.15	29.99	33.01	132.43	-179.12	168.43	229.64	167.10	62.54	3.672		
10,400.00	10,370.48	10,407.49	10,398.02	30.13	33.06	133.80	-183.58	181.65	229.82	167.13	62.69	3.666		
10,500.00	10,468.92	10,507.34	10,496.88	30.27	33.10	135.17	-188.04	194.87	230.13	167.29	62.84	3.662		
10,600.00	10,567.36	10,607.19	10,595.75	30.42	33.16	136.53	-192.50	208.09	230.57	167.57	63.00	3.660		
10,700.00	10,665.80	10,707.03	10,694.62	30.58	33.22	137.89	-196.97	221.31	231.14	167.98	63.17	3.659		
10,800.00	10,764.23	10,806.88	10,793.49	30.74	33.28	139.24	-201.43	234.53	231.85	168.51	63.34	3.660		
10,900.00	10,862.67	10,906.73	10,892.36	30.90	33.35	140.58	-205.89	247.75	232.68	169.15	63.52	3.663		
11,000.00	10,961.11	11,006.58	10,991.23	31.08	33.43	141.92	-210.35	260.97	233.63	169.92	63.71	3.667		
11,100.00	11,059.55	11,106.43	11,090.09	31.26	33.51	143.24	-214.81	274.19	234.72	170.81	63.91	3.673		
11,200.00	11,157.99	11,206.27	11,188.96	31.44	33.59	144.54	-219.28	287.41	235.92	171.81	64.11	3.680		
11,300.00	11,256.45	11,306.13	11,287.84	31.63	33.68	145.83	-223.74	300.63	237.16	172.84	64.32	3.687		
11,400.00	11,355.23	11,406.03	11,386.76	31.82	33.78	146.83	-228.20	313.85	236.87	172.33	64.54	3.670		
11,500.00	11,454.38	11,505.96	11,485.71	32.00	33.88	147.48	-232.67	327.08	234.44	169.68	64.77	3.620		
11,600.00	11,553.84	11,605.85	11,584.62	32.17	33.99	147.79	-237.13	340.31	229.83	164.83	65.01	3.536		
11,700.00	11,653.54	11,704.70	11,682.50	32.34	34.10	147.74	-241.54	353.36	223.05	157.78	65.27	3.417		
11,800.00	11,753.40	11,799.23	11,776.31	32.50	34.20	147.45	-245.26	364.40	215.61	150.00	65.61	3.286		
11,900.00	11,853.37	11,893.95	11,870.56	32.65	34.31	146.97	-248.25	373.25	208.34	142.40	65.94	3.159		
12,000.00	11,953.36	11,988.84	11,965.20	32.79	34.41	-89.87	-250.49	379.89	201.55	135.31	66.24	3.043		
12,100.00	12,052.38	12,082.94	12,059.18	32.90	34.51	-94.27	-251.97	384.27	197.41	130.84	66.58	2.965		
12,126.44	12,078.05	12,107.38	12,083.61	32.93	34.54	-96.08	-252.23	385.05	197.16	130.49	66.67	2.957 SF		
12,200.00	12,147.63	12,173.74	12,149.95	32.99	34.61	-102.12	-252.70	386.42	199.68	132.73	66.96	2.982		
12,300.00	12,236.22	12,260.12	12,236.32	33.05	34.69	-111.45	-252.80	386.73	214.43	147.09	67.34	3.184		
12,400.00	12,315.46	12,339.35	12,315.56	33.08	34.77	-119.86	-252.80	386.73	246.35	178.69	67.66	3.641		
12,500.00	12,382.94	12,453.33	12,429.02	33.10	34.89	-131.20	-244.19	388.93	292.99	225.48	67.51	4.340		
12,600.00	12,436.61	12,609.54	12,577.19	33.09	35.05	-143.36	-197.79	400.80	341.73	275.99	65.74	5.198		
12,700.00	12,474.94	12,824.98	12,749.36	33.08	35.29	-155.88	-74.38	432.38	383.30	321.65	61.65	6.217		
12,800.00	12,499.12	13,095.75	12,880.52	33.10	35.86	-167.29	152.40	490.39	402.49	344.87	57.62	6.985		
12,900.00	12,509.57	13,314.89	12,909.99	33.43	36.70	-175.19	361.94	544.00	402.05	344.66	57.38	7.006		
13,000.00	12,509.75	13,404.76	12,909.74	33.81	37.13	-177.84	449.97	562.02	400.20	342.72	57.47	6.963		
13,100.00	12,509.40	13,503.21	12,909.39	34.27	37.64	-179.61	547.68	573.83	399.91	342.18	57.73	6.927		
13,145.90	12,509.23	13,548.96	12,909.23	34.51	37.89	179.98	593.35	576.45	399.90	342.02	57.88	6.909		
13,200.00	12,509.04	13,603.08	12,909.04	34.79	38.20	179.83	647.46	577.20	399.90	341.84	58.06	6.888		
13,300.00	12,508.69	13,703.08	12,908.69	35.38	38.79	179.83	747.46	576.62	399.90	341.47	58.44	6.843		
13,400.00	12,508.34	13,803.08	12,908.34	36.04	39.45	179.84	847.46	576.03	399.90	341.05	58.85	6.795		
13,500.00	12,507.99	13,903.08	12,907.99	36.75	40.16	179.84	947.46	575.45	399.90	340.60	59.30	6.743		
13,600.00	12,507.64	14,003.08	12,907.63	37.52	40.93	179.84	1,047.45	574.86	399.90	340.10	59.80	6.688		
13,700.00	12,507.28	14,103.08	12,907.28	38.34	41.75	179.85	1,147.45	574.27	399.90	339.58	60.32	6.629		
13,800.00	12,506.93	14,203.08	12,906.93	39.22	42.62	179.85	1,247.45	573.69	399.90	339.01	60.89	6.568		
13,900.00	12,506.58	14,303.08	12,906.58	40.14	43.53	179.86	1,347.45	573.10	399.90	338.42	61.48	6.504		
14,000.00	12,506.23	14,403.08	12,906.23	41.11	44.49	179.86	1,447.44	572.52	399.90	337.78	62.12	6.438		
14,100.00	12,505.88	14,503.08	12,905.87	42.12	45.48	179.87	1,547.44	571.93	399.90	337.12	62.78	6.370		
14,200.00	12,505.53	14,603.08	12,905.52	43.17	46.51	179.87	1,647.44	571.35	399.90	336.42	63.48	6.300		
14,300.00	12,505.17	14,703.08	12,905.17	44.26	47.58	179.87	1,747.44	570.76	399.90	335.70	64.20	6.229		
14,400.00	12,504.82	14,803.08	12,904.82	45.38	48.68	179.88	1,847.43	570.18	399.90	334.94	64.96	6.156		
14,500.00	12,504.47	14,903.08	12,904.47	46.53	49.81	179.88	1,947.43	569.59	399.90	334.16	65.74	6.083		
14,600.00	12,504.12	15,003.08	12,904.12	47.71	50.97	179.89	2,047.43	569.00	399.90	333.34	66.56	6.008		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



## Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Section 14-T24S-R31E - Double Diamond 24S 21E 1414 Well No. 238H - Original Hole - rev1													Offset Site Error:	0.00 ft
Survey Program: 0-GYRO-NS, 9500-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
14,700.00	12,503.77	15,103.08	12,903.76	48.92	52.16	179.89	2,147.43	568.42	399.90	332.50	67.40	5.934		
14,800.00	12,503.41	15,203.08	12,903.41	50.15	53.37	179.89	2,247.42	567.83	399.90	331.64	68.26	5.858		
14,900.00	12,503.06	15,303.08	12,903.06	51.41	54.61	179.90	2,347.42	567.25	399.90	330.75	69.15	5.783		
15,000.00	12,502.71	15,403.08	12,902.71	52.69	55.86	179.90	2,447.42	566.66	399.90	329.84	70.06	5.708		
15,100.00	12,502.36	15,503.08	12,902.36	53.99	57.14	179.91	2,547.42	566.08	399.90	328.90	71.00	5.632		
15,200.00	12,502.01	15,603.08	12,902.00	55.30	58.43	179.91	2,647.42	565.49	399.90	327.94	71.96	5.557		
15,300.00	12,501.66	15,703.08	12,901.65	56.64	59.75	179.92	2,747.41	564.90	399.90	326.96	72.94	5.483		
15,400.00	12,501.30	15,803.08	12,901.30	57.99	61.08	179.92	2,847.41	564.32	399.90	325.96	73.94	5.409		
15,500.00	12,500.95	15,903.08	12,900.95	59.36	62.42	179.92	2,947.41	563.73	399.90	324.94	74.95	5.335		
15,600.00	12,500.60	16,003.08	12,900.60	60.74	63.78	179.93	3,047.41	563.15	399.90	323.91	75.99	5.262		
15,700.00	12,500.25	16,103.08	12,900.24	62.13	65.15	179.93	3,147.40	562.56	399.90	322.85	77.05	5.190		
15,800.00	12,499.90	16,203.08	12,899.89	63.54	66.54	179.94	3,247.40	561.98	399.90	321.78	78.12	5.119		
15,900.00	12,499.55	16,303.08	12,899.54	64.95	67.94	179.94	3,347.40	561.39	399.90	320.69	79.21	5.049		
16,000.00	12,499.19	16,403.08	12,899.19	66.38	69.35	179.94	3,447.40	560.81	399.90	319.59	80.31	4.979		
16,100.00	12,498.84	16,503.08	12,898.84	67.82	70.77	179.95	3,547.39	560.22	399.90	318.47	81.43	4.911		
16,200.00	12,498.49	16,603.08	12,898.49	69.27	72.20	179.95	3,647.39	559.63	399.90	317.33	82.57	4.843		
16,300.00	12,498.14	16,703.08	12,898.13	70.73	73.63	179.96	3,747.39	559.05	399.90	316.18	83.72	4.777		
16,400.00	12,497.79	16,803.08	12,897.78	72.19	75.08	179.96	3,847.39	558.46	399.90	315.02	84.88	4.711		
16,500.00	12,497.43	16,903.08	12,897.43	73.67	76.54	179.97	3,947.39	557.88	399.90	313.85	86.05	4.647		
16,600.00	12,497.08	17,003.08	12,897.08	75.15	78.00	179.97	4,047.38	557.29	399.90	312.66	87.24	4.584		
16,700.00	12,496.73	17,103.08	12,896.73	76.64	79.47	179.97	4,147.38	556.71	399.90	311.46	88.44	4.522		
16,800.00	12,496.38	17,203.08	12,896.37	78.13	80.95	179.98	4,247.38	556.12	399.90	310.25	89.65	4.461		
16,900.00	12,496.03	17,303.08	12,896.02	79.63	82.44	179.98	4,347.38	555.53	399.90	309.03	90.87	4.401		
17,000.00	12,495.68	17,403.08	12,895.67	81.14	83.93	179.99	4,447.37	554.95	399.90	307.80	92.10	4.342		
17,100.00	12,495.32	17,503.08	12,895.32	82.65	85.42	179.99	4,547.37	554.36	399.90	306.55	93.34	4.284		
17,200.00	12,494.97	17,603.08	12,894.97	84.17	86.93	179.99	4,647.37	553.78	399.90	305.30	94.60	4.227		
17,300.00	12,494.62	17,703.08	12,894.62	85.69	88.44	180.00	4,747.37	553.19	399.90	304.04	95.86	4.172		
17,334.53	12,494.50	17,737.61	12,894.49	86.22	88.96	-180.00	4,781.89	552.99	399.90	303.60	96.29	4.153		



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Section 14-T24S-R31E - Petrogulf BJT Federal Well No. 1H - Horizontal - Surveys Horizontal														Offset Site Error:	0.00 ft
Survey Program: 7833-MWD														Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Tooface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
5,900.00	5,896.16	7,700.00	7,699.24	20.48	0.00	56.22	348.55	608.97	1,889.23	1,879.15	10.08	187.425			
6,000.00	5,996.16	7,700.00	7,699.24	20.83	0.00	56.22	348.55	608.97	1,793.90	1,783.46	10.44	171.866			
6,100.00	6,096.16	7,700.00	7,699.24	21.18	0.00	56.22	348.55	608.97	1,699.11	1,688.29	10.82	156.968			
6,200.00	6,196.16	7,700.00	7,699.24	21.53	0.00	56.22	348.55	608.97	1,604.96	1,593.71	11.25	142.717			
6,300.00	6,296.16	7,700.00	7,699.24	21.87	0.00	56.22	348.55	608.97	1,511.55	1,499.85	11.71	129.126			
6,400.00	6,396.16	7,700.00	7,699.24	22.22	0.00	56.22	348.55	608.97	1,419.05	1,406.84	12.21	116.191			
6,500.00	6,496.16	7,700.00	7,699.24	22.57	0.00	56.22	348.55	608.97	1,327.63	1,314.85	12.78	103.889			
6,600.00	6,596.16	7,700.00	7,699.24	22.92	0.00	56.22	348.55	608.97	1,237.54	1,224.13	13.41	92.253			
6,700.00	6,696.16	7,700.00	7,699.24	23.27	0.00	56.22	348.55	608.97	1,149.09	1,134.96	14.14	81.288			
6,800.00	6,796.16	7,700.00	7,699.24	23.62	0.00	56.22	348.55	608.97	1,062.69	1,047.74	14.96	71.039			
6,900.00	6,896.16	7,700.00	7,699.24	23.97	0.00	56.22	348.55	608.97	978.89	962.98	15.91	61.537			
7,000.00	6,996.16	7,700.00	7,699.24	24.31	0.00	56.22	348.55	608.97	898.40	881.40	17.00	52.835			
7,100.00	7,096.16	7,700.00	7,699.24	24.66	0.00	56.22	348.55	608.97	822.21	803.95	18.27	45.011			
7,200.00	7,196.16	7,700.00	7,699.24	25.01	0.00	56.22	348.55	608.97	751.62	731.92	19.71	38.143			
7,300.00	7,296.16	7,700.00	7,699.24	25.36	0.00	56.22	348.55	608.97	688.36	667.06	21.30	32.311			
7,400.00	7,396.16	7,700.00	7,699.24	25.71	0.00	56.22	348.55	608.97	634.62	611.63	22.99	27.599			
7,500.00	7,496.16	7,700.00	7,699.24	26.06	0.00	56.22	348.55	608.97	593.00	568.38	24.62	24.084			
7,600.00	7,596.16	7,700.00	7,699.24	26.41	0.00	56.22	348.55	608.97	566.18	540.22	25.96	21.811			
7,700.00	7,696.16	7,700.00	7,699.24	26.76	0.00	56.22	348.55	608.97	556.29	529.54	26.75	20.793			
7,800.00	7,796.16	7,800.00	7,948.63	27.11	0.55	55.16	340.37	579.14	549.30	520.03	29.26	18.772			
7,900.00	7,896.16	8,143.80	8,117.45	27.46	2.50	48.87	340.19	491.12	509.18	478.42	30.76	16.552			
8,000.00	7,996.16	8,000.00	8,284.46	27.81	1.69	26.85	355.00	306.43	457.96	426.98	30.98	14.781			
8,100.00	8,096.16	8,500.29	8,323.70	28.16	8.50	11.35	354.65	209.89	395.39	360.86	34.53	11.451			
8,200.00	8,196.16	8,545.57	8,334.51	28.51	9.51	3.52	353.72	165.95	345.04	308.21	36.83	9.368			
8,300.00	8,296.16	8,567.12	8,337.90	28.88	10.00	-0.35	353.22	144.68	317.03	278.55	38.48	8.239			
8,343.01	8,339.17	8,573.44	8,338.74	28.69	10.15	-125.26	353.05	138.42	314.02	275.22	38.80	8.094 CC, ES, SF			
8,400.00	8,396.15	8,580.36	8,339.61	28.70	10.31	-126.45	352.86	131.56	319.28	280.44	38.84	8.221			
8,500.00	8,496.08	8,589.06	8,340.64	28.70	10.51	-127.61	352.59	122.92	352.30	314.33	37.97	9.279			
8,600.00	8,595.87	8,594.42	8,341.24	28.72	10.63	-127.77	352.41	117.60	408.88	372.32	36.56	11.184			
8,700.00	8,695.45	8,597.88	8,341.61	28.74	10.71	-127.18	352.29	114.16	480.83	445.55	35.28	13.629			
8,800.00	8,794.77	8,599.11	8,341.74	28.76	10.74	-125.71	352.24	112.94	562.29	527.95	34.33	16.376			
8,900.00	8,893.75	8,598.19	8,341.64	28.79	10.72	-123.30	352.28	113.85	649.64	615.94	33.70	19.276			
9,000.00	8,992.32	8,595.37	8,341.34	28.83	10.65	-120.53	352.37	116.66	740.75	707.44	33.31	22.236			
9,100.00	9,090.76	8,595.00	8,341.30	28.88	10.65	-120.46	352.39	117.02	834.04	800.94	33.10	25.195			
9,200.00	9,189.20	8,595.00	8,341.30	28.93	10.65	-120.46	352.39	117.02	928.73	895.71	33.01	28.133			
9,300.00	9,287.64	8,589.37	8,340.68	29.00	10.52	-119.32	352.58	122.61	1,024.39	991.41	32.98	31.059			
9,400.00	9,386.08	8,587.80	8,340.50	29.06	10.48	-119.01	352.63	124.17	1,120.83	1,087.79	33.03	33.931			
9,500.00	9,484.52	8,586.39	8,340.33	29.14	10.45	-118.73	352.67	125.57	1,217.83	1,184.70	33.13	36.759			
9,600.00	9,582.96	8,585.10	8,340.18	29.22	10.42	-118.47	352.71	126.85	1,315.28	1,282.02	33.26	39.540			
9,700.00	9,681.40	8,583.92	8,340.04	29.31	10.39	-118.23	352.75	128.02	1,413.09	1,379.66	33.43	42.272			
9,800.00	9,779.84	8,582.85	8,339.91	29.41	10.37	-118.02	352.78	129.09	1,511.18	1,477.56	33.62	44.954			
9,900.00	9,878.28	8,581.86	8,339.79	29.51	10.34	-117.82	352.81	130.07	1,609.50	1,575.68	33.82	47.586			
10,000.00	9,976.72	8,580.94	8,339.68	29.62	10.32	-117.64	352.84	130.98	1,708.02	1,673.97	34.04	50.170			
10,100.00	10,075.16	8,580.10	8,339.58	29.74	10.30	-117.47	352.86	131.82	1,806.70	1,772.41	34.28	52.704			
10,200.00	10,173.60	8,579.31	8,339.48	29.86	10.28	-117.31	352.89	132.59	1,905.51	1,870.98	34.53	55.186			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Section 14-T24S-R31E - Petrogulf BJT Federal Well No. 2H - Original Hole - Surveys Original Hole													Offset Site Error:	0.00 ft
Survey Program: 200-GYRO-NS, 7746-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.00	0.00	0.00	0.00	0.00	0.00	58.23	357.93	578.05	680.00					
100.00	100.00	89.42	89.42	0.13	0.14	58.23	357.88	577.98	679.81	679.54	0.27	2,511.327		
200.00	200.00	190.93	190.93	0.48	0.30	58.24	357.70	577.73	679.51	678.73	0.78	872.754		
300.00	300.00	290.54	290.54	0.83	0.63	58.24	357.42	577.44	679.11	677.65	1.46	465.359		
400.00	400.00	389.97	389.97	1.18	0.98	58.26	357.04	577.30	678.79	676.63	2.16	314.692		
500.00	500.00	489.16	489.16	1.53	1.32	58.28	356.77	577.21	678.57	675.72	2.85	237.869		
600.00	600.00	588.32	588.32	1.88	1.67	58.26	356.89	577.03	678.48	674.93	3.55	191.216		
625.70	625.70	613.80	613.80	1.97	1.76	58.25	356.98	576.97	678.47	674.75	3.73	182.044		
700.00	700.00	686.95	686.95	2.24	2.01	58.24	357.19	576.92	678.54	674.30	4.24	159.997		
800.00	800.00	785.51	785.51	2.59	2.36	58.23	357.37	577.13	678.82	673.89	4.93	137.591		
900.00	900.00	886.35	886.34	2.94	2.71	58.25	357.39	577.52	679.16	673.53	5.63	120.534		
1,000.00	1,000.00	987.58	987.57	3.29	3.06	58.28	357.19	577.85	679.33	672.99	6.34	107.198		
1,100.00	1,100.00	1,089.18	1,089.18	3.64	3.42	58.31	356.85	578.01	679.29	672.25	7.04	96.471		
1,200.00	1,200.00	1,190.84	1,190.83	3.99	3.77	58.33	356.53	577.88	679.01	671.27	7.75	87.660		
1,281.58	1,281.58	1,269.69	1,269.68	4.27	4.05	58.34	356.26	577.82	678.82	670.52	8.31	81.721		
1,300.00	1,300.00	1,287.38	1,287.37	4.34	4.11	58.35	356.20	577.87	678.83	670.40	8.43	80.500		
1,400.00	1,400.00	1,383.40	1,383.39	4.69	4.44	58.41	355.80	578.57	679.23	670.12	9.12	74.497		
1,500.00	1,500.00	1,482.60	1,482.58	5.04	4.79	58.50	355.34	579.78	680.03	670.21	9.81	69.293		
1,600.00	1,599.99	1,582.48	1,582.45	5.39	5.14	-16.44	354.90	581.01	680.01	669.50	10.51	64.685		
1,700.00	1,699.96	1,680.32	1,680.28	5.74	5.49	-16.43	354.59	582.30	678.46	667.26	11.20	60.550		
1,800.00	1,799.86	1,777.70	1,777.65	6.10	5.83	-16.47	354.62	583.81	675.61	663.72	11.90	56.795		
1,900.00	1,899.73	1,872.89	1,872.83	6.45	6.16	-16.53	354.94	585.66	672.43	659.86	12.58	53.460		
2,000.00	1,999.59	1,967.48	1,967.37	6.81	6.50	-16.58	355.49	588.25	670.05	656.79	13.26	50.539		
2,100.00	2,099.45	2,064.42	2,064.26	7.16	6.84	-16.61	356.30	591.53	668.35	654.40	13.95	47.920		
2,200.00	2,199.31	2,162.60	2,162.37	7.52	7.19	-16.66	357.41	595.01	666.95	652.31	14.64	45.554		
2,300.00	2,299.18	2,264.62	2,264.32	7.87	7.55	-16.73	358.79	598.61	665.65	650.30	15.35	43.364		
2,400.00	2,399.04	2,368.99	2,368.63	8.23	7.92	-16.82	360.05	601.66	663.76	647.69	16.07	41.307		
2,500.00	2,498.90	2,476.09	2,475.70	8.58	8.30	-16.96	361.28	603.81	661.06	644.26	16.80	39.357		
2,600.00	2,598.77	2,584.23	2,583.83	8.94	8.67	-17.19	362.81	604.23	657.14	639.61	17.53	37.495		
2,700.00	2,698.63	2,685.02	2,684.61	9.29	9.02	-17.45	364.14	603.77	652.46	634.23	18.23	35.791		
2,800.00	2,798.49	2,784.61	2,784.20	9.64	9.37	-17.63	364.67	603.84	647.81	628.88	18.93	34.222		
2,900.00	2,898.36	2,883.80	2,883.38	9.99	9.71	-17.73	364.58	604.39	643.24	623.61	19.63	32.772		
3,000.00	2,998.22	2,982.92	2,982.50	10.35	10.06	-17.80	364.16	605.29	638.79	618.47	20.33	31.427		
3,100.00	3,098.08	3,084.67	3,084.24	10.70	10.41	-17.85	363.49	606.31	634.30	613.27	21.03	30.158		
3,200.00	3,197.94	3,186.93	3,186.50	11.05	10.77	-17.91	362.74	606.94	629.43	607.69	21.74	28.952		
3,300.00	3,297.81	3,284.70	3,284.27	11.40	11.11	-17.98	362.12	607.39	624.50	602.07	22.43	27.837		
3,400.00	3,397.67	3,381.86	3,381.42	11.76	11.45	-18.08	361.94	608.07	620.01	596.88	23.13	26.809		
3,500.00	3,497.53	3,481.38	3,480.94	12.11	11.80	-18.21	362.15	608.85	615.80	591.97	23.83	25.845		
3,600.00	3,597.40	3,581.42	3,580.97	12.46	12.14	-18.38	362.71	609.38	611.58	587.05	24.53	24.934		
3,700.00	3,697.26	3,679.98	3,679.54	12.81	12.49	-18.57	363.50	609.83	607.44	582.22	25.23	24.081		
3,800.00	3,797.12	3,778.24	3,777.79	13.16	12.83	-18.75	364.35	610.56	603.58	577.65	25.92	23.285		
3,900.00	3,896.99	3,875.82	3,875.35	13.52	13.17	-18.90	365.00	611.78	600.04	573.42	26.62	22.545		
4,000.00	3,996.85	3,973.24	3,972.75	13.87	13.51	-18.94	364.98	613.95	596.92	569.61	27.31	21.858		
4,100.00	4,096.71	4,079.44	4,078.92	14.22	13.88	-18.90	364.14	616.70	593.68	565.65	28.03	21.179		
4,200.00	4,196.57	4,188.84	4,188.29	14.57	14.26	-18.86	362.36	618.14	588.92	560.16	28.76	20.477		
4,300.00	4,296.44	4,286.08	4,285.51	14.92	14.60	-18.82	360.44	618.85	583.47	554.02	29.45	19.810		
4,400.00	4,396.30	4,382.01	4,381.41	15.27	14.94	-18.78	358.88	620.09	578.69	548.55	30.14	19.198		
4,500.00	4,496.20	4,477.95	4,477.34	15.62	15.27	-18.72	357.75	621.84	575.42	544.59	30.83	18.662		
4,589.12	4,585.29	4,563.50	4,562.86	15.93	15.57	-18.64	357.21	623.77	574.49	543.04	31.45	18.269		
4,600.00	4,596.17	4,573.94	4,573.30	15.97	15.61	-18.63	357.17	624.03	574.50	542.98	31.52	18.226		
4,700.00	4,696.16	4,674.19	4,673.51	16.32	15.96	56.50	356.96	626.56	575.66	543.44	32.22	17.866		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Section 14-T24S-R31E - Petrogulf BJT Federal Well No. 2H - Original Hole - Surveys Original Hole													Offset Site Error:	0.00 ft
Survey Program: 200-GYRO-NS, 7746-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance				Minimum Separation		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,800.00	4,796.16	4,776.01	4,775.30	16.66	16.32	56.66	356.56	628.91	577.37	544.45	32.93	17.535		
4,900.00	4,896.16	4,879.87	4,879.14	17.01	16.68	56.84	355.81	630.96	578.63	545.00	33.64	17.202		
5,000.00	4,996.16	4,984.35	4,983.60	17.36	17.05	57.04	354.36	632.53	579.13	544.78	34.35	16.860		
5,100.00	5,096.16	5,085.75	5,084.98	17.70	17.40	57.23	352.69	633.56	579.09	544.04	35.05	16.521		
5,200.00	5,196.16	5,186.63	5,185.85	18.05	17.75	57.36	351.52	634.07	578.89	543.14	35.75	16.192		
5,300.00	5,296.16	5,288.33	5,287.54	18.40	18.11	57.46	350.47	634.24	578.48	542.03	36.45	15.869		
5,400.00	5,396.16	5,390.14	5,389.34	18.74	18.47	57.59	348.97	634.33	577.76	540.60	37.16	15.550		
5,500.00	5,496.16	5,488.34	5,487.53	19.09	18.81	57.71	347.52	634.37	577.00	539.16	37.85	15.245		
5,600.00	5,596.16	5,586.16	5,585.35	19.44	19.15	57.78	346.70	634.45	576.63	538.08	38.54	14.961		
5,700.00	5,696.16	5,685.52	5,684.71	19.79	19.50	57.82	346.35	634.54	576.51	537.27	39.24	14.692		
5,800.00	5,796.16	5,785.13	5,784.32	20.13	19.85	57.83	346.21	634.57	576.47	536.53	39.94	14.435		
5,900.00	5,896.16	5,886.07	5,885.26	20.48	20.20	57.83	346.20	634.49	576.39	535.76	40.64	14.184		
6,000.00	5,996.16	5,987.24	5,986.43	20.83	20.55	57.82	346.15	634.19	576.12	534.78	41.34	13.937		
6,100.00	6,096.16	6,087.47	6,086.66	21.18	20.90	57.80	346.05	633.77	575.71	533.68	42.04	13.696		
6,200.00	6,196.16	6,187.57	6,186.76	21.53	21.24	57.79	345.88	633.38	575.29	532.55	42.73	13.462		
6,300.00	6,296.16	6,287.47	6,286.66	21.87	21.59	57.79	345.70	632.99	574.86	531.43	43.43	13.236		
6,400.00	6,396.16	6,387.35	6,386.53	22.22	21.94	57.78	345.61	632.57	574.46	530.33	44.13	13.018		
6,500.00	6,496.16	6,488.54	6,487.73	22.57	22.29	57.76	345.49	632.06	573.97	529.14	44.83	12.803		
6,600.00	6,596.16	6,589.93	6,589.11	22.92	22.64	57.75	345.19	631.38	573.25	527.72	45.53	12.590		
6,700.00	6,696.16	6,688.79	6,687.97	23.27	22.99	57.74	344.87	630.68	572.48	526.25	46.23	12.384		
6,800.00	6,796.16	6,787.38	6,786.56	23.62	23.33	57.72	344.75	630.15	571.95	525.03	46.92	12.190		
6,900.00	6,896.16	6,887.26	6,886.43	23.97	23.68	57.70	344.74	629.71	571.58	523.96	47.62	12.003		
7,000.00	6,996.16	6,987.32	6,986.50	24.31	24.03	57.68	344.70	629.28	571.19	522.87	48.32	11.821		
7,100.00	7,096.16	7,094.50	7,093.67	24.66	24.40	57.66	344.30	628.33	570.25	521.22	49.03	11.631		
7,200.00	7,196.16	7,202.67	7,201.81	25.01	24.78	57.65	343.00	626.12	567.88	518.15	49.73	11.418		
7,300.00	7,296.16	7,302.40	7,301.49	25.36	25.13	57.64	341.44	623.51	564.83	514.40	50.43	11.200		
7,400.00	7,396.16	7,402.34	7,401.38	25.71	25.48	57.63	339.94	620.85	561.78	510.65	51.13	10.987		
7,500.00	7,496.16	7,500.93	7,499.94	26.06	25.82	57.63	338.41	618.41	558.86	507.03	51.83	10.783		
7,600.00	7,596.16	7,599.57	7,598.54	26.41	26.17	57.66	336.70	616.35	556.17	503.65	52.53	10.589		
7,700.00	7,696.16	7,703.28	7,702.20	26.76	26.53	57.76	334.27	614.33	553.27	500.04	53.22	10.395		
7,800.00	7,796.16	7,803.83	7,802.69	27.11	26.60	57.85	331.83	612.15	550.14	496.50	53.64	10.256		
7,900.00	7,896.16	7,905.48	7,904.27	27.46	26.61	57.80	330.41	608.99	546.76	492.77	53.99	10.127		
8,000.00	7,996.16	8,000.00	8,103.20	27.81	26.62	52.56	357.00	561.57	535.99	482.84	53.15	10.084		
8,100.00	8,096.16	8,315.82	8,254.54	28.16	26.90	38.43	411.36	441.87	504.60	452.34	52.26	9.655		
8,200.00	8,196.16	8,395.59	8,293.87	28.51	27.16	30.10	438.94	378.31	474.79	420.46	54.33	8.739		
8,300.00	8,296.16	8,459.19	8,318.99	28.88	27.45	22.84	461.97	324.64	459.96	404.00	55.96	8.219		
8,341.89	8,338.05	8,480.57	8,327.27	28.69	27.56	-103.38	468.92	306.20	458.37	402.14	56.23	8.151	CC, ES, SF	
8,400.00	8,396.15	8,497.94	8,333.82	28.70	27.66	-105.35	474.59	291.14	461.76	405.66	56.10	8.231		
8,500.00	8,496.08	8,525.69	8,343.93	28.70	27.83	-108.30	483.84	267.01	483.01	428.38	54.63	8.841		
8,600.00	8,595.87	8,549.68	8,352.42	28.72	27.98	-110.52	492.06	246.13	522.05	469.88	52.17	10.007		
8,700.00	8,695.45	8,575.50	8,361.37	28.74	28.15	-112.68	501.00	223.63	575.53	525.99	49.54	11.617		
8,800.00	8,794.77	8,594.81	8,367.94	28.76	28.29	-113.79	507.66	206.73	640.09	593.03	47.06	13.601		
8,900.00	8,893.75	8,609.34	8,372.76	28.79	28.40	-114.06	512.72	193.99	713.06	668.12	44.94	15.866		
9,000.00	8,992.32	8,615.00	8,374.61	28.83	28.44	-113.34	514.70	189.02	792.30	749.17	43.13	18.369		
9,100.00	9,090.76	8,626.97	8,378.39	28.88	28.54	-114.79	518.89	178.47	875.78	833.94	41.84	20.931		
9,200.00	9,189.20	8,633.25	8,380.28	28.93	28.59	-115.54	521.08	172.90	962.34	921.58	40.77	23.606		
9,300.00	9,287.64	8,638.67	8,381.86	29.00	28.63	-116.19	522.97	168.07	1,051.22	1,011.28	39.94	26.322		
9,400.00	9,386.08	8,647.00	8,384.21	29.06	28.70	-117.18	525.86	160.61	1,141.90	1,102.55	39.35	29.017		
9,500.00	9,484.52	8,647.00	8,384.21	29.14	28.70	-117.18	525.86	160.61	1,233.95	1,195.14	38.82	31.789		
9,600.00	9,582.96	8,647.00	8,384.21	29.22	28.70	-117.18	525.86	160.61	1,327.16	1,288.74	38.42	34.542		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 14-T24S-R31E - Petrogulf BJT Federal Well No. 2H - Original Hole - Surveys Original Hole													Offset Well Error:	0.00 ft
Survey Program: 200-GYRO-NS, 7746-MWD														
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
9,700.00	9,681.40	8,647.00	8,384.21	29.31	28.70	-117.18	525.86	160.61	1,421.29	1,383.15	38.14	37.266		
9,800.00	9,779.84	8,647.00	8,384.21	29.41	28.70	-117.18	525.86	160.61	1,516.17	1,478.22	37.95	39.955		
9,900.00	9,878.28	8,647.00	8,384.21	29.51	28.70	-117.18	525.86	160.61	1,611.67	1,573.84	37.83	42.606		
10,000.00	9,976.72	8,659.25	8,387.41	29.62	28.81	-118.63	530.08	149.57	1,707.49	1,669.60	37.89	45.068		
10,100.00	10,075.16	8,660.93	8,387.83	29.74	28.82	-118.83	530.65	148.04	1,803.88	1,765.99	37.89	47.611		
10,200.00	10,173.60	8,662.45	8,388.20	29.86	28.84	-119.01	531.18	146.66	1,900.64	1,862.71	37.93	50.107		

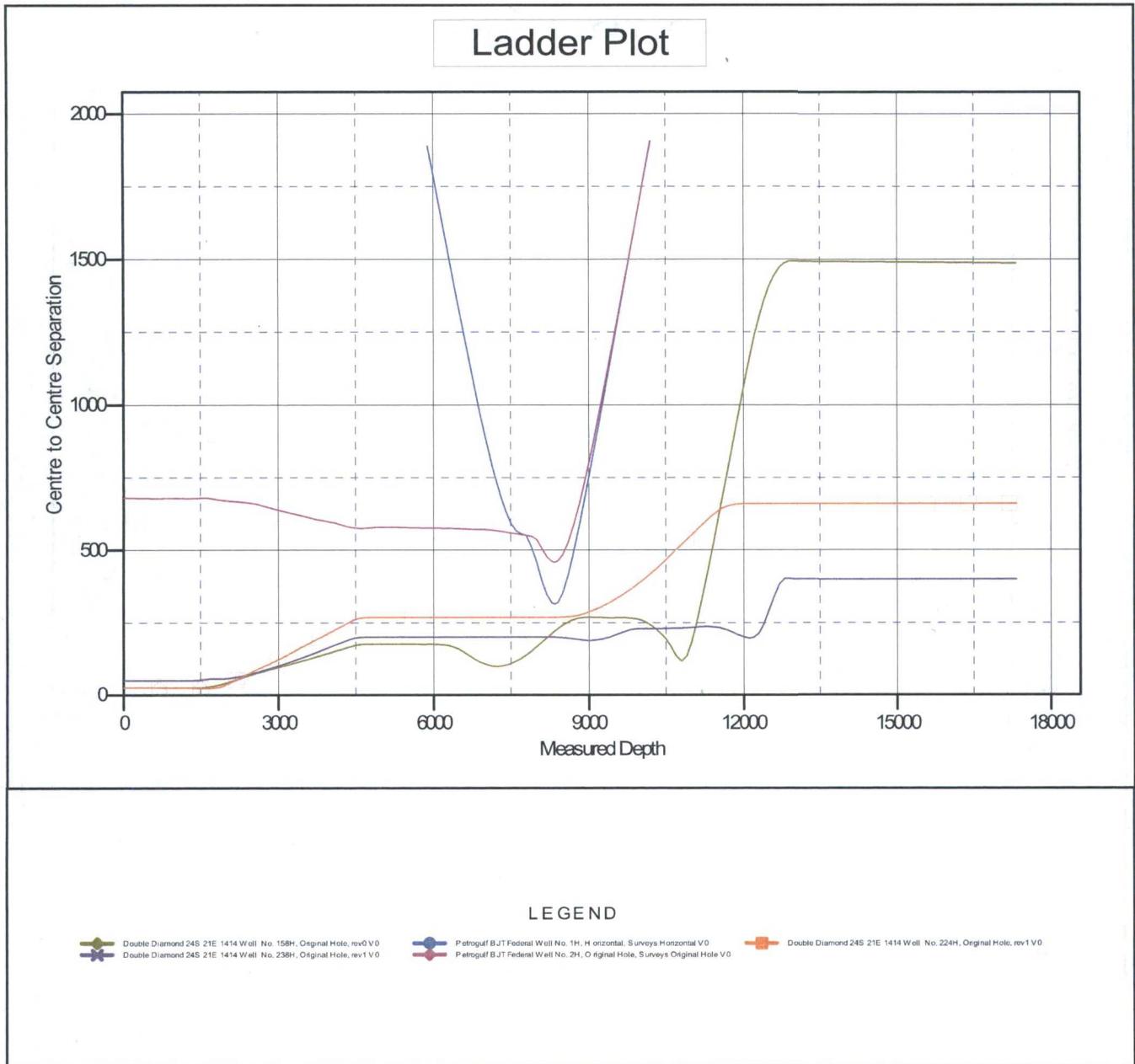


# Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to RKB=3585.9+25 @ 3610.90ft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -104.33333334

Coordinates are relative to: Double Diamond 24S 21E 1414 Well No. 228H  
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
 Grid Convergence at Surface is: 0.31°





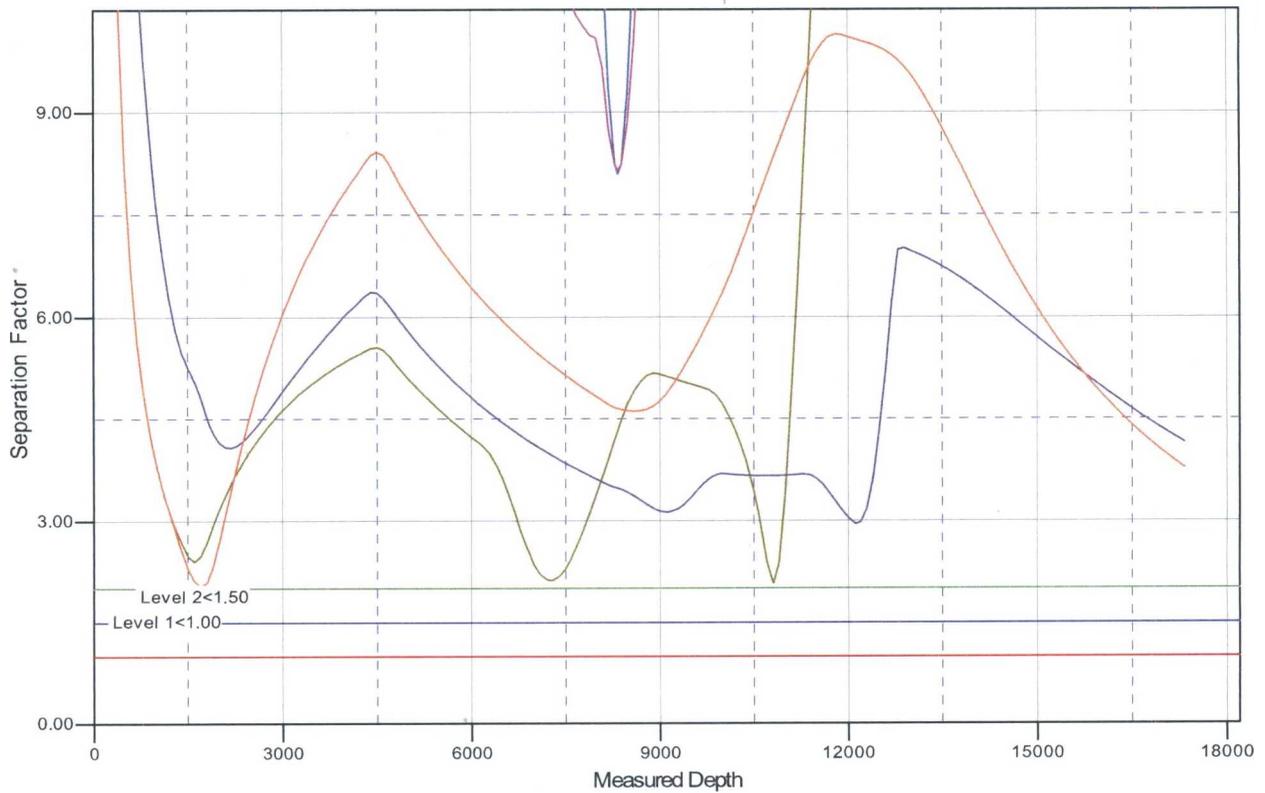
# Anticollision Report

<b>Company:</b>	Tap Rock Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Double Diamond 24S 21E 1414 Well No. 228H
<b>Project:</b>	Eddy County, New Mexico NAD83 NM east	<b>TVD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Reference Site:</b>	Section 14-T24S-R31E	<b>MD Reference:</b>	RKB=3585.9+25 @ 3610.90ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Double Diamond 24S 21E 1414 Well No. 228H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Hole	<b>Database:</b>	DB_Jul2216dt_v14
<b>Reference Design:</b>	rev1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to RKB=3585.9+25 @ 3610.90ft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -104.33333334

Coordinates are relative to: Double Diamond 24S 21E 1414 Well No. 228H  
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
 Grid Convergence at Surface is: 0.31°

## Separation Factor Plot



### LEGEND

- Double Diamond 24S 21E 1414 Well No. 158H, Original Hole, rev0 V0
- Petrogulf BJT Federal Well No. 1H, Horizontal, Surveys Horizontal V0
- Double Diamond 24S 21E 1414 Well No. 224H, Original Hole, rev1 V0
- Double Diamond 24S 21E 1414 Well No. 238H, Original Hole, rev1 V0
- Petrogulf BJT Federal Well No. 2H, Original Hole, Surveys Original Hole V0

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

**Tap Rock Operating, LLC**  
**Double Diamond Fed Com 228H**  
**SHL 305' FSL & 910' FEL**  
**BHL 200' FNL & 330' FEL**  
**Sec. 14, T. 24 S., R. 31 E., Eddy County, NM**

**DRILL PLAN PAGE 1**

Drilling Program

**1. ESTIMATED TOPS**

Formation Name	TVD	MD	Bearing
Quaternary caliche	0'	0'	water
Rustler anhydrite	731'	731'	N/A
Salado salt	1067'	1067'	N/A
Base salt	2813'	2815'	N/A
Bell Canyon sandstone	4613'	4617'	hydrocarbons
Brushy Canyon sandstone	6723'	6727'	hydrocarbons
Bone Spring limestone	8443'	8447'	hydrocarbons
1 <sup>st</sup> Bone Spring sandstone	9443'	9447'	hydrocarbons
2nd Bone Spring sandstone	10083'	10089'	hydrocarbons
3 <sup>rd</sup> Bone Spring sandstone	11343'	11362'	hydrocarbons
Wolfcamp A carbonate	11823'	11846'	hydrocarbons
Wolfcamp A Fat carbonate	12003'	12042'	hydrocarbons
Wolfcamp B carbonate	12193'	12232'	hydrocarbons
(KOP	11928'	11975'	hydrocarbons)
Wolfcamp B1 carbonate (goal)	12193'	12759'	hydrocarbons
TD	12495'	17334'	

**2. NOTABLE ZONES**

Wolfcamp B1 is the goal. Hole will extend north of the last perforation point to allow for pump installation. All perforations will be  $\geq 330'$  from the dedication perimeter. Closest water well (C 02440) in State Engineer records is 10,368' northwest. Well was drilled to 350'. No water was encountered.

**3. PRESSURE CONTROL**

A 13,000' 10,000-psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and 1 annular preventer will be used below surface casing to TD. BOP, choke manifold, co-flex hose, and speed head diagrams are attached.

**Tap Rock Operating, LLC  
Double Diamond Fed Com 228H  
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BHL 200' FNL & 330' FEL  
Sec. 14, T. 24 S., R. 31 E., Eddy County, NM**

**DRILL PLAN PAGE 2**

An accumulator will be on site. It will comply with Onshore Order 2 requirements for the BOP stack pressure rating. Rotating head will be installed as needed.

Pressure tests will be conducted before drilling out from under all casing strings. BOP will be inspected and operated as required by 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.

A third-party company will test the BOPs. Test pressures will be:

After surface casing is set and the BOP is nipped up, pressure tests will be made to 250 psi low and 2000 psi high.

Test intermediate 1 casing to 250 psi low and 3000 psi high.

Test intermediate 2 casing to 250 psi low and 7500 psi high.

Annular preventer will be tested to 250 psi low and 1000 psi high on the surface casing and 250 psi low and 1500 psi high on both intermediate strings.

In the case of running a speed head with landing mandrel for the 1st and 2nd intermediate casing the initial, after surface casing is set, BOP test pressures will be 250 psi low and 3000 psi high with well head seals tested to 5000 psi once the first intermediate casing has been landed and cemented. BOP may then be lifted to install the C-section of the wellhead. Tap Rock will then nipple the BOP back up and pressure tests will be made to 250 psi low and 5000 psi high. Annular preventer will be tested to 250 psi low and 1500 psi high.

Tap Rock requests a variance to use a co-flex hose between the BOP stack and choke manifold. Co-flex hose certification is attached. Manufacturer does not require the hose to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.

#### **4. CASING & CEMENT**

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

No pilot hole will be drilled. Well will be drilled to 12,494 TVD (17,334' MD).

**Tap Rock Operating, LLC**  
**Double Diamond Fed Com 228H**  
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**Sec. 14, T. 24 S., R. 31 E., Eddy County, NM**

**DRILL PLAN PAGE 3**

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Axial
17.5"	0' - 1000'	0' - 1000'	13.375" surface	54.5	J-55	BTC	1.13	1.15	1.51
12.25"	0' - 4700'	0' - 4693'	9.625" inter. 1	40.0	J-55	BTC	1.13	1.15	1.51
8.75"	0' - 4000'	0' - 3,997'	7.625" inter. 2 top	29.7	P-110	BTC	1.13	1.15	1.51
8.75"	4000' - 11,975'	3,997' - 11,973'	7.625" inter. 2 middle	29.7	P-110	flush	1.13	1.15	1.51
8.75"	11,975' - 12,675'	11,973' - 12,467'	7.0" inter. 2 bottom	29.0	P-110	BTC	1.13	1.15	1.51
6.125"	0' - 11,975'	0' - 11,967'	5.5" product. top	20.0	P-110	BTC	1.13	1.15	1.51
6.125"	11,975' - 17,334'	11,967' - 12,494'	4.5" product. bottom	13.5	P-110	BTC	1.13	1.15	1.51

Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Tail	1000	1.38	1380	14.8	Class C + 5% NaCl + LCM
TOC = GL		100% Excess			Centralizers per Onshore Order 2 III. B. 1f	
Intermediate 1	Lead	1300	1.81	2353	13.5	Class C + bentonite + 1% CaCl <sub>2</sub> + 8% NaCl + LCM
	Tail	427	1.38	589	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	823	2.35	1934	11.5	TXI + fluid loss + dispersant + retarder + LCM
	Tail	100	1.39	139	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 (500' above TOC)	
Production	Tail	470	1.17	549	15.8	Class H + fluid loss + dispersant + retarder + LCM
TOC = 11975'		10% Excess			2 on btm jt, 1 on 2nd jt, 1 every third jt to top of curve	

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DRILL PLAN PAGE 4

## 5. 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.

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss
fresh water spud	0' - 1000'	8.3	28	NC
brine water	1000' - 4700'	10.0	30 - 32	NC
fresh water & cut brine	4700' - 12675'	9.0	30 - 32	NC
OBM	12675' - 17334'	12.5	15 - 20	<10

## 6. CORES, TESTS, & LOGS

No core or drill stem test is planned.

A 2-person mud logging program will be used from ≈4700' MD to TD.

Triple combo logs (density, porosity, resistivity, GR) will be run in the pilot hole.

GR will be collected through the MWD tools from intermediate casing to TD. CBL with CCL will be run as far as gravity will let it fall to TOC.

## 7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈8700 psi. Expected bottom hole temperature is ≈180° F.

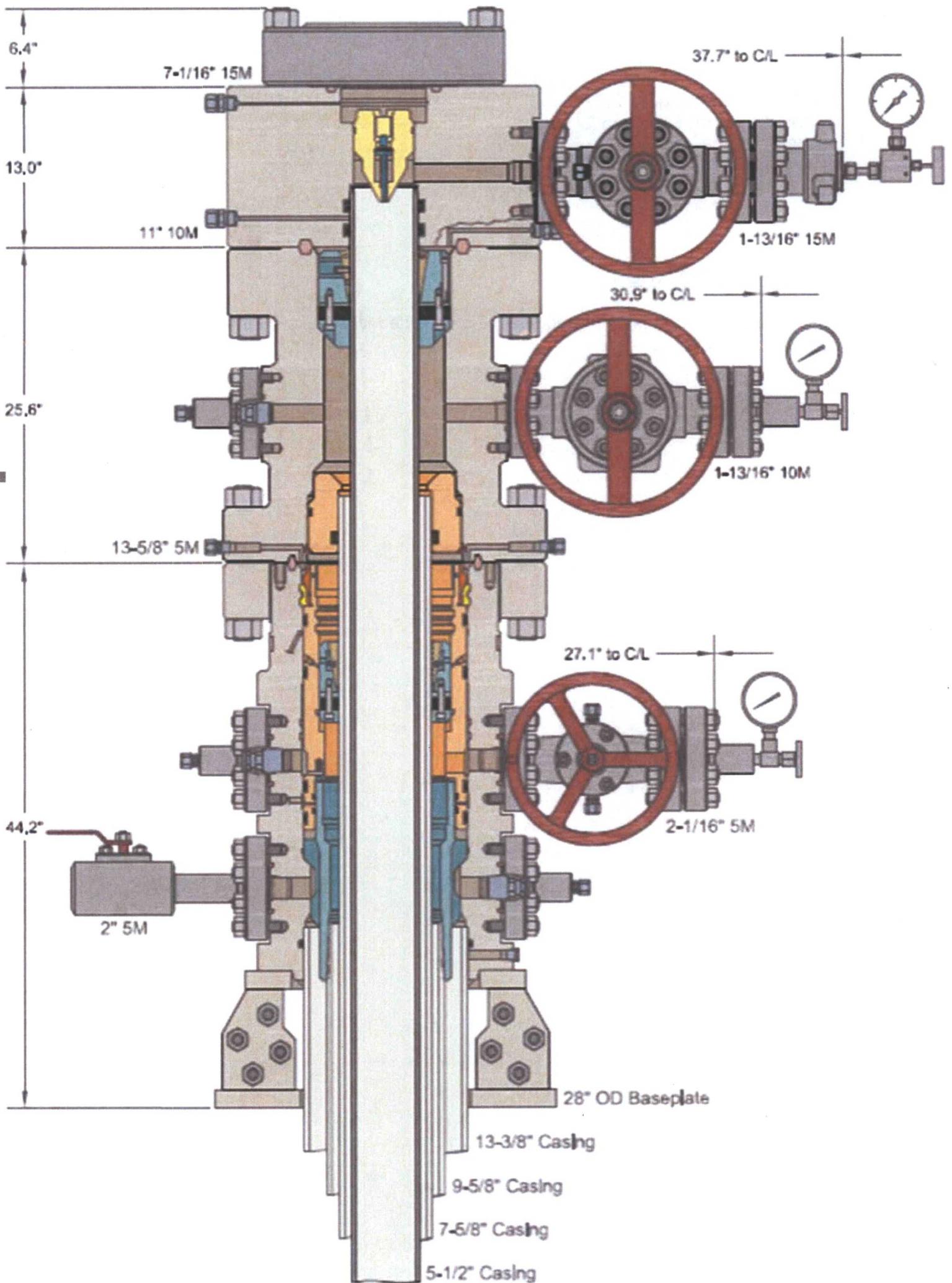
Tap Rock does not anticipate that there will be enough H<sub>2</sub>S from the surface to the Bone Spring to meet the BLM's Onshore Order 6 requirements for the submission of an "H<sub>2</sub>S Drilling Operation Plan" or "Public Protection Plan" for drilling and completing this well. Tap Rock has an H<sub>2</sub>S safety package on all wells and an "H<sub>2</sub>S Drilling Operations Plan" is attached. Adequate flare lines will be installed off the mud/gas separator where gas may be safely flared. All personnel will be familiar with all aspects of safe operation of equipment being used.

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**DRILL PLAN PAGE 5**

**8. OTHER INFORMATION**

Anticipated spud date is upon approval. It is expected it will take ≈3 months to drill and complete the well.





## 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
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#### 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](#)

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## Casing and Tubing Performance Data

Choose pipe size, wall thickness and steel grade to view API connection options and performance data.

Size **9.625** Wall **0.395 in (0.0157 in)** Grade **J55** Connection **BTC** Unit **USC**

### Pipe Body Data

#### GEOMETRY

Nominal OD	<b>9.625 in</b>	Wall Thickness	<b>0.395 in</b>	API Drift Diameter	<b>8.679 in</b>
Nominal Weight	<b>40.00 lbs/ft</b>	Nominal ID	<b>8.835 in</b>	Alternate Drift Diameter	<b>8.75 in</b>
Plain End Weight	<b>38.97 lbs/ft</b>	Nominal Cross Section	<b>11.454 sq in</b>		

#### PERFORMANCE

Steel Grade	<b>J55</b>	Minimum Yield	<b>55,000 psi</b>	Minimum Ultimate	<b>75,000 psi</b>
Body Yield Strength	<b>630,000 lbs</b>	Internal Yield Pressure	<b>3,950 psi</b>	Collapse Pressure	<b>2,570 psi</b>

### Connection Data

#### GEOMETRY

Regular OD	<b>10.625 in</b>	Threads Per Inch	<b>5</b>	Make-Up Thread Turns	<b>1</b>
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#### PERFORMANCE

Steel Grade	<b>J55</b>	Minimum Yield	<b>55,000 psi</b>	Minimum Ultimate	<b>75,000 psi</b>
Joint Strength	<b>714,000 lbs</b>	Internal Pressure Resistance	<b>3,950 psi</b>		

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## 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
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#### 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	<b>COUPLING</b>	<b>PIPE BODY</b>
Grade	P110*	Drift	API Standard	Body: White	1st Band: White
		Type	Casing	1st Band: -	2nd Band: -
				2nd Band: -	3rd Band: -
				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](http://www.tenaris.com)

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## 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)



SHARE EXPORT DATA PRINT



Outside Diameter	5.500 in	Min. Wall Thickness	87.5%	▼
Wall Thickness	0.361 in	Drift	API Standard	▼
		Type	Casing	▼
Grade	<a href="#">P110</a>	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 x 1000 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 x 1000 lbs	Internal Pressure Capacity [1]	12640.000 psi
Compression Efficiency	100 %	Compression Strength	641.000 x 1000 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





## 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



APD ID: 10400027206

Submission Date: 02/12/2018

Highlighted data reflects the most recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: DOUBLE DIAMOND FED COM

Well Number: 228H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

### Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

DD\_228H\_Road\_Map\_20180212130317.pdf

DD\_228H\_Road\_Plat\_033018\_20180330163708.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:

DD\_228H\_New\_Road\_Map\_20180212130814.pdf

DD\_228H\_Road\_Plat\_033018\_20180330163610.PDF

New road type: RESOURCE

Length: 227 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:

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

**Access road engineering design?** NO

**Access road engineering design attachment:**

**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

**Additional Attachment(s):**

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

DD\_228H\_Well\_Map\_20180212130847.pdf

**Existing Wells description:**

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

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Production Facilities description:**

**Production Facilities map:**

DD\_228H\_Production\_Facilities\_20180212130902.pdf

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source use type:** DUST CONTROL,  
INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE  
CASING

**Water source type:** GW WELL

**Describe type:**

**Source longitude:**

**Source latitude:**

**Source datum:**

**Water source permit type:** PRIVATE CONTRACT

**Source land ownership:** FEDERAL

**Water source transport method:** TRUCKING

**Source transportation land ownership:** PRIVATE

**Water source volume (barrels):** 20000

**Source volume (acre-feet):** 2.577862

**Source volume (gal):** 840000

**Water source and transportation map:**

DD\_228H\_Water\_Source\_Map\_20180212130956.pdf

**Water source comments:**

**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.):**

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

**Additional information attachment:**

### Section 6 - Construction Materials

**Construction Materials description:** NM One Call (811) will be notified before construction starts. Top 6" of soil and brush will be stockpiled north of the pad. Pipe racks will be to the south. A closed loop drilling system will be used. Caliche will be hauled from existing pit on private land in NENE 7-23s-31e.

**Construction Materials source location attachment:**

DD\_228H\_Construction\_Methods\_20180212131031.pdf

### Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

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

**Amount of waste:** 2000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Steel tanks

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** PRIVATE

**Disposal type description:**

**Disposal location description:** R360's state approved (NM1-6-0) disposal site at Halfway, NM

### 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.)**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

**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**

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

DD\_228H\_Well\_Site\_Layout\_20180212131128.pdf

**Comments:**

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** DOUBLE DIAMOND

**Multiple Well Pad Number:** 238H

**Recontouring attachment:**

DD\_228H\_Recontour\_Plat\_20180212131638.pdf

DD\_228H\_Interim\_Reclamation\_Diagram\_20180212131648.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):** 1.35

**Well pad long term disturbance (acres):** 3.76

**Road proposed disturbance (acres):** 0.16

**Road interim reclamation (acres):** 0

**Road long term disturbance (acres):** 0.16

**Powerline proposed disturbance (acres):** 0

**Powerline interim reclamation (acres):** 0

**Powerline long term disturbance (acres):** 0

**Pipeline proposed disturbance (acres):** 0

**Pipeline interim reclamation (acres):** 0

**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:** 5.27

**Total interim reclamation:** 1.35

**Total long term disturbance:** 3.92

**Reconstruction method:** Interim reclamation will shrink the well pad 26% by removing caliche and reclaiming the north 40' and west 100', leaving 3.76 acres for producing 5 wells and truck turn arounds.

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

**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:**

**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 type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

### Seed Summary

**Total pounds/Acre:**

Seed Type	Pounds/Acre
-----------	-------------

**Seed reclamation attachment:**

### Operator Contact/Responsible Official Contact Info

**First Name:**

**Last Name:**

**Phone:**

**Email:**

**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:** 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:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

**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:**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** DOUBLE DIAMOND FED COM

**Well Number:** 228H

**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

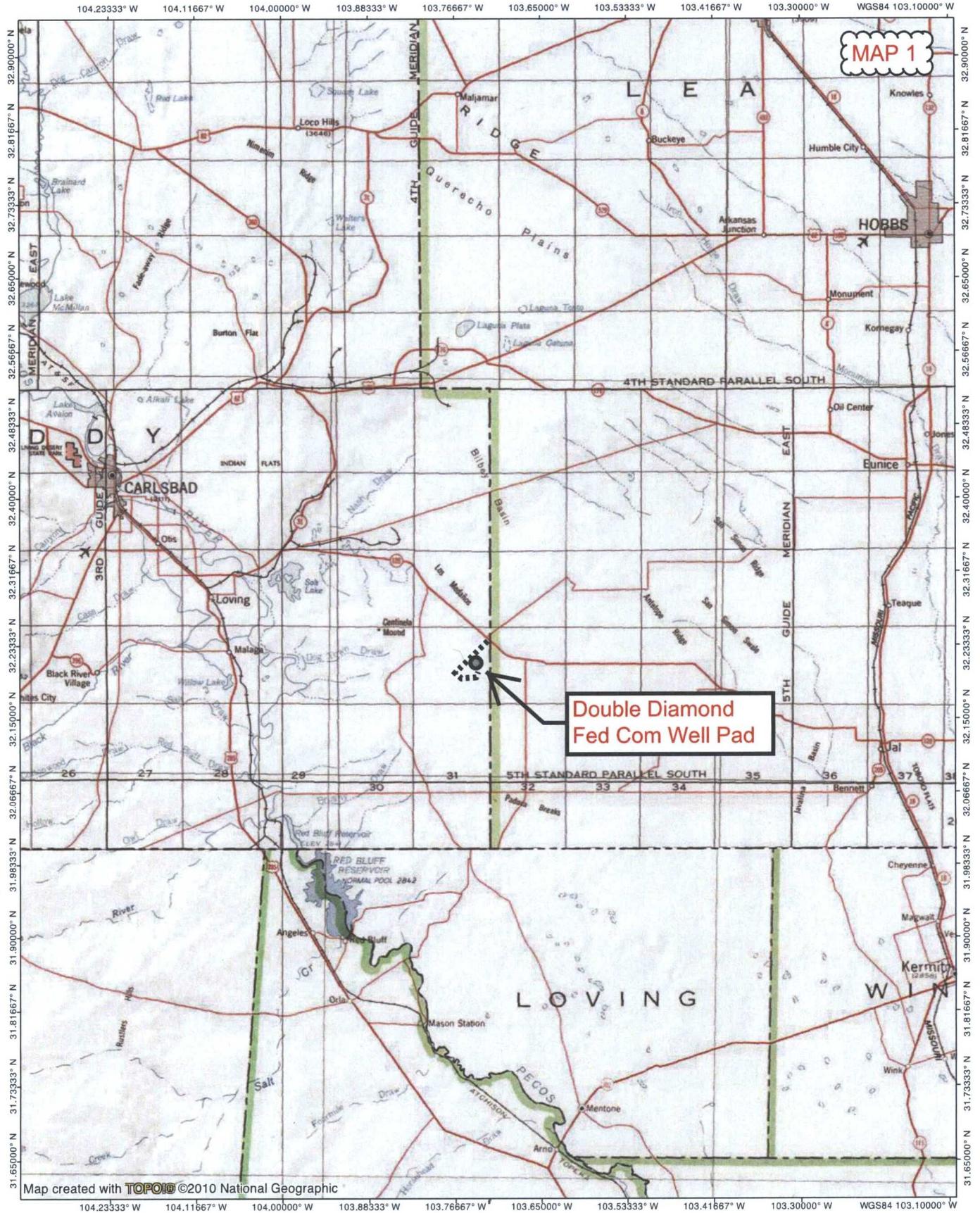
**SUPO Additional Information:** Deficiency letter dated 3/29/18 requested road plat - see attachment

**Use a previously conducted onsite?** YES

**Previous Onsite information:** On-site inspection was held with Vance Wolfe (BLM) on December 7, 2017. Lone Mountain filed archaeology report NMCRIS 139066 on October 3, 2017.

### Other SUPO Attachment

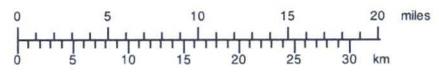
DD\_228H\_General\_SUPO\_20180212131720.pdf



MAP 1

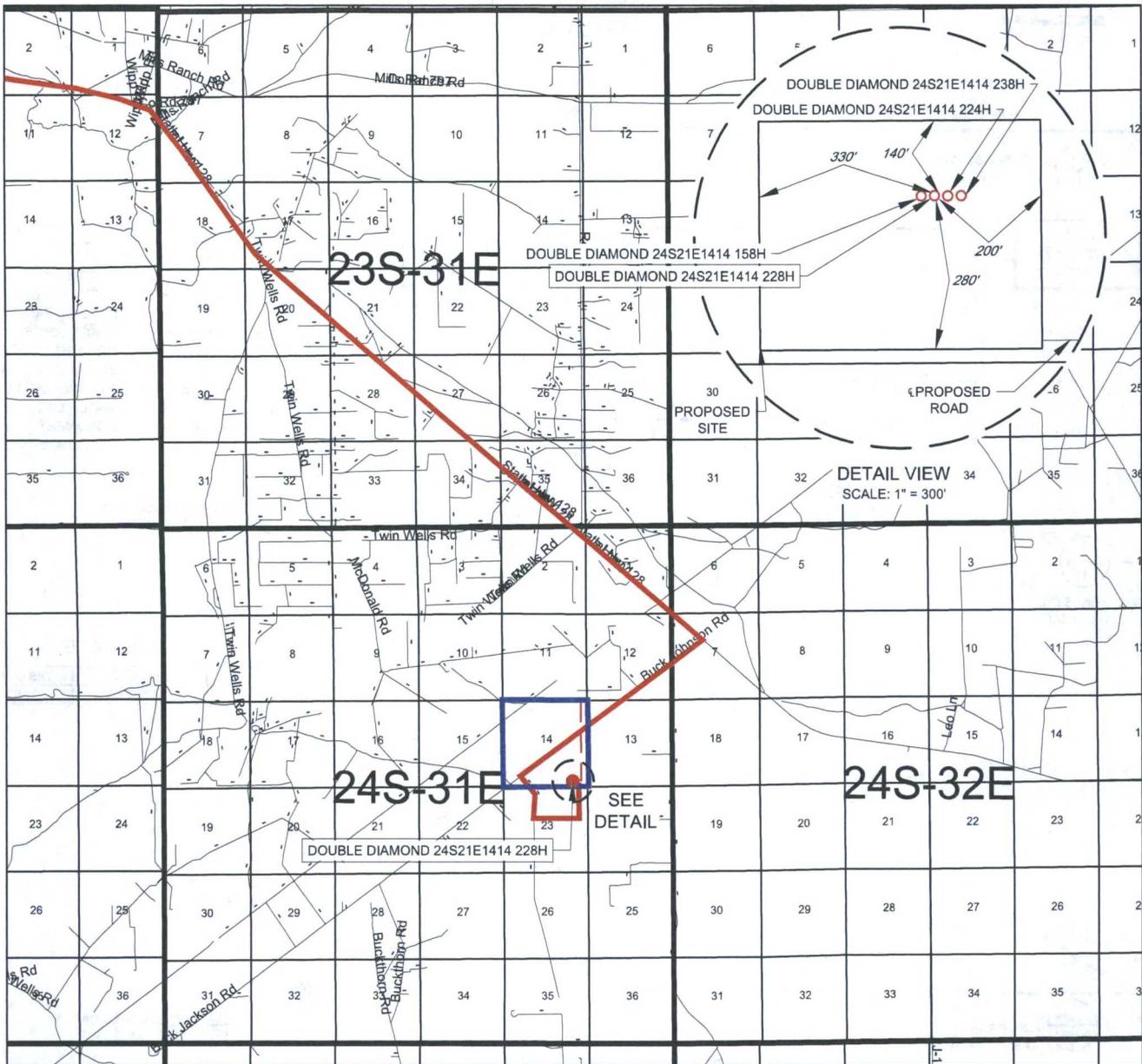
Double Diamond Fed Com Well Pad

Map created with TOPOID ©2010 National Geographic



02/04/18

EXHIBIT 2  
VICINITY MAP



LEASE NAME & WELL NO.: DOUBLE DIAMOND 24S21E1414 228H

SECTION 14 TWP 24-S RGE 31-E SURVEY N.M.P.M.  
 COUNTY EDDY STATE NM  
 DESCRIPTION 305' FSL & 910' FEL

**DISTANCE & DIRECTION**  
FROM INT. OF NM-31, & NM-128-E, HEAD EAST ON NM-128 E ±19.6 MILES,  
THENCE SOUTHWEST (RIGHT) ON BUCK JACKSON RD. ±1.1 MILES, THENCE  
SOUTHEAST, (LEFT) ON LEASE RD ±1.6 MILES, THENCE WEST ON PROPOSED  
RD ±215 FEET TO A POINT ±332 FEET SOUTHEAST OF THE LOCATION.

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.



SCALE: 1" = 10000'  
 0' 5000' 10000'

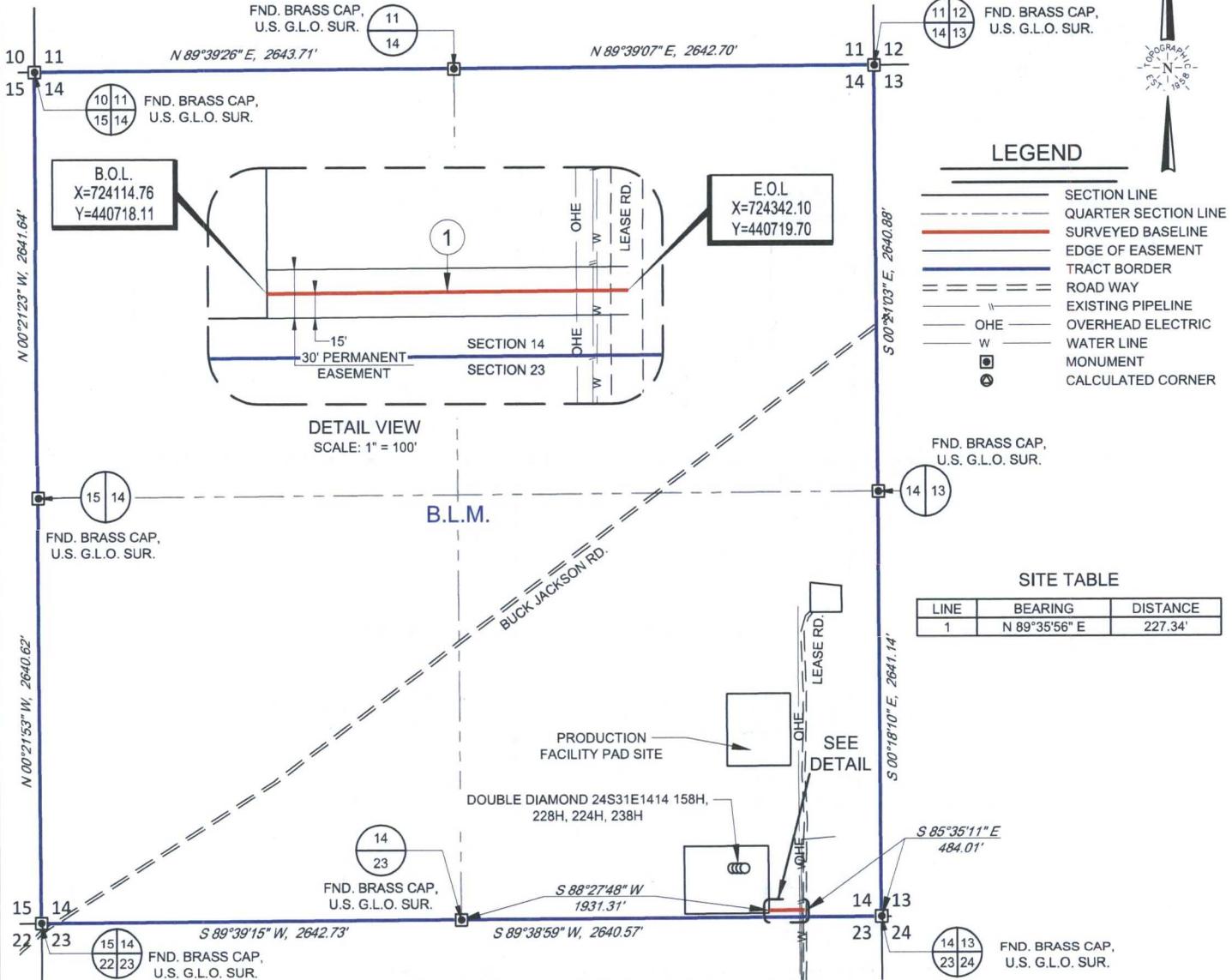


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 TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743  
 WWW.TOPOGRAPHIC.COM

SCALE: 1" = 1000'

0' 500' 1000'

SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO



LEGEND

- SECTION LINE
- - - QUARTER SECTION LINE
- SURVEYED BASELINE
- EDGE OF EASEMENT
- TRACT BORDER
- ROAD WAY
- EXISTING PIPELINE
- OHE — OVERHEAD ELECTRIC
- W — WATER LINE
- MONUMENT
- ⊙ CALCULATED CORNER

SITE TABLE

LINE	BEARING	DISTANCE
1	N 89°35'56" E	227.34'

DOUBLE DIAMOND SURFACE PAD SITE  
ROAD EASEMENT

Being a proposed road easement being 30 feet in width, 15 feet left, and 15 feet right of the above platted centerline total line footage containing 227.34 feet or 13.78 rods, containing 0.16 acres more or less.



Stan W. Lloyd, P.S. No. 19642

MARCH 30, 2018



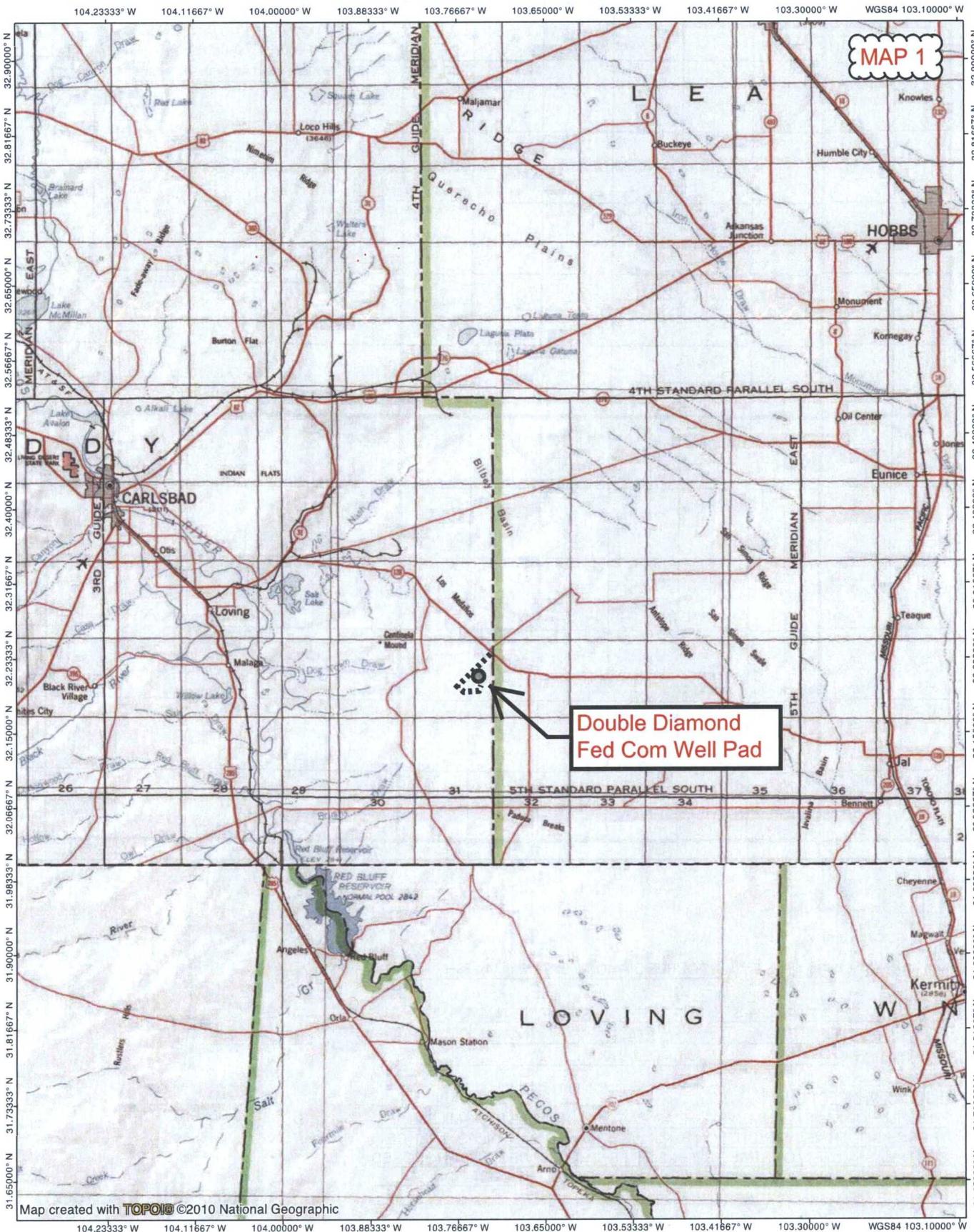
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DOUBLE DIAMOND SURFACE PAD SITE ROAD EASEMENT	REVISION:	
	INT	DATE
DATE: 03/30/18		
FILE: EP_DOUBLE_DIAMOND_SURFACE_PAD_SITE_RD		
DRAWN BY: AMD		
SHEET: 1 OF 1		

- NOTES:
1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
  2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
  3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY TAP ROCK OPERATING, LLC. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
  4. B.O.L. = BEGINNING OF LINE
  5. E.O.L. = END OF LINE

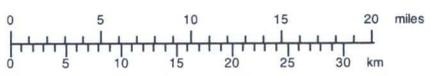




MAP 1

Double Diamond Fed Com Well Pad

Map created with TOPOID ©2010 National Geographic

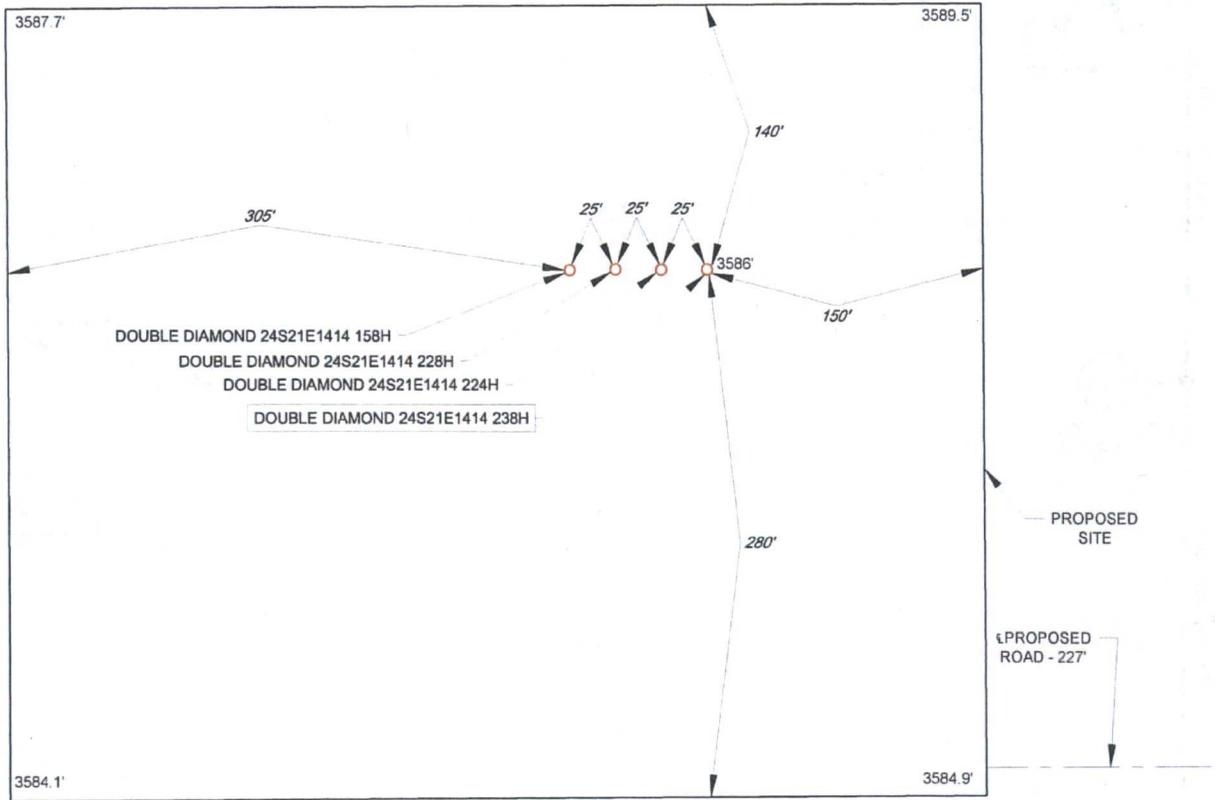




SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

MAP 4

DETAIL VIEW  
SCALE: 1" = 100'



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.

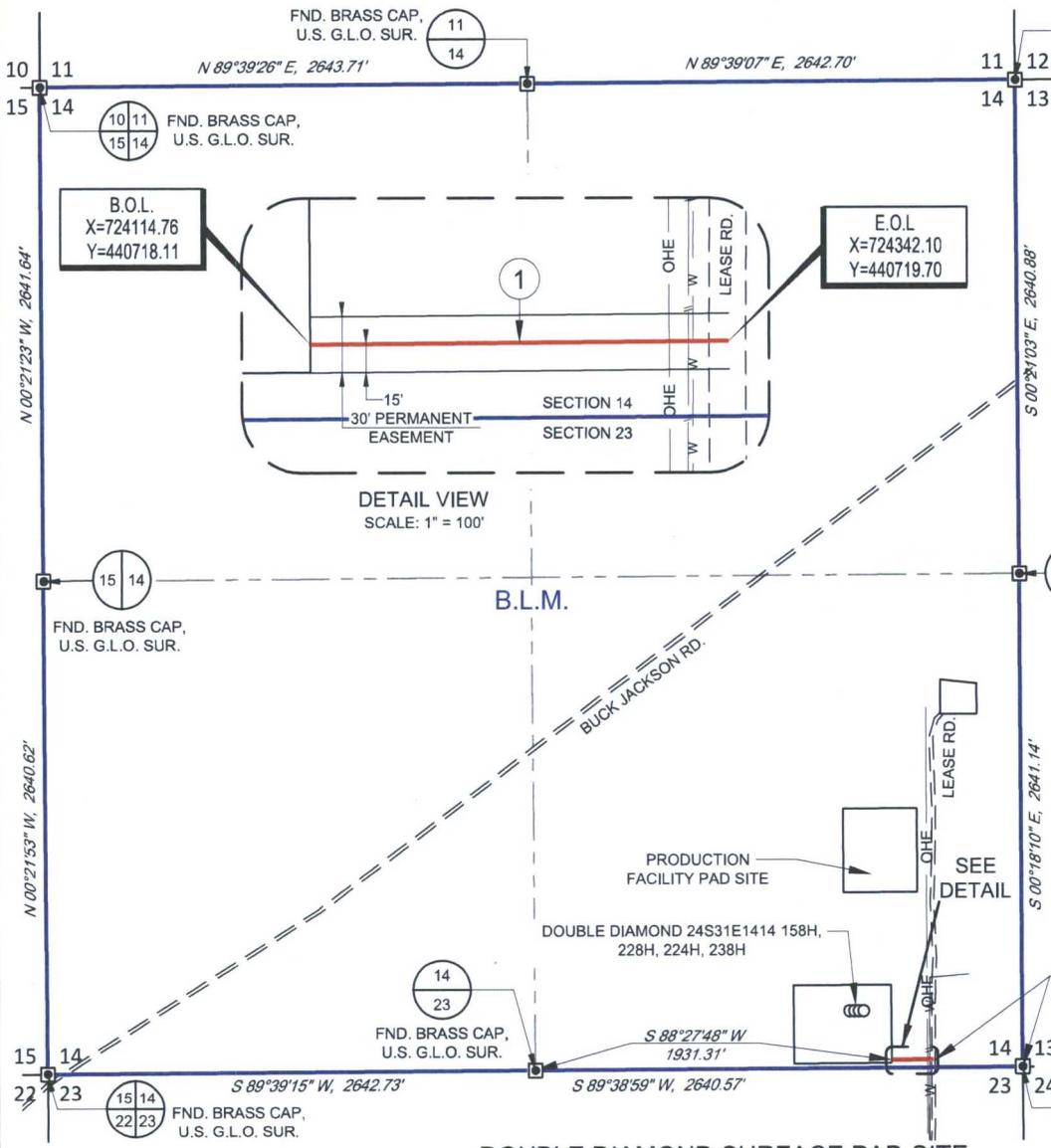
THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TAP ROCK OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF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



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EDDY COUNTY, NEW MEXICO

SCALE: 1" = 1000'  
0' 500' 1000'



**LEGEND**

- SECTION LINE
- QUARTER SECTION LINE
- SURVEYED BASELINE
- EDGE OF EASEMENT
- TRACT BORDER
- ROAD WAY
- EXISTING PIPELINE
- OHE OVERHEAD ELECTRIC
- W WATER LINE
- MONUMENT
- CALCULATED CORNER

**SITE TABLE**

LINE	BEARING	DISTANCE
1	N 89°35'56" E	227.34'

**DOUBLE DIAMOND SURFACE PAD SITE  
ROAD EASEMENT**

Being a proposed road easement being 30 feet in width, 15 feet left, and 15 feet right of the above platted centerline total line footage containing 227.34 feet or 13.78 rods, containing 0.16 acres more or less.



*Stan W. Lloyd*  
Stan W. Lloyd, P.S. No. 19642

MARCH 30, 2018

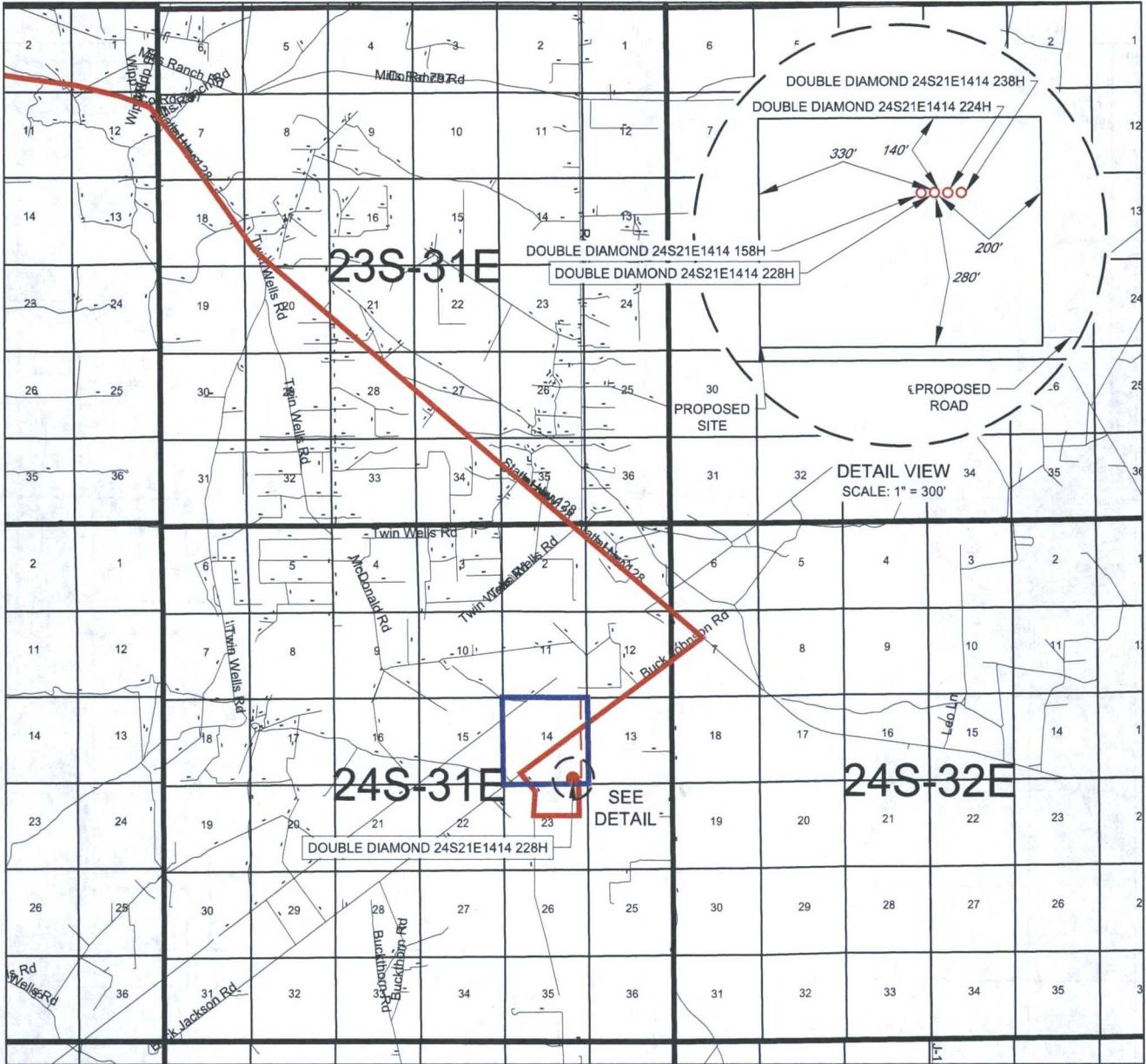


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TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743  
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DOUBLE DIAMOND SURFACE PAD SITE ROAD EASEMENT	REVISION:	
	INT	DATE
DATE: 03/30/18		
FILE: EP_DOUBLE_DIAMOND_SURFACE_PAD_SITE_RD		
DRAWN BY: AMD		
SHEET: 1 OF 1		

- NOTES:**
1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
  2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
  3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY TAP ROCK OPERATING, LLC. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
  4. B.O.L. = BEGINNING OF LINE
  5. E.O.L. = END OF LINE

EXHIBIT 2  
VICINITY MAP



LEASE NAME & WELL NO.: DOUBLE DIAMOND 24S21E1414 228H

SECTION 14 TWP 24-S RGE 31-E SURVEY N.M.P.M.

COUNTY EDDY STATE NM

DESCRIPTION 305' FSL & 910' FEL

**DISTANCE & DIRECTION**

FROM INT. OF NM-31, & NM-128-E, HEAD EAST ON NM-128 E ±19.6 MILES,  
THENCE SOUTHWEST (RIGHT) ON BUCK JACKSON RD. ±1.1 MILES, THENCE  
SOUTHEAST, (LEFT) ON LEASE RD ±1.6 MILES, THENCE WEST ON PROPOSED  
RD ±215 FEET TO A POINT ±332 FEET SOUTHEAST OF THE LOCATION.

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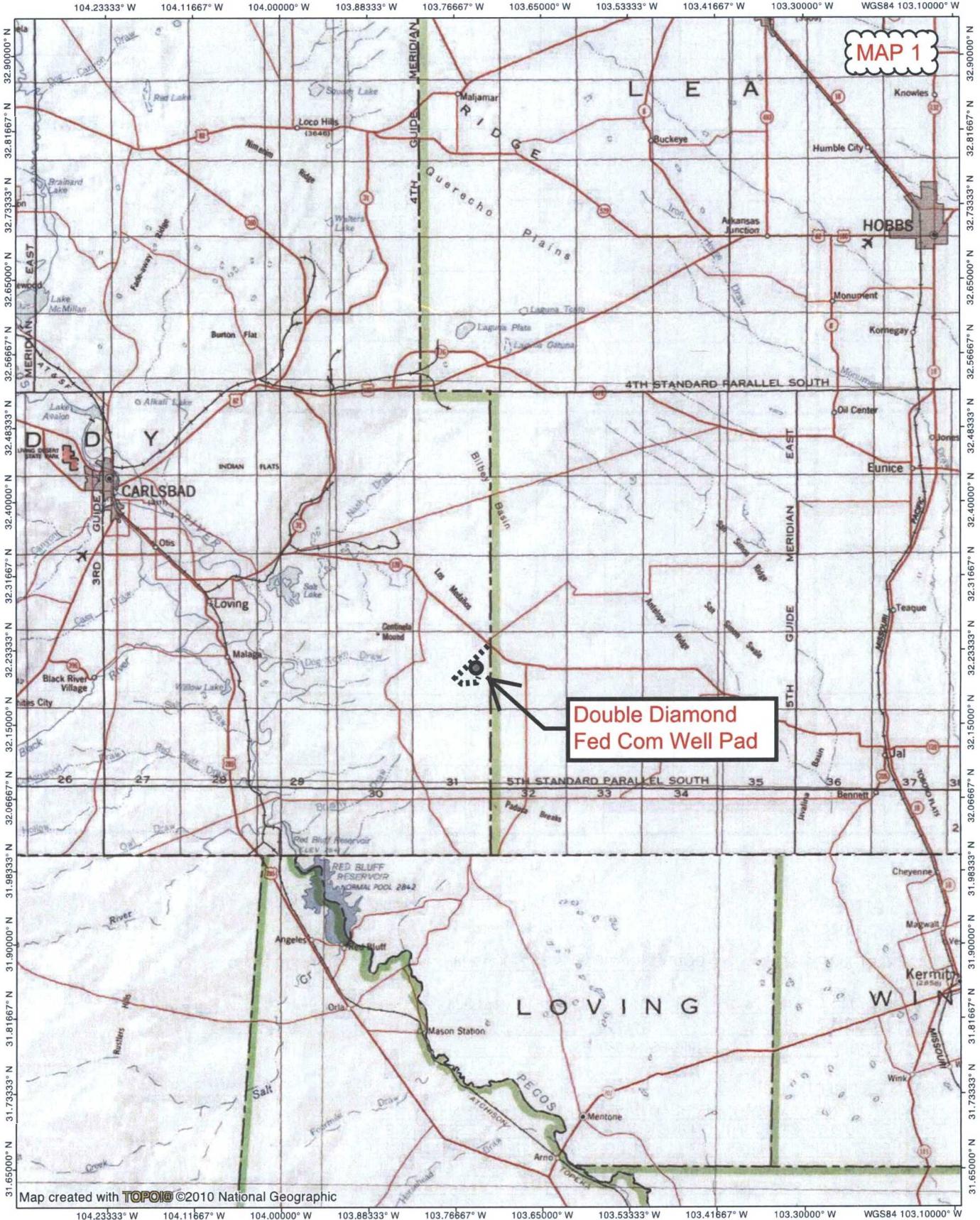
SCALE: 1" = 10000'  
 0' 5000' 10000'



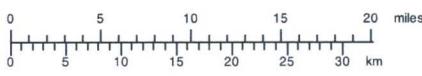
**TOPOGRAPHIC**  
 LOYALTY INNOVATION LEGACY

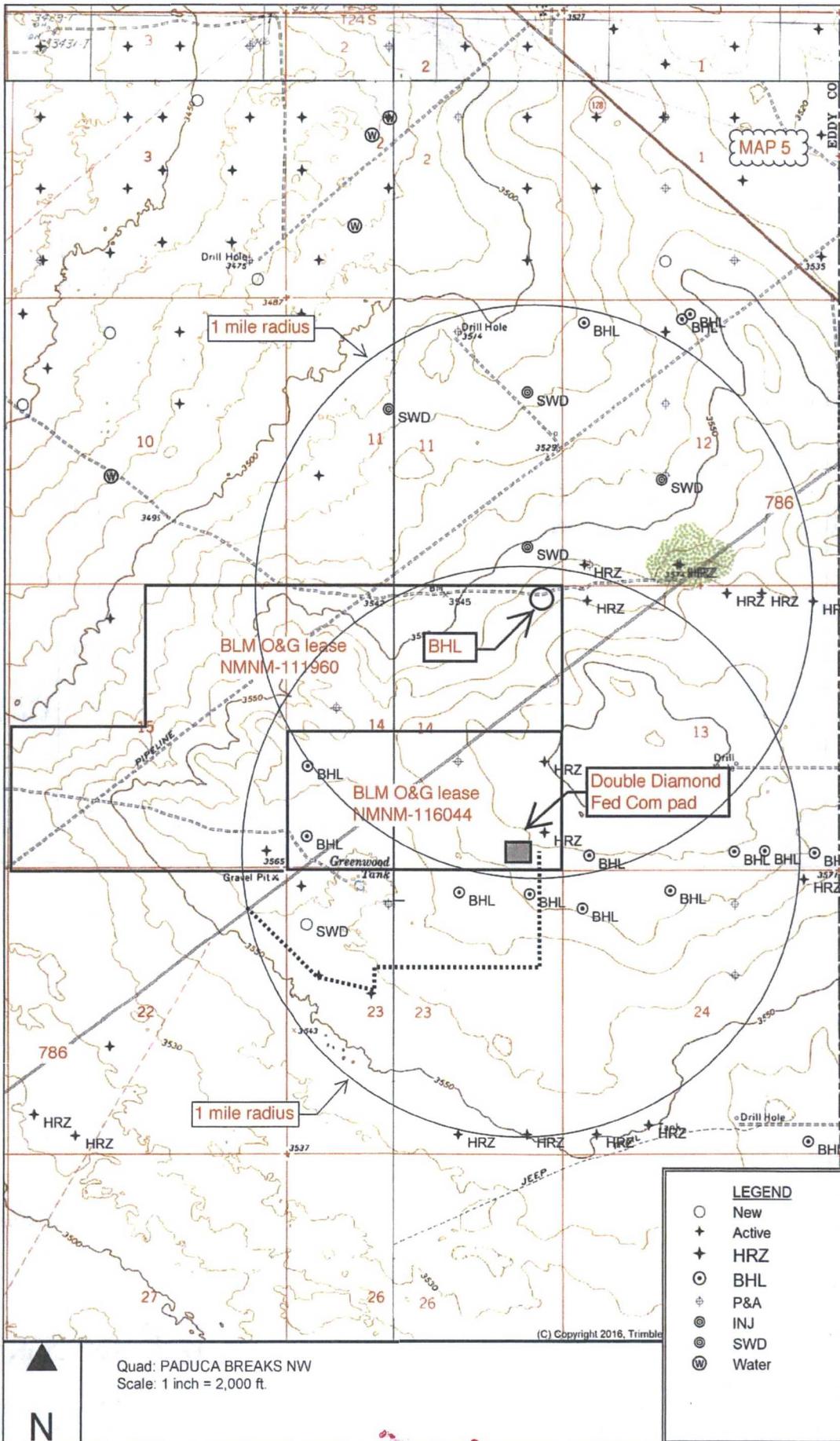
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MAP 1



Map created with TOPOID ©2010 National Geographic



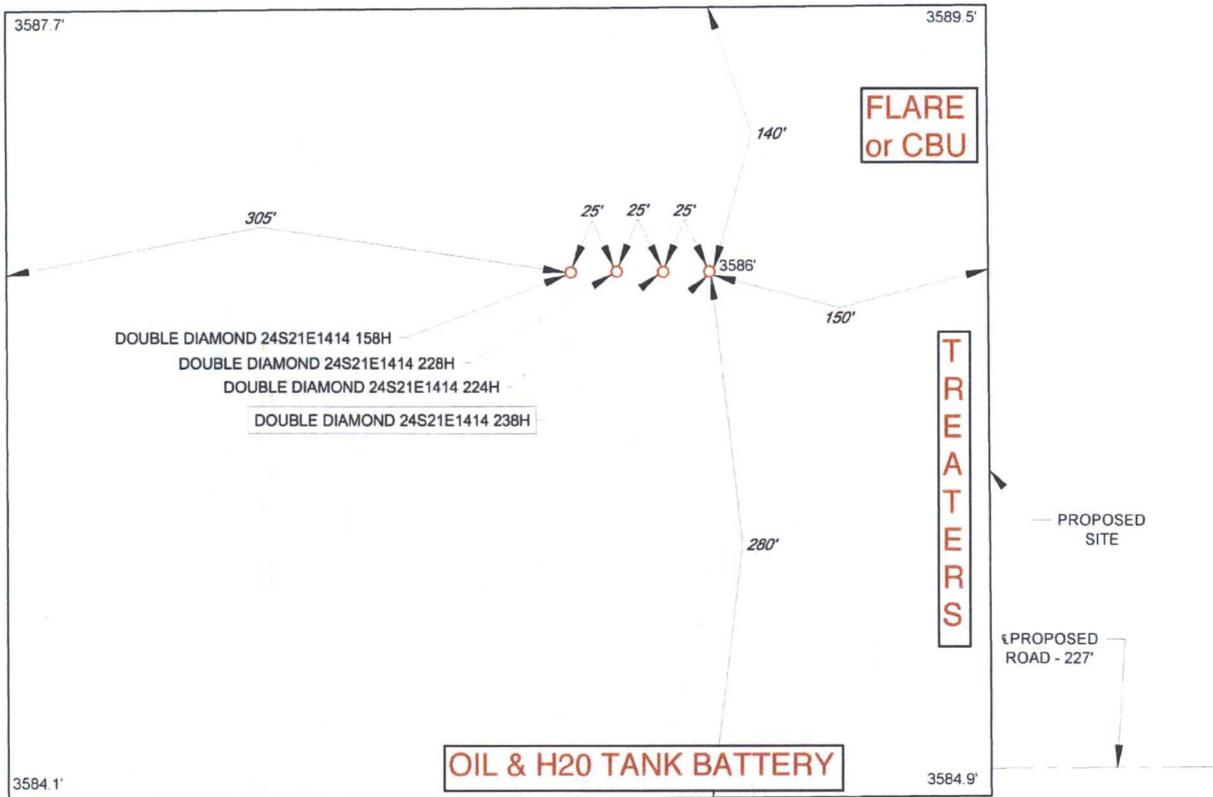




SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

MAP 6

DETAIL VIEW  
SCALE: 1" = 100'



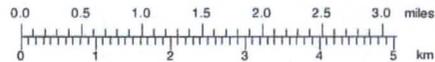
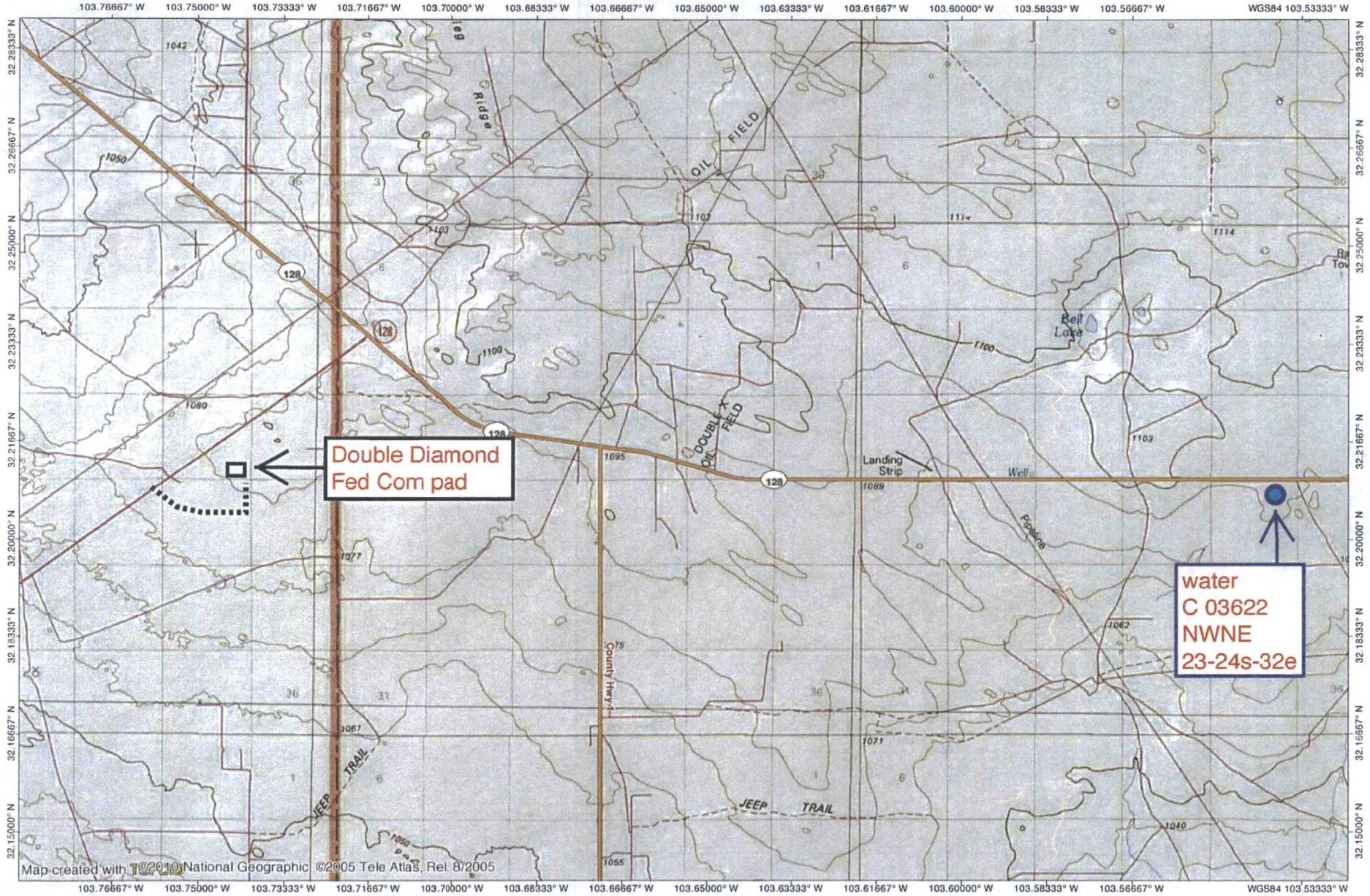
SCALE: 1" = 100'  
0' 50' 100'

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MAP 7

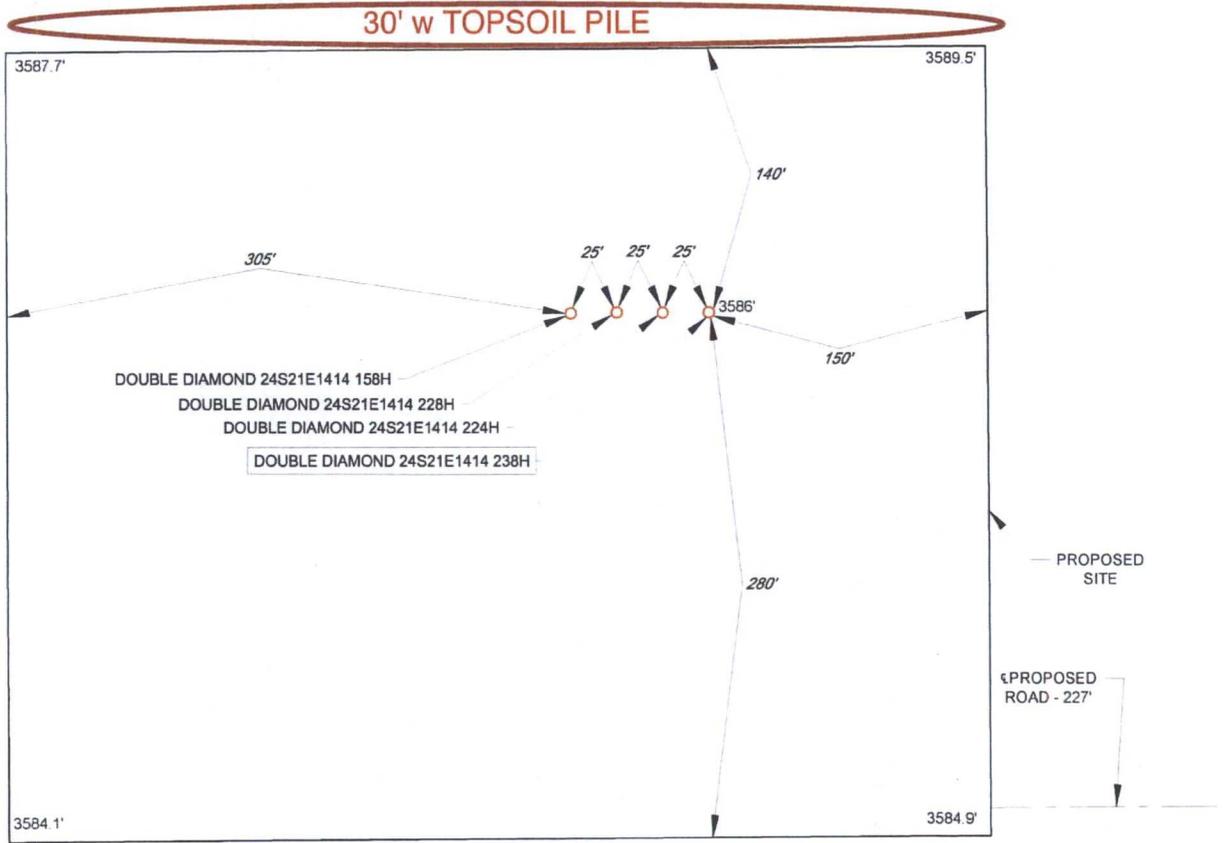
TN + MN  
7°  
02/04/18



SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

MAP 8

DETAIL VIEW  
SCALE: 1" = 100'



SCALE: 1" = 100'

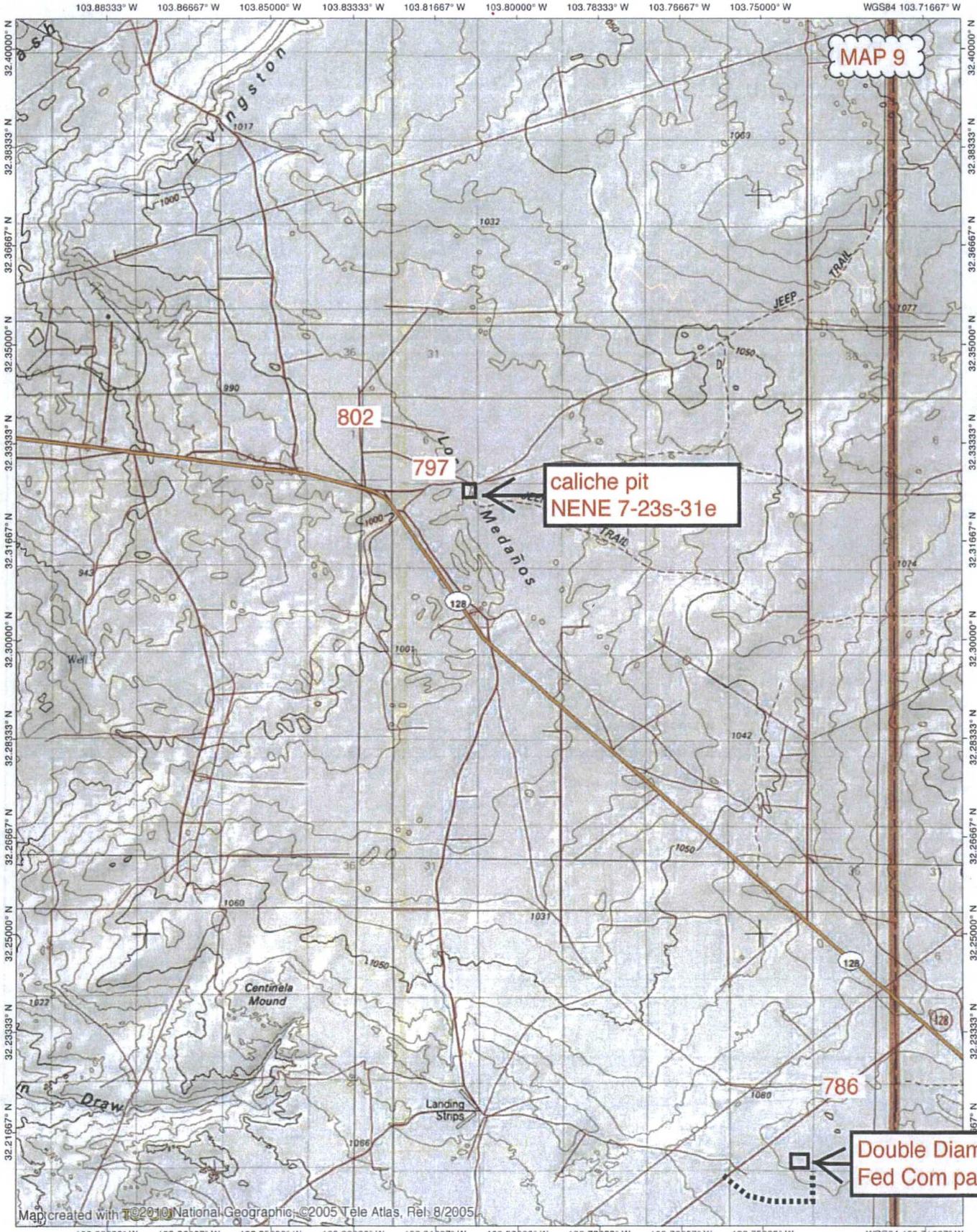
0' 50' 100'

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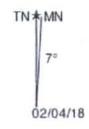
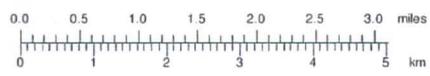


MAP 9

caliche pit  
NENE 7-23s-31e

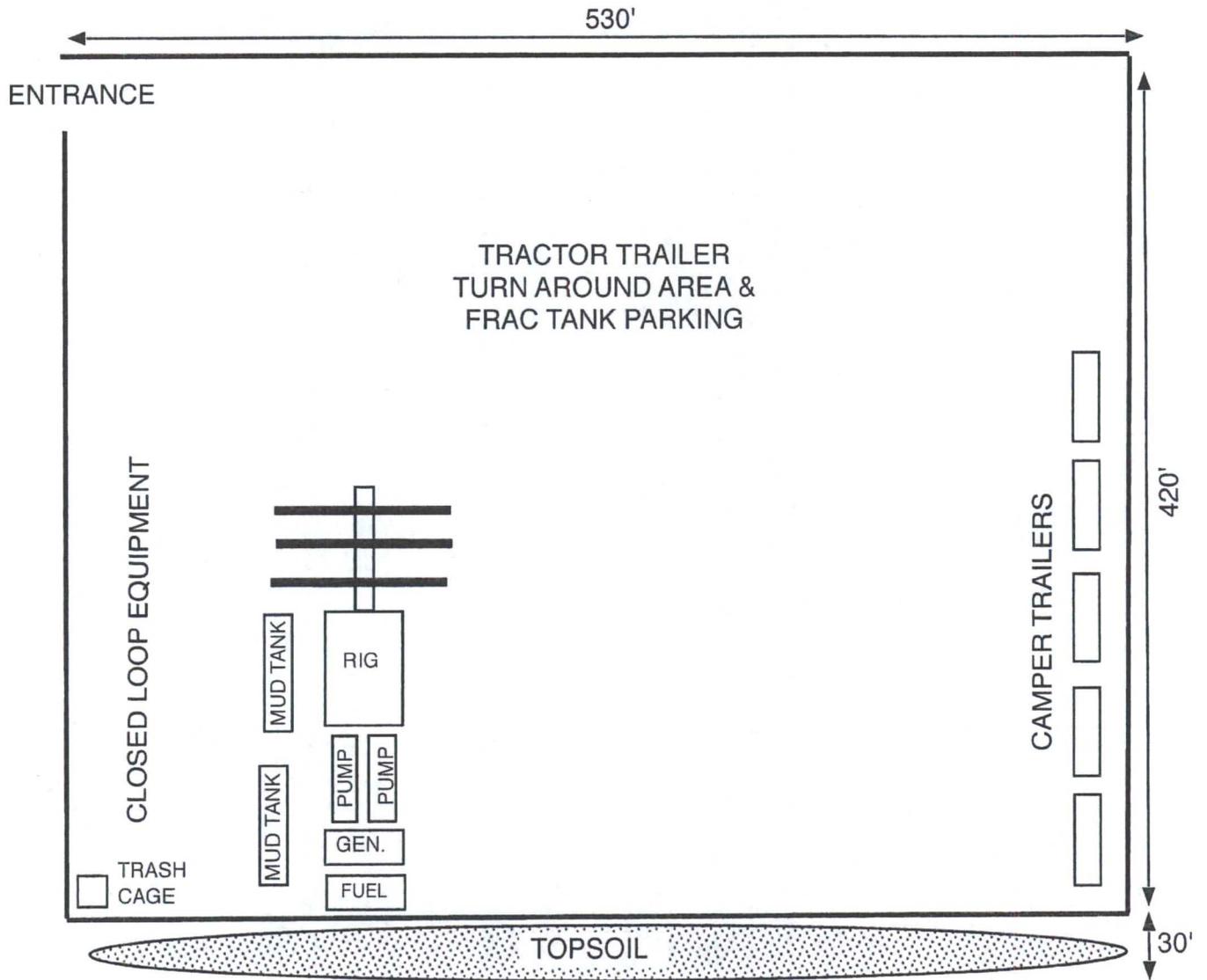
Double Diamond  
Fed Com pad

Map created with ©2010 National Geographic, ©2005 Tele Atlas, Rel. 8/2005



Double Diamond Fed Com 228H  
rig diagram

1" = 80'

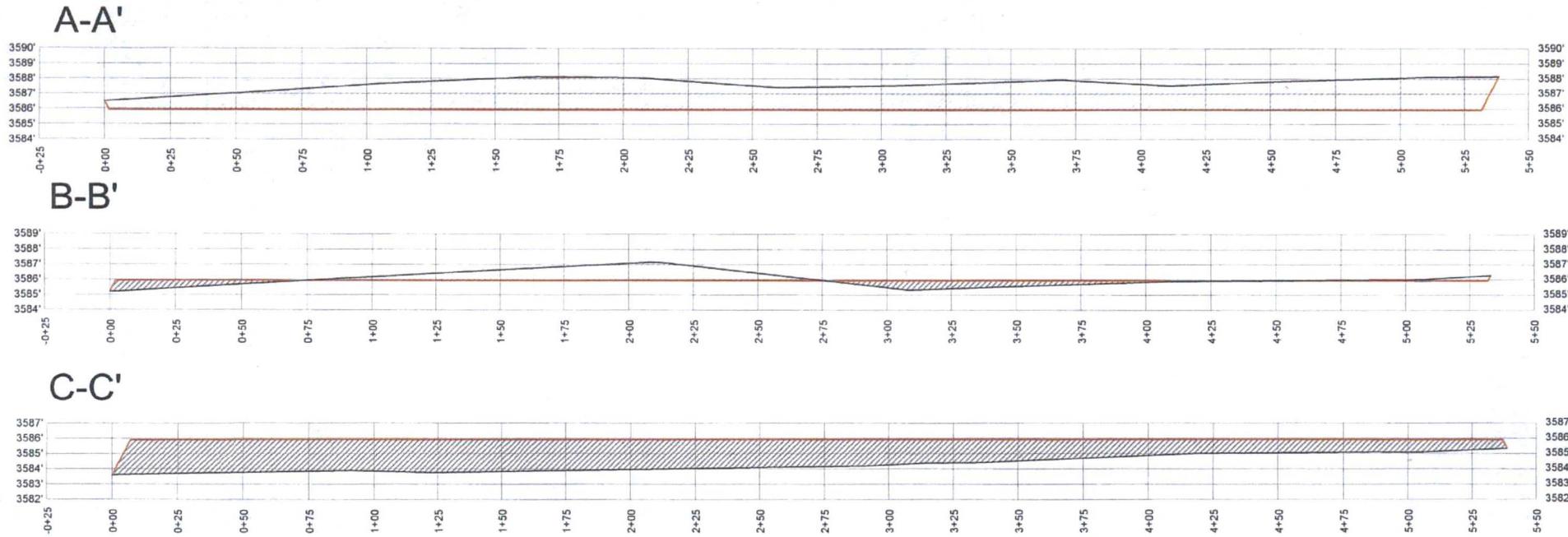


TOP OF PAD ELEVATION: 3585.9292  
 CUT SLOPE: 33.33% 3.000:1 18.43°  
 FILL SLOPE: 33.33% 3.000:1 18.43°  
 BALANCE TOLERANCE (C.Y.): 0.00  
 CUT SWELL FACTOR: 1.00  
 FILL SHRINK FACTOR: 1.00

SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
 EDDY COUNTY, NEW MEXICO



PAD EARTHWORK VOLUMES  
 CUT: 128,917.1 C.F., 4,774.71 C.Y.  
 FILL: 128,917.1 C.F., 4,774.71 C.Y.  
 AREA: 231518.3 SQ.FT., 5.315 ACRES



Horizontal Scale = 1:60  
 Vertical Scale = 1:10



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DOUBLE DIAMOND 24S21E1414 PAD SITE  DATE: 01/26/18 FILE: CD_DOUBLE_DIAMOND_UNIT DRAWN BY: EAH SHEET:	REVISION:		NOTES: 1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET. 3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY TAP ROCK OPERATING, LLC. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
	INT	DATE	



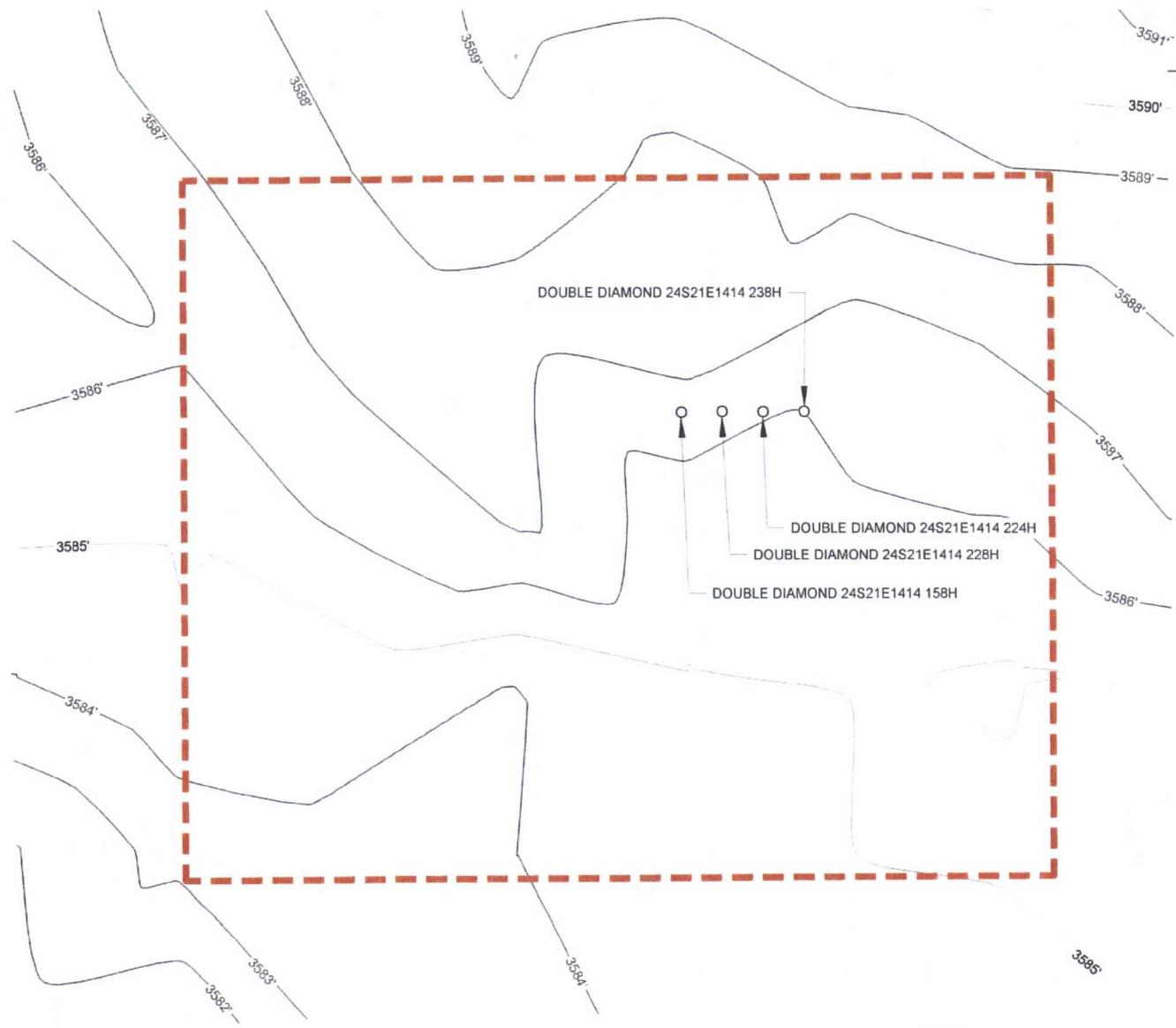
Michael Blake Brown, P.S. No. 18329  
 JANUARY 26, 2018

MAP 11

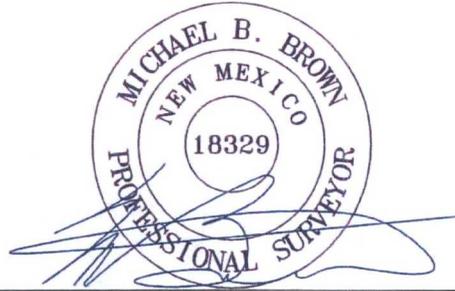
SCALE 1" = 100'  
 0' 50' 100'

SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
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MAP 12



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 JANUARY 26, 2018

DOUBLE DIAMOND 24S21E1414 PAD SITE	REVISION:	
	INT	DATE
DATE:	01/26/18	
FILE:	CD_DOUBLE_DIAMOND_UNIT	
DRAWN BY:	EAH	
SHEET:		

NOTES:  
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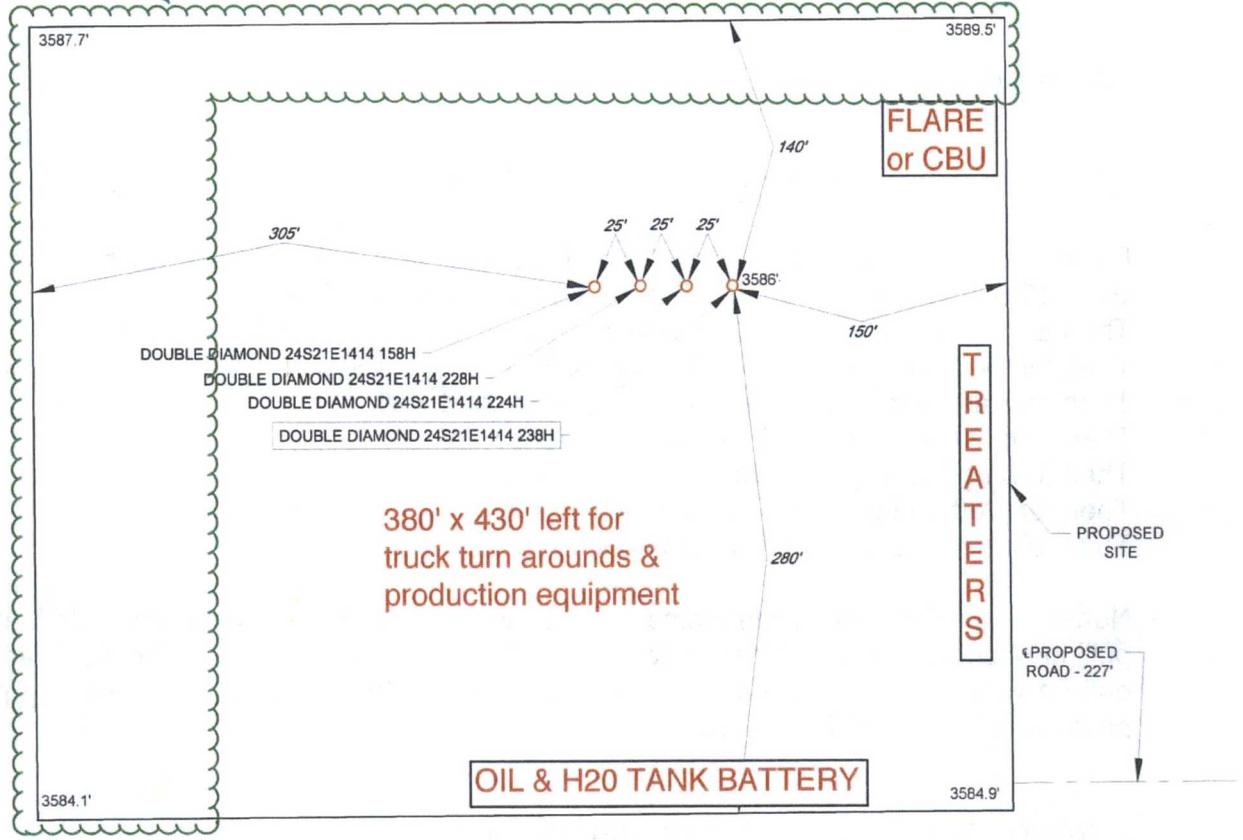


SECTION 14, TOWNSHIP 24-S, RANGE 31-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

DETAIL VIEW  
SCALE: 1" = 100'

MAP 10

interim reclaim  
40' on north  
100' on west



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

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Tap Rock Operating LLC  
Double Diamond Fed Com 228H  
SHL 305' FSL & 910' FEL  
BHL 200' FNL & 330' FEL  
Sec. 14, T. 24 S., R. 31 E., Eddy County, NM

SURFACE PLAN PAGE 1

Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1 – 4)

From the equivalent of Mile Post 23.4 on US 285 between Carlsbad & Loving...  
Go E 19.5 miles on paved NM 31 to the equivalent of Mile Post 19.5  
Then turn right and go SW 3.1 miles on caliche County Road 786  
Then turn left and go SW 1/3 mile on a caliche road to a well  
Then go East 1/4 mile on a caliche road to a second well  
Then turn left and go N 100 yards on a caiche road  
Then turn right and go E 1/2 mile on a caliche road  
Then turn left and go N 0.4 mile on a caliche road  
Then turn left and go W 227' cross-country to the proposed pad

Non-county roads will be maintained as needed to Gold Book standards. This includes pulling ditches, preserving the crown, and cleaning culverts. This will be done at least once a year, and more often as needed. Caliche will be hauled from an existing pit on private land in NENE 7-23s-31e.

2. ROAD TO BE BUILT OR UPGRADED (See MAP 4)

227' of new resource road will be built. The new road will be crowned and ditched, have a 14' wide driving surface, and be surfaced with caliche. Maximum disturbed width = 30'. Maximum grade = 1%. Maximum cut or fill = 1'. No upgrade, culvert, cattle guard, or vehicle turn out is needed.

3. EXISTING WELLS (See MAP 5)

Existing oil, gas, SWD, and P & A wells are within a mile. No water or injection well is within a mile.

4. PROPOSED PRODUCTION FACILITIES (See MAP 6)

Production facilities will be on the southeast sides of the pad. Gas pipeline and power line plans have not been finalized.

**Tap Rock Operating LLC  
Double Diamond Fed Com 228H  
SHL 305' FSL & 910' FEL  
BHL 200' FNL & 330' FEL  
Sec. 14, T. 24 S., R. 31 E., Eddy County, NM**

**SURFACE PLAN PAGE 2**

**5. WATER SUPPLY (See MAP 7)**

Water will be trucked from a private water well (C 03662) on private land in NWNE 23-24s-33e.

**6. CONSTRUCTION MATERIALS & METHODS (see MAPS 8 & 9)**

NM One Call (811) will be notified before construction starts. Top ≈6" of soil and brush will be stockpiled north of the pad. Pipe racks will be to the south. A closed loop drilling system will be used. Caliche will be hauled from existing pit on private land in NENE 7-23s-31e.

**7. WASTE DISPOSAL**

All trash will be placed in a portable trash cage. It will be hauled to the Eddy County landfill. There will be no trash burning. Contents (drill cuttings, mud, salts, and other chemicals) of the mud tanks will be hauled to R360's state approved (NM1-6-0) disposal site at Halfway. Human waste will be disposed of in chemical toilets and hauled to the Carlsbad wastewater treatment plant.

**8. ANCILLARY FACILITIES**

There will be no airstrip or camp. Camper trailers will be on location for the company man, tool pusher, or mud logger.

**9. WELL SITE LAYOUT**

See Rig Diagram for depictions of the well pad, trash cage, access onto the location, parking, living facilities, and rig orientation.

**10. RECLAMATION (See MAPS 10 - 12)**

Interim reclamation will shrink the well pad ≈26% by removing caliche and reclaiming the north 40' and west 100', leaving 3.76 acres for producing 5 wells and truck turn arounds. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas. Disturbed areas will be seeded in

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Double Diamond Fed Com 228H  
SHL 305' FSL & 910' FEL  
BHL 200' FNL & 330' FEL  
Sec. 14, T. 24 S., R. 31 E., Eddy County, NM

**SURFACE PLAN PAGE 3**

accordance with BLM requirements. 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.

Land use:

30' x 227' road = 0.16 acre  
+ 420' x 530' pad = 5.11 acres  
short term = 5.27 acres

short term = 5.27 acres  
- interim reclamation on well pad = 1.35 acres  
3.92 acres long term (0.16 ac. road + 3.76 ac. pad)

**11. SURFACE OWNER**

All construction will be on BLM, 620 E. Greene, Carlsbad NM 88220. Phone is 575 234-5972.

**12. OTHER INFORMATION**

On-site inspection was held with Vance Wolfe (BLM) on December 7, 2017. Lone Mountain filed archaeology report NMCRIS 139066 on October 3, 2017.

**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. Executed this 4th day of February, 2018.

**Tap Rock Operating LLC  
Double Diamond Fed Com 228H  
SHL 305' FSL & 910' FEL  
BHL 200' FNL & 330' FEL  
Sec. 14, T. 24 S., R. 31 E., Eddy County, NM**

**SURFACE PLAN PAGE 4**



---

**Brian Wood, Consultant  
Permits West, Inc.**

**37 Verano Loop, Santa Fe, NM 87508**

**(505) 466-8120**

**FAX: (505) 466-9682**

**Cellular: (505) 699-2276**

**Field representative will be:**

**Doug Sproul**

**Tap Rock Operating, LLC**

**602 Park Point Dr., Suite 200, Golden CO 80401**

**Phone: (720) 772-5090**

**Section 1 - General**

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

**Section 2 - Lined Pits**

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

### Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Assigned injection well API number?

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Injection well name:

Injection well API number:

### Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

### Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

**Bond Information**

**Federal/Indian APD:** FED

**BLM Bond number:** NMB001443

**BIA Bond number:**

**Do you have a reclamation bond?** NO

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**