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Form 3160-3  
(June 2015)

JUN 20 2019

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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
DISTRICT 7 - ARTESIA O.C.D.  
LAND MANAGEMENT  
APPLICATION FOR PERMIT TO DRILL  
DISTRICT 7 - ARTESIA O.C.D.

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

|                                                                                                                                                                                                                                                                     |                                                     |                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER                                                                                                                                                                        |                                                     | 5. Lease Serial No.<br>NMNM085891                               |
| 1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other                                                                                                                                     |                                                     | 6. If Indian, Allottee or Tribe Name                            |
| 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone                                                                                                        |                                                     | 7. If Unit or CA Agreement, Name and No.                        |
| 2. Name of Operator<br>TAP ROCK OPERATING LLC                                                                                                                                                                                                                       |                                                     | 8. Lease Name and Well No.<br>CYPRESS 34 FEDERAL<br>233H 319943 |
| 3a. Address<br>602 Park Point Drive Suite 200 Golden CO 80401                                                                                                                                                                                                       | 3b. Phone No. (include area code)<br>(720)460-3316  | 9. API Well No.<br>30-015-46119                                 |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *)<br>At surface LOT 1 / 241 FNL / 1171 FEL / LAT 32.2533358 / LONG -103.9676762<br>At proposed prod. zone NWNE / 5 FNL / 2010 FEL / LAT 32.2685781 / LONG -103.9705198 |                                                     | 10. Field and Pool, or Exploratory<br>PURPLE SAGE WOLFCAMP      |
| 11. Sec., T. R. M. or Blk. and Survey or Area<br>SEC 3 / T24S / R29E / NMP                                                                                                                                                                                          |                                                     |                                                                 |
| 14. Distance in miles and direction from nearest town or post office*<br>6 miles                                                                                                                                                                                    |                                                     | 12. County or Parish<br>EDDY                                    |
| 13. State<br>NM                                                                                                                                                                                                                                                     |                                                     |                                                                 |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)<br>240 feet                                                                                                                                   | 16. No of acres in lease<br>318.62                  | 17. Spacing Unit dedicated to this well<br>320                  |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.<br>25 feet                                                                                                                                               | 19. Proposed Depth<br>11040 feet / 16480 feet       | 20. BLM/BIA Bond No. in file<br>FED: NMB001443                  |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.)<br>3093 feet                                                                                                                                                                                                    | 22. Approximate date work will start*<br>01/02/2019 | 23. Estimated duration<br>30 days                               |
| 24. Attachments                                                                                                                                                                                                                                                     |                                                     |                                                                 |

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- |                                                                                                                                                |                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 1. Well plat certified by a registered surveyor.                                                                                               | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.                                                                                                                            | 5. Operator certification.                                                                      |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

|                                                               |                                                         |                    |
|---------------------------------------------------------------|---------------------------------------------------------|--------------------|
| 25. Signature<br>(Electronic Submission)                      | Name (Printed/Typed)<br>Brian Wood / Ph: (505)466-8120  | Date<br>10/26/2018 |
| Title<br>President                                            |                                                         |                    |
| Approved by (Signature)<br>(Electronic Submission)            | Name (Printed/Typed)<br>Cody Layton / Ph: (575)234-5959 | Date<br>06/11/2019 |
| Title<br>Assistant Field Manager Lands & Minerals<br>CARLSBAD |                                                         |                    |

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

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

**APPROVED WITH CONDITIONS**

NSL Required.

(Continued on page 2)

\*(Instructions on page 2)

Approval Date: 06/11/2019

RWP 6-25-19

## INSTRUCTIONS

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

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

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

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the 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.

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

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service 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 connects this information to an 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 Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

## **Additional Operator Remarks**

### **Location of Well**

I. SHL: LOT 1 / 241 FNL / 1171 FEL / TWSP: 24S / RANGE: 29E / SECTION: 3 / LAT: 32.2533358 / LONG: -103.9676762 ( TVD: 0 feet, MD: 0 feet )  
PPP: LOT 1 / 241 FNL / 1171 FEL / TWSP: 24S / RANGE: 29E / SECTION: 3 / LAT: 32.2533358 / LONG: -103.9676762 ( TVD: 0 feet, MD: 0 feet )  
PPP: SWSE / 0 FSL / 2007 FEL / TWSP: 23S / RANGE: 29E / SECTION: 34 / LAT: 32.2685781 / LONG: -103.9705198 ( TVD: 10991 feet, MD: 11205 feet )  
BHL: NWNE / 5 FNL / 2010 FEL / TWSP: 23S / RANGE: 29E / SECTION: 34 / LAT: 32.2685781 / LONG: -103.9705198 ( TVD: 11040 feet, MD: 16480 feet )

## **BLM Point of Contact**

Name: Candy Vigil  
Title: Admin Support Assistant  
Phone: 5752345982  
Email: cvigil@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.

# PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

|                              |                                     |
|------------------------------|-------------------------------------|
| <b>OPERATOR'S NAME:</b>      | <b>TAP ROCK OPERATING LLC.</b>      |
| <b>LEASE NO.:</b>            | <b>NMNM086024</b>                   |
| <b>WELL NAME &amp; NO.:</b>  | <b>233H – CYPRESS 34 FEDERAL</b>    |
| <b>SURFACE HOLE FOOTAGE:</b> | <b>241'/N &amp; 1171'/E</b>         |
| <b>BOTTOM HOLE FOOTAGE:</b>  | <b>5'/N &amp; 2010'/E</b>           |
| <b>LOCATION:</b>             | <b>SECTION 03, T24S, R29E, NMPM</b> |
| <b>COUNTY:</b>               | <b>EDDY</b>                         |

COA

|                      |                                        |                                            |                                          |
|----------------------|----------------------------------------|--------------------------------------------|------------------------------------------|
| H2S                  | <input type="radio"/> Yes              | <input checked="" type="radio"/> No        |                                          |
| Potash               | <input type="radio"/> None             | <input type="radio"/> Secretary            | <input checked="" type="radio"/> R-111-P |
| Cave/Karst Potential | <input type="radio"/> Low              | <input checked="" 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 **350** feet (a minimum of 70 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.
2. The minimum required fill of cement behind the **9-5/8** inch 1<sup>st</sup> intermediate casing is which setting depth is at **3100ft**:
- Cement to surface. If cement does not circulate see B.1.a, c-d above.
- Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
- ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
3. The minimum required fill of cement behind the **7-5/8** inch 2<sup>nd</sup> intermediate casing is: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
- Variance for annular spacing between 7 5/8" x 5 1/2" casing is approved.**
4. The minimum required fill of cement behind the **5-1/2 x 5** inch production casing is:
- Cement should tie-back 200' 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 **5000 (5M)** psi.

**If a Multibowl system is used, Annular preventer will be tested 250 low and 50% of the working pressure for the surface and both intermediate casings. Rams will be tested to per Onshore Order 2.**

## 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 (one log per well pad is acceptable) 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 051019**

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

|                       |                              |
|-----------------------|------------------------------|
| OPERATOR'S NAME:      | TAP ROCK OPERATING LLC       |
| LEASE NO.:            | NMNM 085891                  |
| WELL NAME & NO.:      | 233H – CYPRESS 34 FEDERAL    |
| SURFACE HOLE FOOTAGE: | 241'N & 1171'E               |
| BOTTOM HOLE FOOTAGE   | 5'N & 2010'E                 |
| LOCATION:             | SECTION 03, T24S, R29E, NMPM |
| COUNTY:               | EDDY                         |
| OPERATOR'S NAME:      | TAP ROCK OPERATING LLC       |
| LEASE NO.:            | NMNM 085891                  |
| WELL NAME & NO.:      | 243H – CYPRESS 34 FEDERAL    |
| SURFACE HOLE FOOTAGE: | 241'N & 1196'E               |
| BOTTOM HOLE FOOTAGE   | 5'N & 2430'E                 |
| LOCATION:             | SECTION 03, T24S, R29E, NMPM |
| COUNTY:               | EDDY                         |
| OPERATOR'S NAME:      | TAP ROCK OPERATING LLC       |
| LEASE NO.:            | NMNM 085891                  |
| WELL NAME & NO.:      | 246H – CYPRESS 34 FEDERAL    |
| SURFACE HOLE FOOTAGE: | 241'N & 1146'E               |
| BOTTOM HOLE FOOTAGE   | 5'N & 1590'E                 |
| LOCATION:             | SECTION 03, T24S, R29E, NMPM |
| COUNTY:               | EDDY                         |

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☐ **Special Requirements**
  - SSPS Habitat
  - Hydrology
  - Cave/Karst
- ☐ **Construction**

Notification

Topsoil

Closed Loop System

Federal Mineral Material Pits

Well Pads

Roads

☐ **Road Section Diagram**

☐ **Production (Post Drilling)**

Well Structures & Facilities

Pipelines

☐ **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)**

### **Hydrology:**

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

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

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

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion. A power pole should not be placed in drainages, playas, wetlands, riparian areas, or floodplains and must span across the features at a distance away that would not promote further erosion.

## **Cave and Karst Conditions of Approval for APDs**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production:

#### **Construction:**

##### **General Construction:**

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

##### **Pad Construction:**

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

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

**Tank Battery Construction:**

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- All tank battery locations and facilities will be lined and bermed.
- The liner should be at least 20 mil in thickness and installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures.
- Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

**Road Construction:**

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

**Buried Pipeline/Cable Construction:**

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

**Powerline Construction:**

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Larger powerlines will adjust their pole spacing to avoid cave and karst features.

- Special restoration stipulations or realignment may be required if subsurface voids are encountered.

#### **Surface Flowlines Installation:**

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage system.

#### **Leak Detection System:**

- A method of detecting leaks is required. The method could incorporate gauges to measure loss, siting valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present.
- A leak detection plan will be submitted to BLM that incorporates an automatic shut off system (see below) to minimize the effects of an undesirable event that could negatively sensitive cave/karst resources.
- Well heads, pipelines (surface and buried), storage tanks, and all supporting equipment should be monitored regularly after installation to promptly identify and fix leaks.

#### **Automatic Shut-off Systems:**

- Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

### **Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and groundwater concerns:

#### **Closed Loop System:**

- A closed loop system using steel tanks will be utilized during drilling – no pits
- All fluids and cuttings will be hauled off-site and disposed of properly at an authorized site

#### **Rotary Drilling with Fresh Water:**

- Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

#### **Directional Drilling:**

- The kick off point for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

#### **Lost Circulation:**

- ALL lost circulation zones between surface and the base of the cave occurrence zone will be logged and reported in the drilling report.
- If a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, regardless of the type of drilling machinery used, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

#### **Abandonment Cementing:**

- Additional plugging conditions of approval may be required upon well abandonment in high and medium karst potential occurrence zones.
- The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

#### **Pressure Testing:**

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

#### **Special Status Plant Species (SSPS) Habitat**

Vehicles and equipment will be kept on existing roads and approved surfaces only, and will avoid travel across undisturbed surfaces; workers will be instructed not to park off the roads or ROW in undisturbed areas. Alterations to project design and additions of project components will require SSPS surveys and re-analysis of impacts if those project elements intersect SSPS suitable habitat.

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the 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 .

### **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.

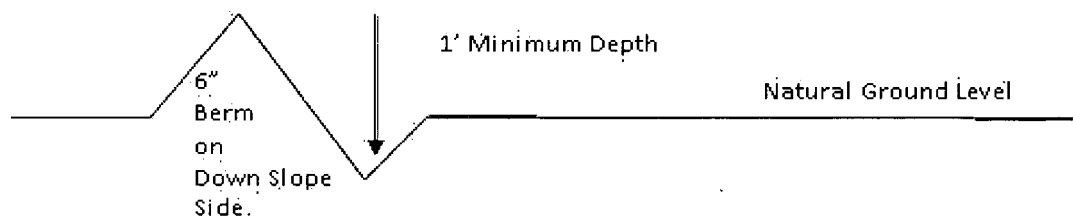
##### **Turnouts**

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 outslowing and insloping, leadoff 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 %);

### **Cattle guards**

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

### **Fence Requirement**

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

### **Public Access**

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

### Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

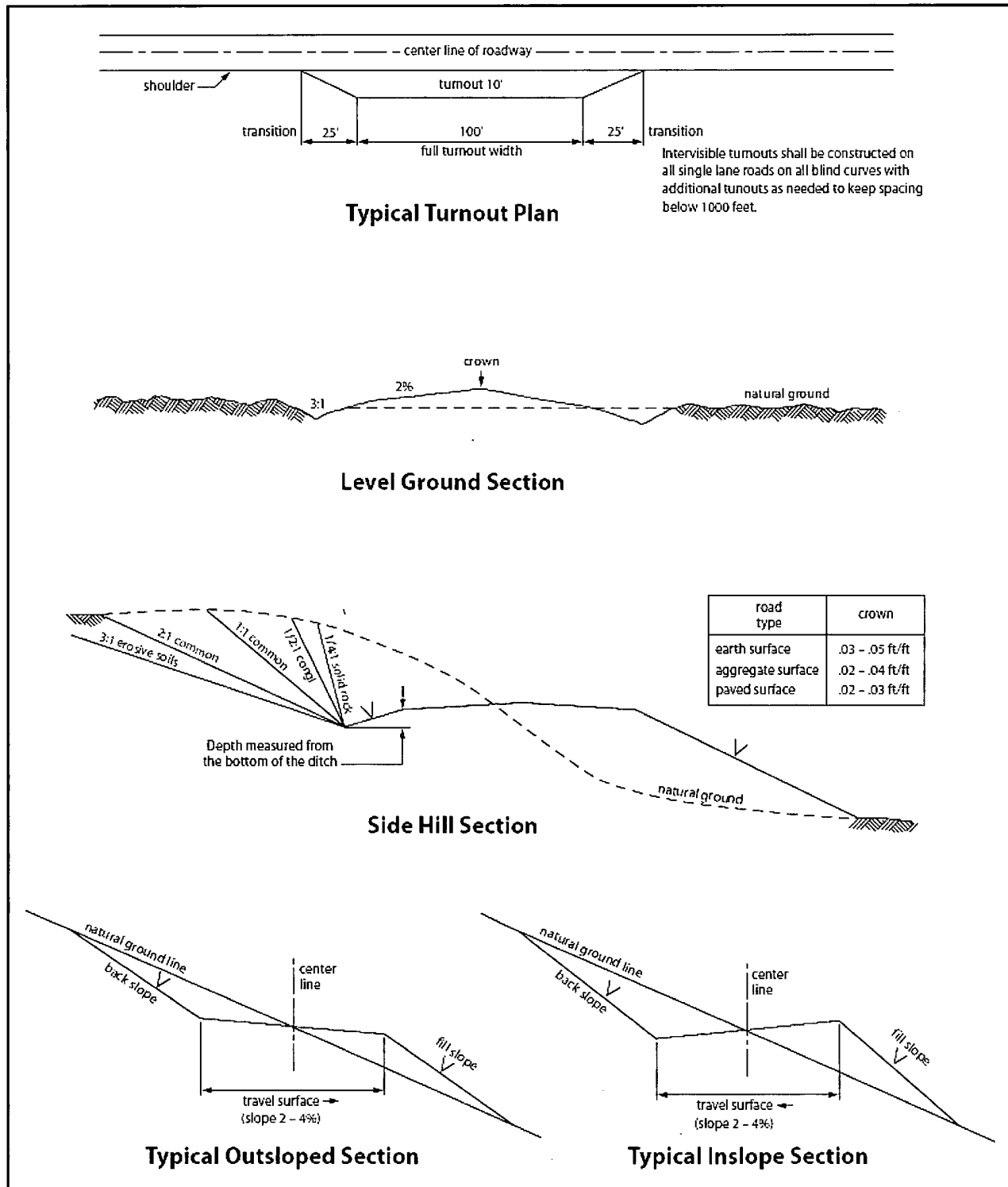


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## **VII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

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

#### **Exclosure Netting (Open-top Tanks)**

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

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

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

#### **Open-Vent Exhaust Stack Exclosures**

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

#### **Containment Structures**

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

#### **Painting Requirement**

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

### **B. PIPELINES**

#### **BURIED PIPELINE STIPULATIONS**

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way.

This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

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

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

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

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

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 30 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

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

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

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

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

|                                                    |                                                  |
|----------------------------------------------------|--------------------------------------------------|
| <input checked="" type="checkbox"/> seed mixture 1 | <input type="checkbox"/> seed mixture 3          |
| <input type="checkbox"/> seed mixture 2            | <input type="checkbox"/> seed mixture 4          |
| <input type="checkbox"/> seed mixture 2/LPC        | <input type="checkbox"/> Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

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

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

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

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

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

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

## **VIII. INTERIM RECLAMATION**

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

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

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for

production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

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

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

## **IX. FINAL ABANDONMENT & RECLAMATION**

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

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

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

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

### **Seed Mixture 1 for Loamy Sites**

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

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

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

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

\*Pounds of pure live seed:

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



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

## Operator Certification Data Report

06/17/2019

### Operator Certification

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

**NAME:** Brian Wood

**Signed on:** 10/26/2018

**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:**



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

## Application Data Report

06/17/2019

APD ID: 10400035647

Submission Date: 10/26/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: CYPRESS 34 FEDERAL

Well Number: 233H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

### Section 1 - General

APD ID: 10400035647

Tie to previous NOS?

Submission Date: 10/26/2018

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: NMNM085891

Lease Acres: 318.62

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? YES

APD Operator: TAP ROCK OPERATING LLC

Operator letter of designation:

### Operator Info

Operator Organization Name: TAP ROCK OPERATING LLC

Operator Address: 602 Park Point Drive Suite 200

Zip: 80401

Operator PO Box:

Operator City: Golden

State: CO

Operator Phone: (720)460-3316

Operator Internet Address:

### Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: CYPRESS 34 FEDERAL

Well Number: 233H

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:** CYPRESS 34 FEDERAL

**Well Number:** 233H

**Describe other minerals:**

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

**Type of Well Pad:** MULTIPLE WELL

**Multiple Well Pad Name:**

**Number:** 233H

**Well Class:** HORIZONTAL

CYPRESS 34 FEDERAL

**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:** 6 Miles

**Distance to nearest well:** 25 FT

**Distance to lease line:** 240 FT

**Reservoir well spacing assigned acres Measurement:** 320 Acres

**Well plat:** Cypress\_233H\_C102\_et al\_102518\_20181026134323.pdf

**Well work start Date:** 01/02/2019

**Duration:** 30 DAYS

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:** 19642

|                  | 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<br>Leg<br>#1 | 241     | FNL          | 117<br>1 | FEL          | 24S  | 29E   | 3       | Lot<br>1          | 32.25333<br>58 | -<br>103.9676<br>762 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>085891 | 309<br>3      | 0         | 0         |
| KOP<br>Leg<br>#1 | 474     | FNL          | 200<br>7 | FEL          | 24S  | 29E   | 3       | Lot<br>2          | 32.25270<br>3  | -<br>103.9703<br>84  | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>085891 | -<br>738<br>4 | 105<br>62 | 104<br>77 |
| PPP<br>Leg<br>#1 | 241     | FNL          | 117<br>1 | FEL          | 24S  | 29E   | 3       | Lot<br>1          | 32.25333<br>58 | -<br>103.9676<br>762 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>085891 | 309<br>3      | 0         | 0         |

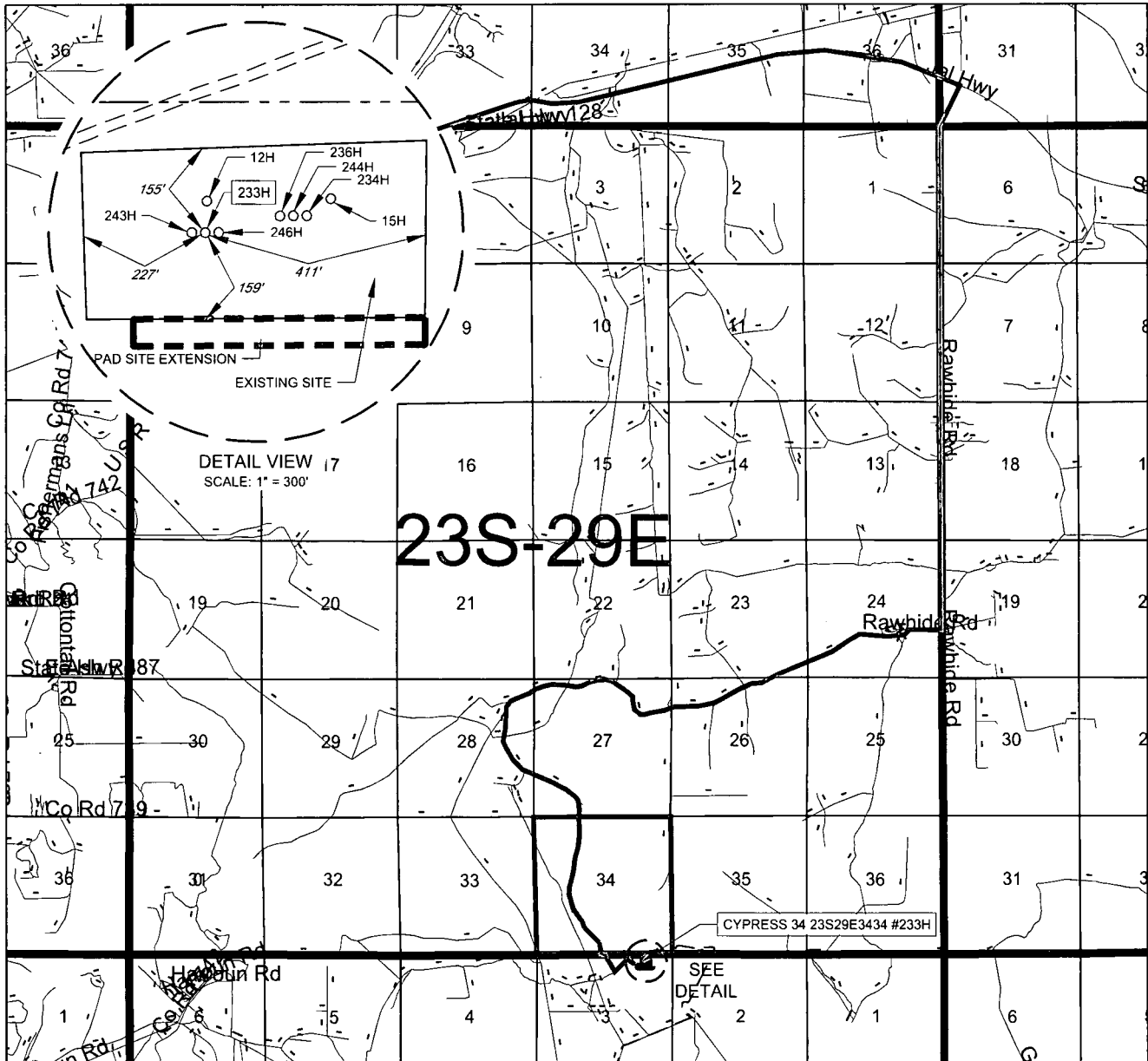
**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

|                   | 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<br>Leg<br>#1  | 0       | FSL          | 200<br>7 | FEL          | 23S  | 29E   | 34      | Aliquot<br>SWSE   | 32.26857<br>81 | -<br>103.9705<br>198 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>086024 | -<br>789<br>8 | 112<br>05 | 109<br>91 |
| EXIT<br>Leg<br>#1 | 5       | FNL          | 201<br>0 | FEL          | 23S  | 29E   | 34      | Aliquot<br>NWNE   | 32.26857<br>81 | -<br>103.9705<br>198 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>086024 | -<br>794<br>7 | 164<br>80 | 110<br>40 |
| BHL<br>Leg<br>#1  | 5       | FNL          | 201<br>0 | FEL          | 23S  | 29E   | 34      | Aliquot<br>NWNE   | 32.26857<br>81 | -<br>103.9705<br>198 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>086024 | -<br>794<br>7 | 164<br>80 | 110<br>40 |

# EXHIBIT 2 VICINITY MAP



LEASE NAME & WELL NO.: CYPRESS 34 23S29E3434 #233H

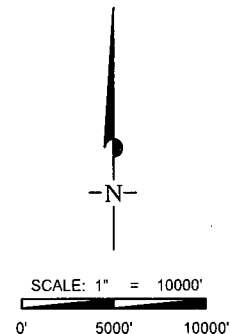
SECTION 3 TWP 24-S RGE 29-E SURVEY N.M.P.M.  
COUNTY EDDY STATE NM  
DESCRIPTION 241' FNL & 1171' FEL

## DISTANCE & DIRECTION

FROM INT. OF NM-31, & NM-128-E, HEAD EAST ON NM-128 E  $\pm 4.5$   
MILES, THENCE SOUTH (RIGHT) ON RAWHIDE ROAD  $\pm 4.1$  MILES,  
THENCE WEST, (RIGHT) ON MAIN ROAD  $\pm 3.5$  MILES, THENCE SOUTH  
CONTINUING ON MAIN ROAD  $\pm 2.6$  MILES TO A POINT  $\pm 470$  FEET  
SOUTHWEST 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.



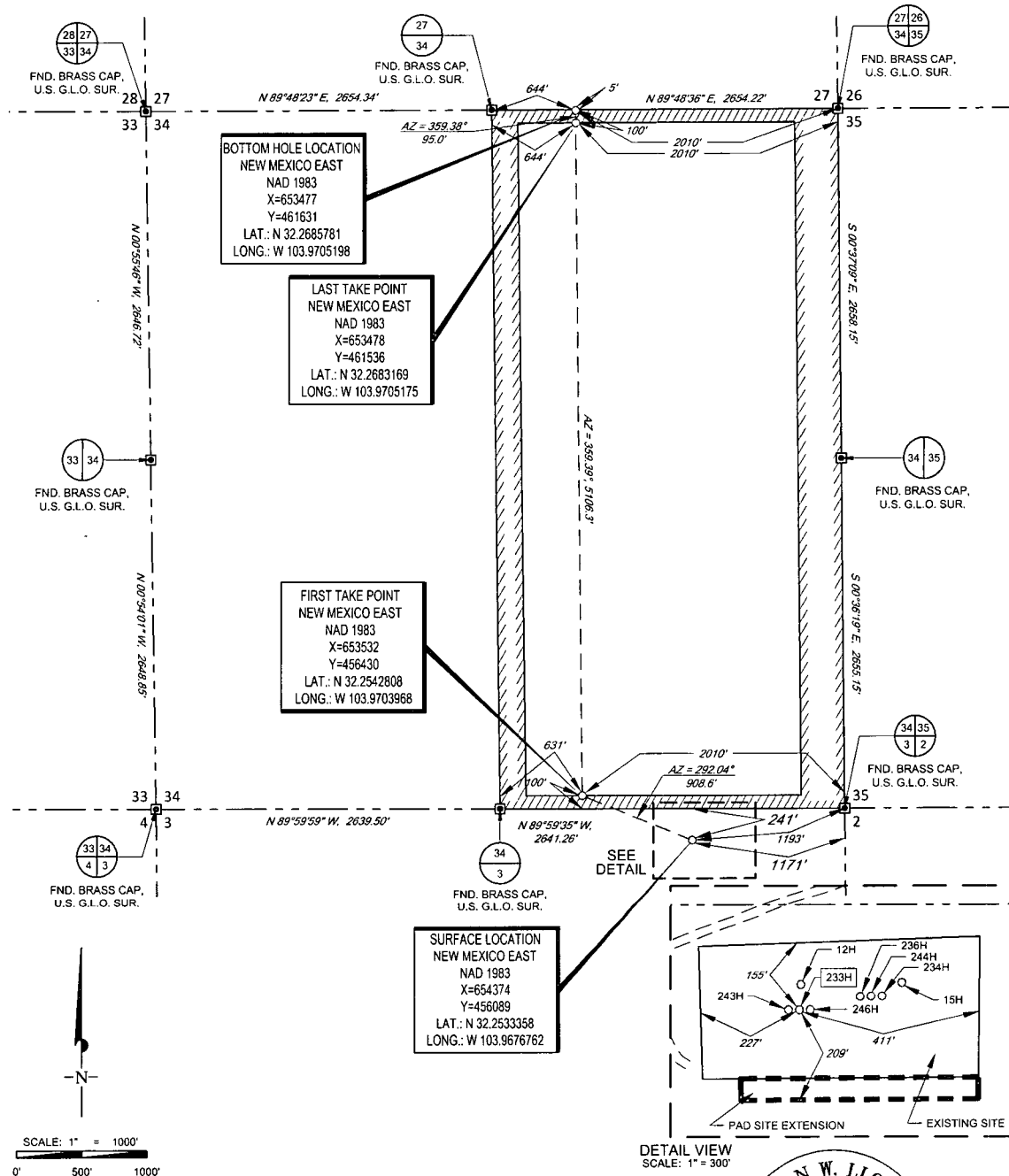
**TOPOGRAPHIC**  
LOYALTY INNOVATION LEGACY

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

# TAP ROCK EXHIBIT 2A

SECTION 3, TOWNSHIP 24-S, RANGE 29-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: CYPRESS 34 23S29E3434 #233H

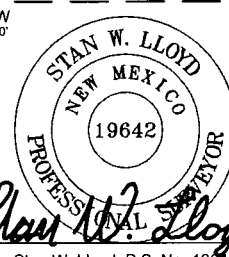
SECTION 3 TWP 24-S RGE 29-E SURVEY N.M.P.M.  
COUNTY EDDY STATE NM  
DESCRIPTION 241' FNL & 1171' FEL

**DISTANCE & DIRECTION**  
FROM INT. OF NM-31, & NM-128-E, HEAD EAST ON NM-128 E ±4.5  
MILES, THENCE SOUTH (RIGHT) ON RAWHIDE ROAD ±4.1 MILES,  
THENCE WEST, (RIGHT) ON MAIN ROAD ±3.5 MILES, THENCE SOUTH  
CONTINUING ON MAIN ROAD ± 2.6 MILES TO A POINT ±470 FEET  
SOUTHWEST 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.

DETAIL VIEW  
SCALE: 1" = 300'



Stan W. Lloyd, P.S. No. 19642  
AUGUST 8, 2018

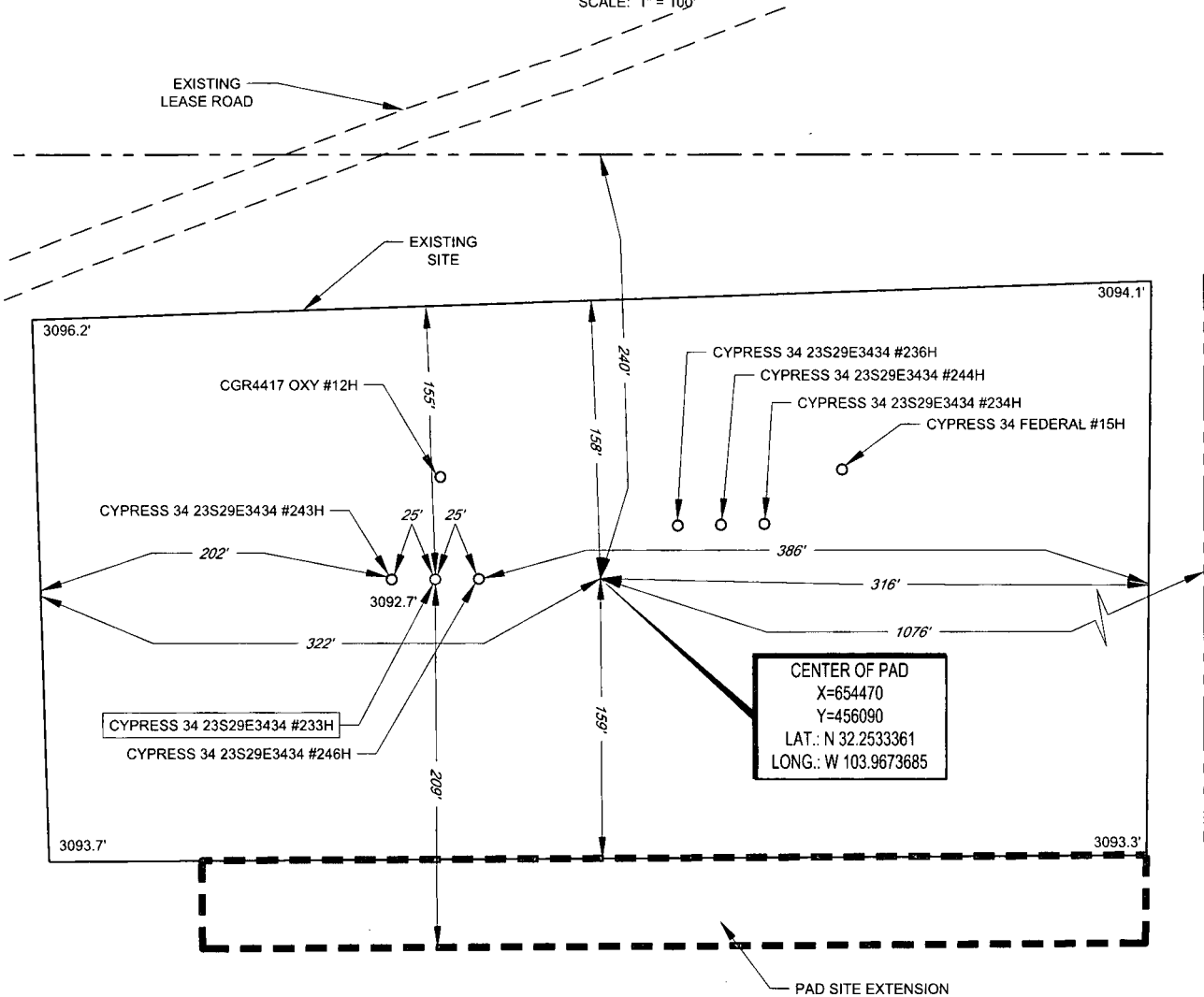
**TOPOGRAPHIC**  
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WWW.TOPOGRAPHIC.COM

# EXHIBIT 2B

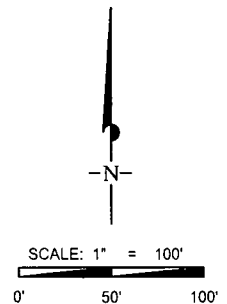


SECTION 3, TOWNSHIP 24-S, RANGE 29-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

DETAIL VIEW  
SCALE: 1" = 100'



LEASE NAME & WELL NO.: CYPRESS 34 23S29E3434 #233H  
233H LATITUDE N 32.2533358 233H LONGITUDE W 103.9676762  
CENTER OF PAD IS 240' FNL & 1076' FEL



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.



1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140  
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554  
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705  
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WWW.TOPOGRAPHIC.COM





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

## Drilling Plan Data Report

06/17/2019

APD ID: 10400035647

Submission Date: 10/26/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: CYPRESS 34 FEDERAL

Well Number: 233H

[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            | QUATERNARY        | 3093      | 0                   | 0              | OTHER : Caliche        | USEABLE WATER,OTHER : Salt | No                  |
| 2            | RUSTLER ANHYDRITE | 2757      | 336                 | 336            |                        | OTHER : Salt               | No                  |
| 3            | SALADO            | 2442      | 651                 | 651            | SALT                   | OTHER : Salt               | No                  |
| 4            | BASE OF SALT      | -68       | 3161                | 3211           |                        | OTHER : Salt               | No                  |
| 5            | DELAWARE          | -88       | 3181                | 3231           | OTHER : Mountain Group | NATURAL GAS,OIL            | No                  |
| 6            | LAMAR             | -98       | 3191                | 3241           |                        | NATURAL GAS,OIL            | No                  |
| 7            | BELL CANYON       | -118      | 3211                | 3262           | SANDSTONE              | NATURAL GAS,OIL            | No                  |
| 8            | BRUSHY CANYON     | -2213     | 5306                | 5391           | SANDSTONE              | NATURAL GAS,OIL            | No                  |
| 9            | BONE SPRING       | -3828     | 6921                | 7006           | LIMESTONE              | NATURAL GAS,OIL            | No                  |
| 10           | BONE SPRING 1ST   | -4793     | 7886                | 7971           | SANDSTONE              | NATURAL GAS,OIL            | No                  |
| 11           | BONE SPRING 2ND   | -5408     | 8501                | 8586           | SANDSTONE              | NATURAL GAS,OIL            | No                  |
| 12           | BONE SPRING 3RD   | -6738     | 9831                | 9916           | SANDSTONE              | NATURAL GAS,OIL            | No                  |
| 13           | WOLFCAMP          | -7053     | 10146               | 10231          | OTHER : A              | NATURAL GAS,OIL            | No                  |
| 14           | WOLFCAMP          | -7253     | 10346               | 10431          | OTHER : A Fat          | NATURAL GAS,OIL            | No                  |
| 15           | WOLFCAMP          | -7408     | 10501               | 10586          | OTHER : B              | NATURAL GAS,OIL            | No                  |
| 16           | WOLFCAMP          | -7908     | 11001               | 11223          | OTHER : B2             | NATURAL GAS,OIL            | Yes                 |

### Section 2 - Blowout Prevention

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

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

**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. The BOP will be utilized below surface casing to TD. Also present will be an accumulator that meets the requirements of Onshore Order #2 for the pressure rating of the BOP stack. A rotating head will also be installed as needed. BOP will be inspected and operated as recommended in Onshore Order #2. A top drive check valve and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position. The wellhead will be a multi-bowl speed head.

**Requesting Variance?** YES

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

**Testing Procedure:** BOP Test procedure will be as follows: After surface casing is set and the BOP is nipped up, the BOP pressure tests will be made with a third party tester to 250 psi low, 5000 psi high, and the annular preventer will be tested to 3,500 psi. The BOP will be tested in this manner after any breaks, nipple ups, or passage of allotted time. Casing Test procedure: Casing will be tested to .22 psi per foot of casing length or 1500 psi, whichever is greater, but not to exceed 70% of minimum internal yield.

**Choke Diagram Attachment:**

Cypress\_233H\_Choke\_032918\_20181026142237.pdf

**BOP Diagram Attachment:**

Cypress\_233H\_BOP\_20181026142308.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          | 410           | 0           | 410            | 3093        |                | 410                         | J-55  | 54.5   | BUTT              | 1.13        | 1.15     | DRY           | 1.51     | DRY          | 1.51    |
| 2         | INTERMEDIATE | 12.25     | 9.625    | NEW       | API      | N              | 0          | 3300          | 0           | 3248           | 3093        |                | 3300                        | J-55  | 40     | BUTT              | 1.13        | 1.15     | DRY           | 1.51     | DRY          | 1.51    |
| 3         | PRODUCTION   | 6.75      | 5.5      | NEW       | API      | Y              | 0          | 9362          | 0           | 9270           | 3093        |                | 9362                        | P-110 | 20     | BUTT              | 1.13        | 1.15     | DRY           | 1.51     | DRY          | 1.51    |
| 4         | INTERMEDIATE | 8.75      | 7.625    | NEW       | API      | N              | 0          | 9562          | 0           | 9470           | 3093        |                | 9562                        | P-110 | 29.7   | OTHER - Wedge 513 | 1.13        | 1.15     | DRY           | 1.51     | DRY          | 1.51    |
| 5         | PRODUCTION   | 6.75      | 5.0      | NEW       | API      | Y              | 9362       | 16480         | 9270        | 11040          |             |                | 7118                        | P-105 | 18     | OTHER - Wedge 521 | 1.13        | 1.15     | DRY           | 1.51     | DRY          | 1.51    |

**Casing Attachments**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

#### Casing Attachments

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Cypress\_233H\_Casing\_Design\_Assumptions\_20181026142924.pdf

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Cypress\_233H\_Casing\_Design\_Assumptions\_20181026143030.pdf

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

Cypress\_233H\_5.5in\_Casing\_Spec\_20181026143350.PDF

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

Cypress\_233H\_Casing\_Design\_Assumptions\_20181026143424.pdf

---

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

#### Casing Attachments

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Cypress\_233H\_Casing\_Design\_Assumptions\_20181026143442.pdf

Cypress\_233H\_7.625\_P110\_Casing\_Spec\_20190508120237.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

Cypress\_233H\_5in\_Casing\_Spec\_20181026143541.pdf

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

Cypress\_233H\_Casing\_Design\_Assumptions\_20181026144835.pdf

#### Section 4 - Cement

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives                                |
|-------------|-----------|------------------|--------|-----------|--------------|-------|---------|-------|---------|-------------|------------------------------------------|
| PRODUCTION  | Lead      |                  | 0      | 0         | 0            | 0     | 0       | 0     | 0       | None        | None                                     |
| PRODUCTION  | Tail      |                  | 0      | 0         | 0            | 0     | 0       | 0     | 0       | None        | None                                     |
| PRODUCTION  | Lead      |                  | 0      | 0         | 0            | 0     | 0       | 0     | 0       | None        | None                                     |
| PRODUCTION  | Tail      |                  | 8562   | 16480     | 950          | 1.24  | 14.2    | 1178  | 10      | Class H     | fluid loss + dispersant + retarder + LCM |

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives                    |
|-------------|-----------|------------------|--------|-----------|--------------|-------|---------|-------|---------|-------------|------------------------------|
| SURFACE     | Lead      |                  | 0      | 410       | 316          | 1.8   | 13.5    | 486   | 100     | Class C     | 5% Bentonite + 2% CaCl + LCM |

|              |      |  |   |      |     |      |      |      |     |         |                                          |
|--------------|------|--|---|------|-----|------|------|------|-----|---------|------------------------------------------|
| INTERMEDIATE | Lead |  | 0 | 3300 | 755 | 2.19 | 12.7 | 1653 | 100 | Class C | bentonite + 1% CaCl2 + 8% NaCl + LCM     |
| INTERMEDIATE | Tail |  | 0 | 3300 | 311 | 1.33 | 14.8 | 414  | 100 | Class C | 5% NaCl + LCM                            |
| INTERMEDIATE | Lead |  | 0 | 9562 | 310 | 3.36 | 11.5 | 1042 | 35  | TXI     | fluid loss + dispersant + retarder + LCM |
| INTERMEDIATE | Tail |  | 0 | 9562 | 187 | 1.39 | 13.2 | 260  | 35  | TXI     | 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 |
|-----------|--------------|---------------------------------|----------------------|----------------------|---------------------|-----------------------------|----|----------------|----------------|-----------------|----------------------------|
| 3300      | 9562         | OTHER : Fresh water & cut brine | 9                    | 9                    |                     |                             |    |                |                |                 |                            |
| 410       | 3300         | OTHER : Brine water             | 10                   | 10                   |                     |                             |    |                |                |                 |                            |
| 9562      | 16480        | OIL-BASED MUD                   | 12.5                 | 12.5                 |                     |                             |    |                |                |                 |                            |

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

| Top Depth | Bottom Depth | Mud Type                 | Min Weight (lbs/gal) | Max Weight (lbs/gal) | Density (lbs/cu ft) | Gel Strength (lbs/100 sqft) | PH | Viscosity (CP) | Salinity (ppm) | Filtration (cc) | Additional Characteristics |
|-----------|--------------|--------------------------|----------------------|----------------------|---------------------|-----------------------------|----|----------------|----------------|-----------------|----------------------------|
| 0         | 410          | OTHER : Fresh water spud | 8.3                  | 8.3                  |                     |                             |    |                |                |                 |                            |

### Section 6 - Test, Logging, Coring

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

Electric Logging Program: No open-hole logs are planned at this time for the pilot hole. GR will be collected while drilling through the MWD tools from intermediate casing to TD.

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

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

CBL,GR

**Coring operation description for the well:**

No DSTs or cores are planned at this time.

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 6624

**Anticipated Surface Pressure:** 4195.2

**Anticipated Bottom Hole Temperature(F):** 160

**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:**

Cypress\_233H\_H2S\_Plan\_20181026144719.pdf

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

### Section 8 - Other Information

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

Cypress\_233H\_Horizontal\_Plan\_20181026144735.pdf

**Other proposed operations facets description:**

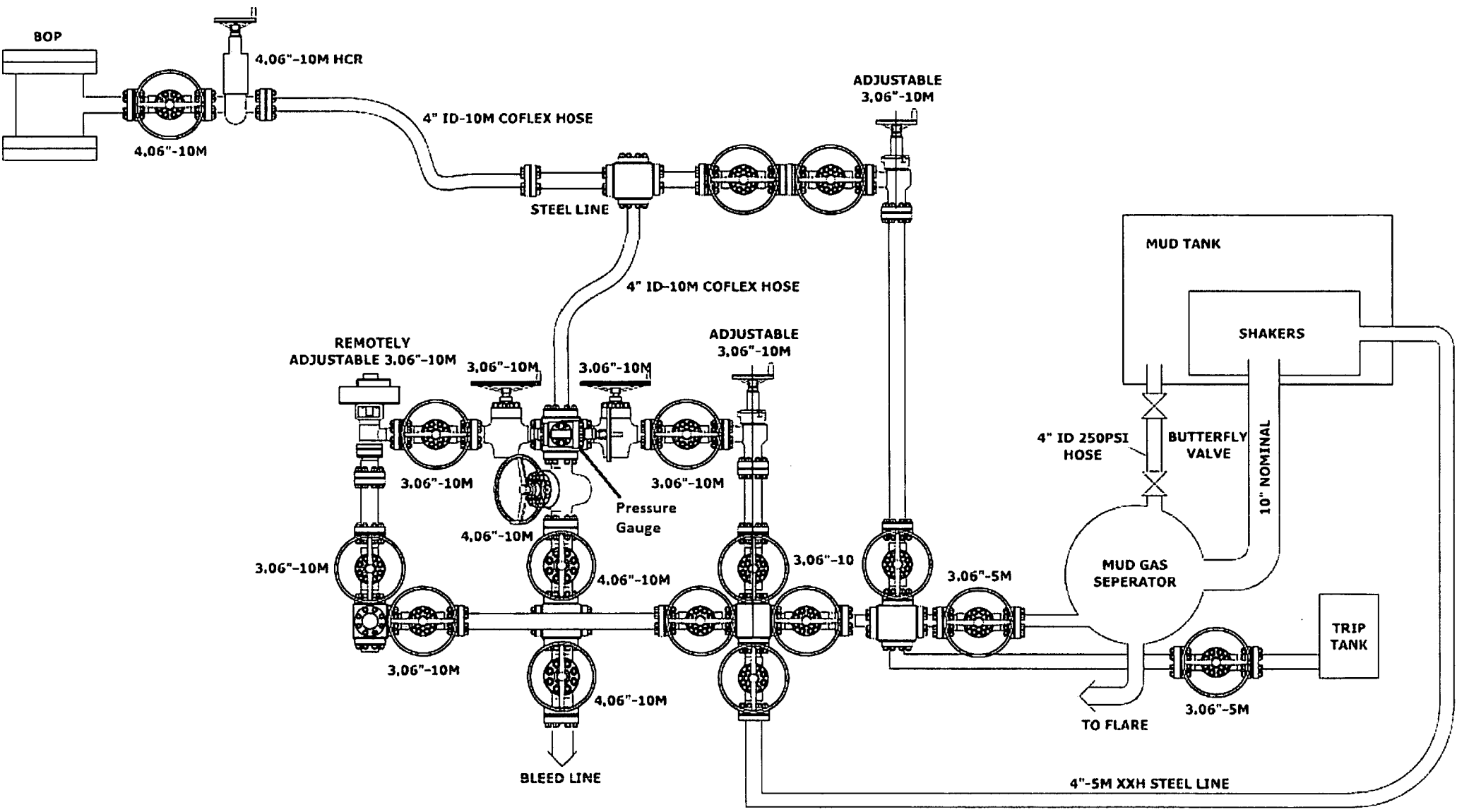
**Other proposed operations facets attachment:**

Cypress\_233H\_Speedhead\_Specs\_033018\_20181026144753.pdf

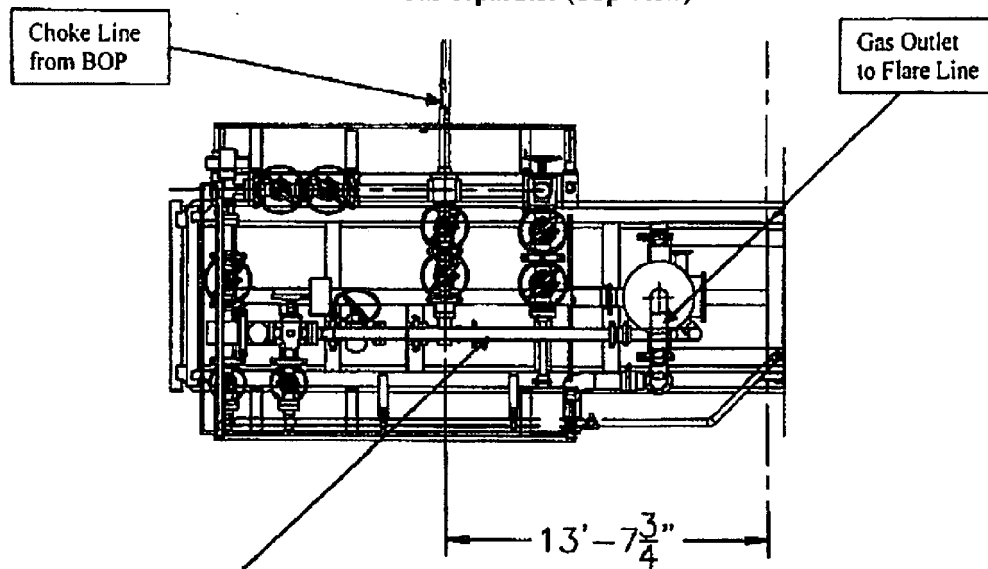
Cypress\_233H\_Drill\_Plan\_050819\_REVISED\_v4\_20190508120338.pdf

**Other Variance attachment:**

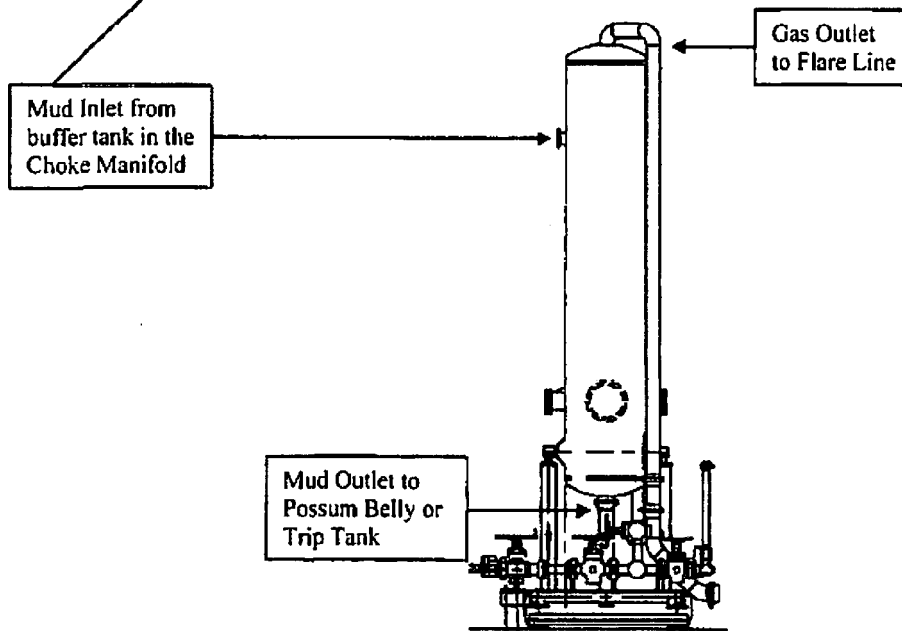
Cypress\_233H\_Casing\_Cementing\_Variance\_20181026144801.pdf



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



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

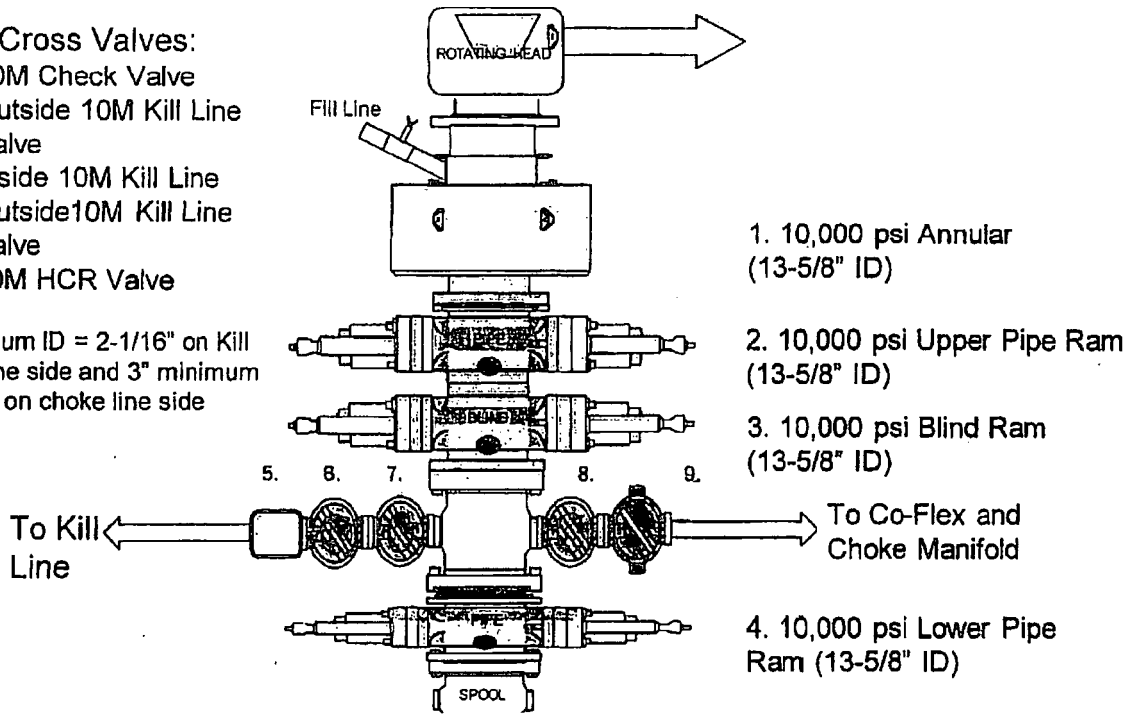


# 10,000 psi BOP Stack

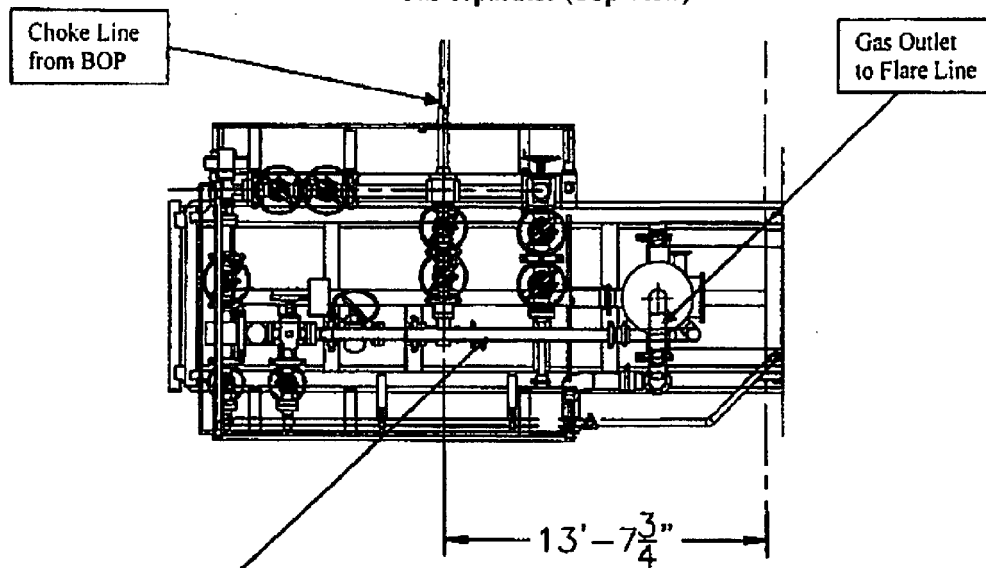
## Mud Cross Valves:

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

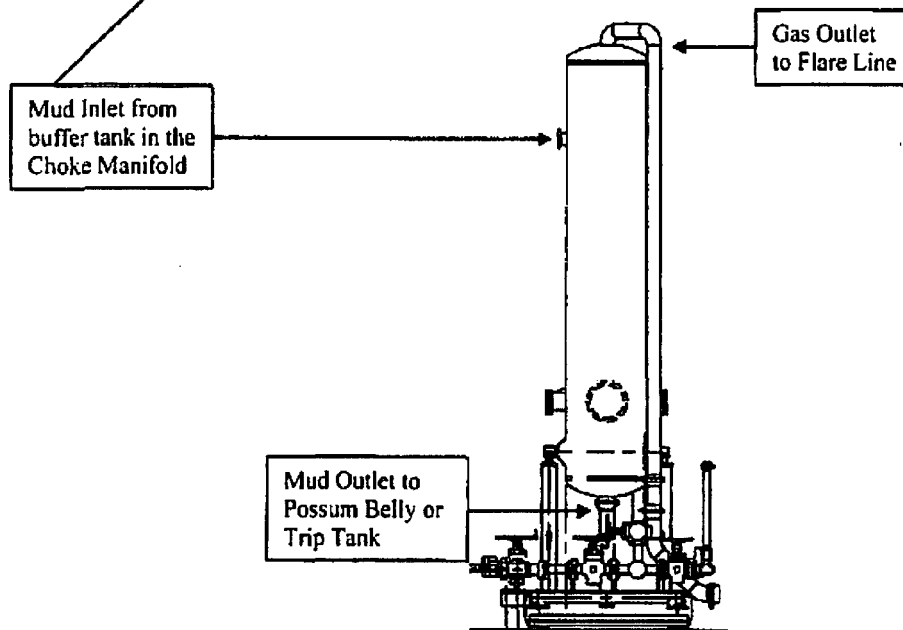
\*Minimum ID = 2-1/16" on Kill Line side and 3" minimum ID on choke line side



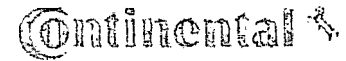
**Choke Manifold – Gas Separator (Top View)**



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



# Hydrostatic Test Certificate



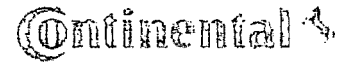
ContiTech

|                                                                                                                       |                                                                            |                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Certificate Number</b><br>938562                                                                                   | <b>COM Order Reference</b><br>938562                                       | <b>Customer Name &amp; Address</b><br>HELMERICH & PAYNE DRILLING CO<br>1434 SOUTH BOULDER AVE<br>TULSA, OK 74119<br>USA |
| <b>Customer Purchase Order No:</b> 740043386                                                                          |                                                                            |                                                                                                                         |
| <b>Project:</b> HOW                                                                                                   |                                                                            |                                                                                                                         |
| <b>Test Center Address</b><br>ContiTech Oil & Marine Corp.<br>11535 Brittmoore Park Drive<br>Houston, TX 77041<br>USA | <b>Accepted by COM Inspection</b><br>Signed: Roger Suarez<br>Date: 3/13/17 | <b>Accepted by Client Inspection</b>                                                                                    |

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   | 56838         | 10,000 psi | 15,000 psi | 60                  |
| 50   |          | RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL | 1   | 56489         | 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   | 60687         | 10,000 psi | 15,000 psi | 60                  |

# Certificate of Conformity

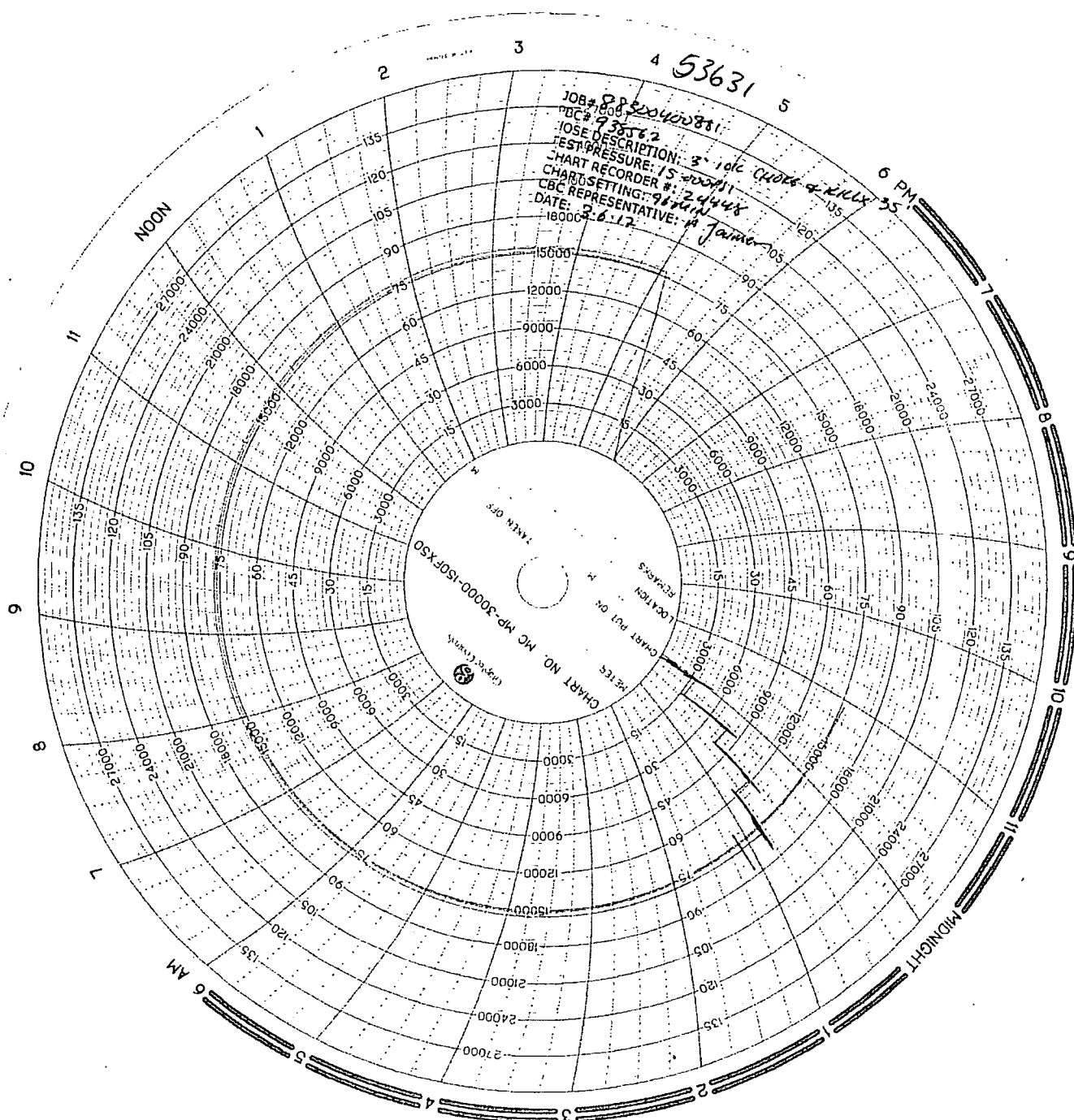


ContiTech

|                                                                                                                       |                                                               |                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Certificate Number</b><br>938562                                                                                   | <b>COM Order Reference</b><br>938562                          | <b>Customer Name &amp; Address</b><br>HELMERICH & PAYNE DRILLING CO<br>1434 SOUTH BOULDER AVE<br>TULSA, OK 74119<br>USA |
| <b>Customer Purchase Order No:</b> 740043386                                                                          |                                                               |                                                                                                                         |
| <b>Project:</b> HOW                                                                                                   |                                                               |                                                                                                                         |
| <b>Test Center Address</b><br>ContiTech Oil & Marine Corp.<br>11535 Brittmoore Park Drive<br>Houston, TX 77041<br>USA | <b>Accepted by COM Inspection</b><br>Signed:<br>Date: 3/13/17 | <b>Accepted by Client Inspection</b>                                                                                    |

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   | 53631         | ContiTech Standard |
| 30   |          | RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL | 1   | 54500         | ContiTech Standard |
| 40   |          | RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL | 1   | 56838         | ContiTech Standard |
| 50   |          | RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL | 1   | 56489         | ContiTech Standard |
| 60   |          | RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL | 1   | 61475         | ContiTech Standard |
| 80   |          | RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL | 1   | 80197         | 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 |



JOB# 885040081  
PBC# 735562  
TEST DESCRIPTION: 3" 10c (Hole & KIL) 35  
CHART RECORD: 15 200411  
CHART SETTING: 91 24448  
DATE: 2-6-12  
CNC REPRESENTATIVE: M. Jaimon-08

53631

# Hose Inspection Report

ContiTech Oil & Marine

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

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

## Connections

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

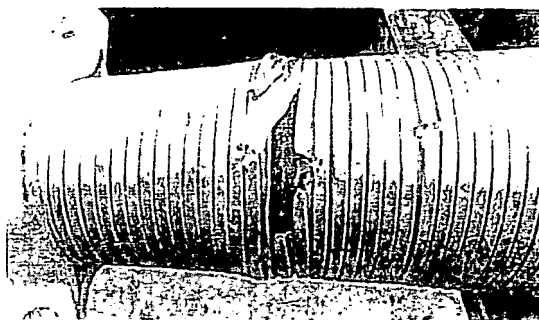
**Conclusion:** Hose #53631 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #53631 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. Hose #53631 is suitable for continued service.

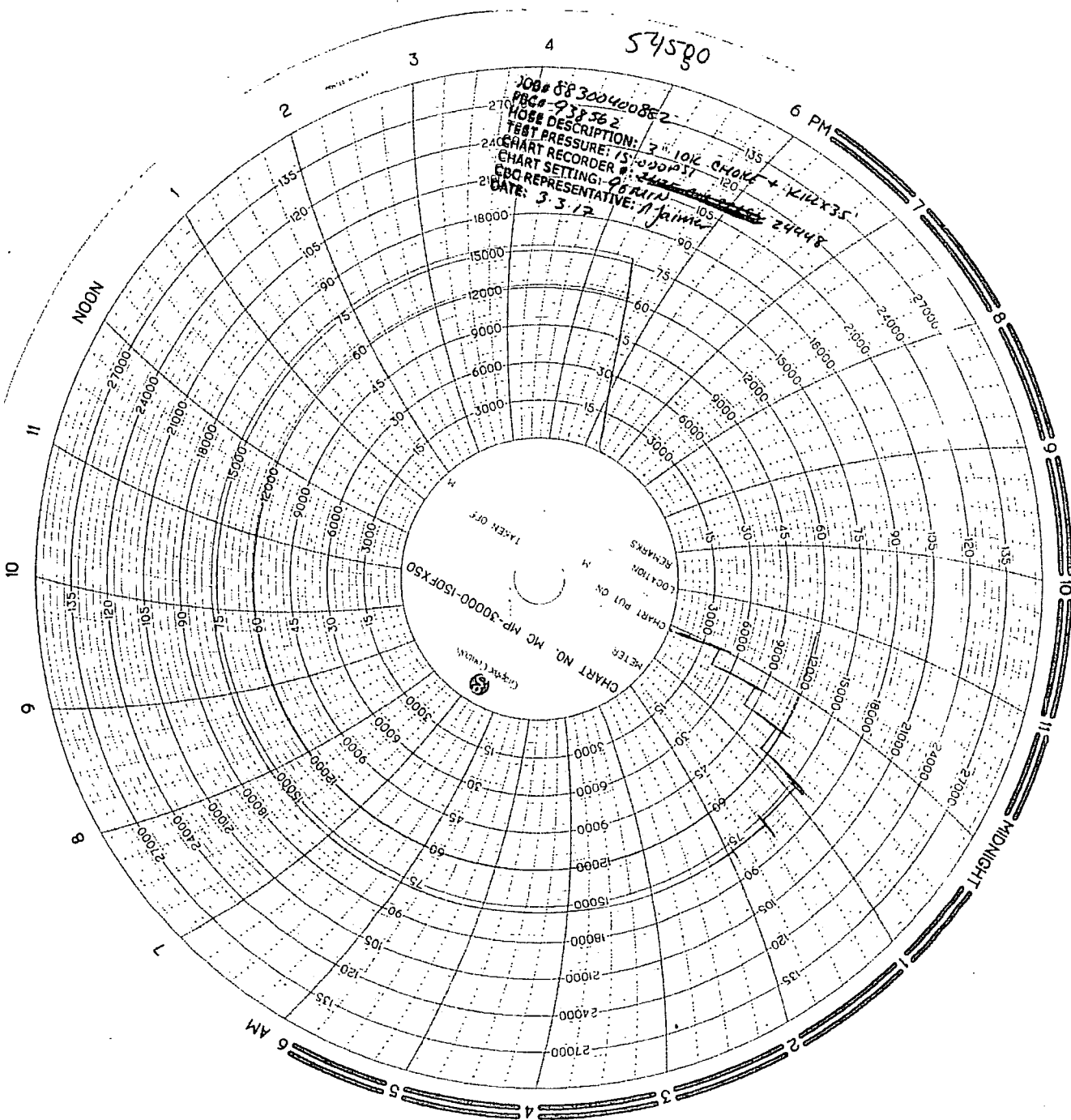
**Recommendations:** In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

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

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

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





## Hose Inspection Report

ContiTech Oil & Marine

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

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

### Connections

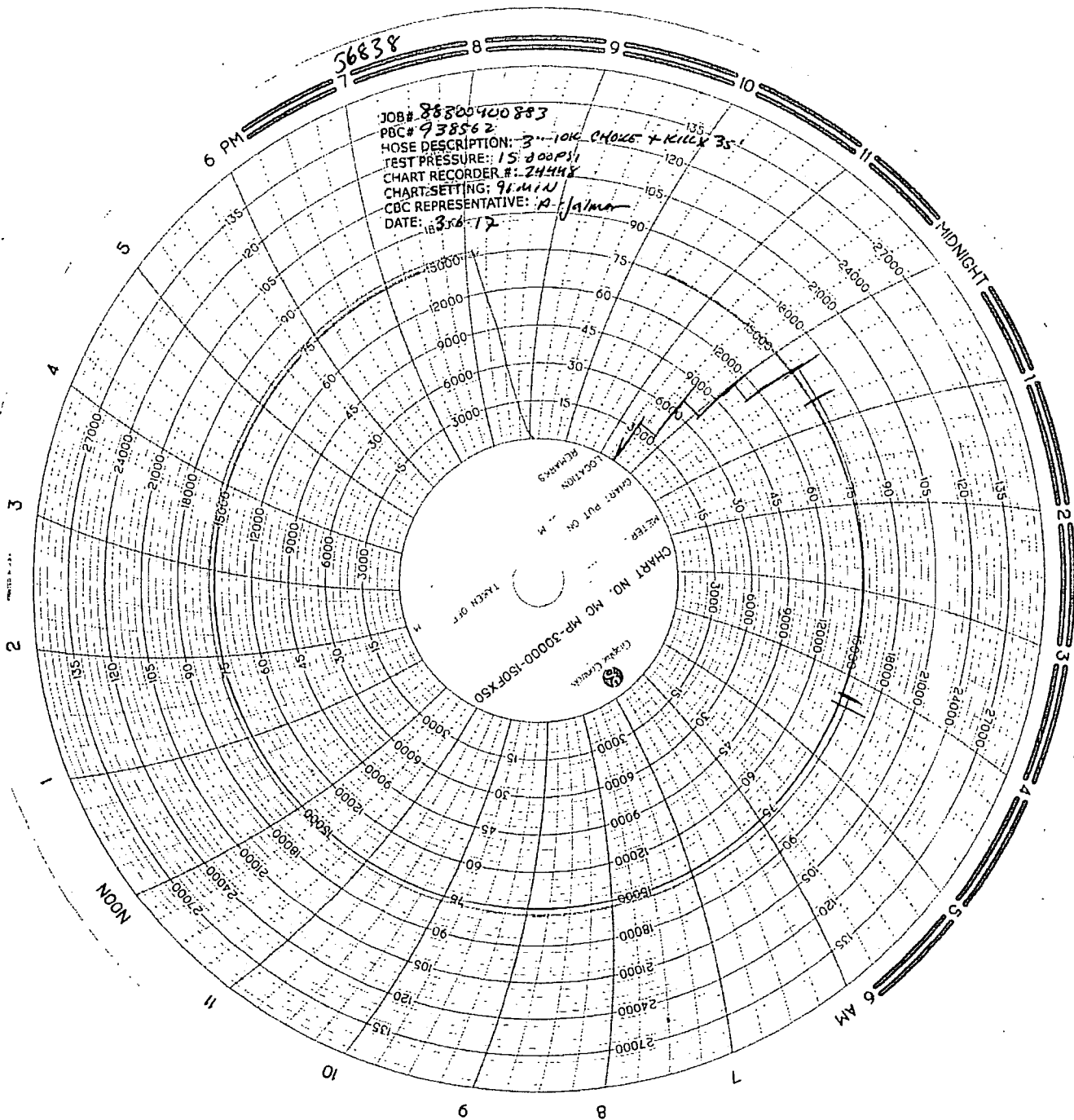
|                                                 |                                                 |
|-------------------------------------------------|-------------------------------------------------|
| End A: 3.1/8" 5Kpsi API Spec 6A Type 6BX Flange | End B: 3.1/8" 5Kpsi API Spec 6A Type 6BX Flange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

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

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

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

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



## Hose Inspection Report

ContiTech Oil & Marine

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

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

### Connections

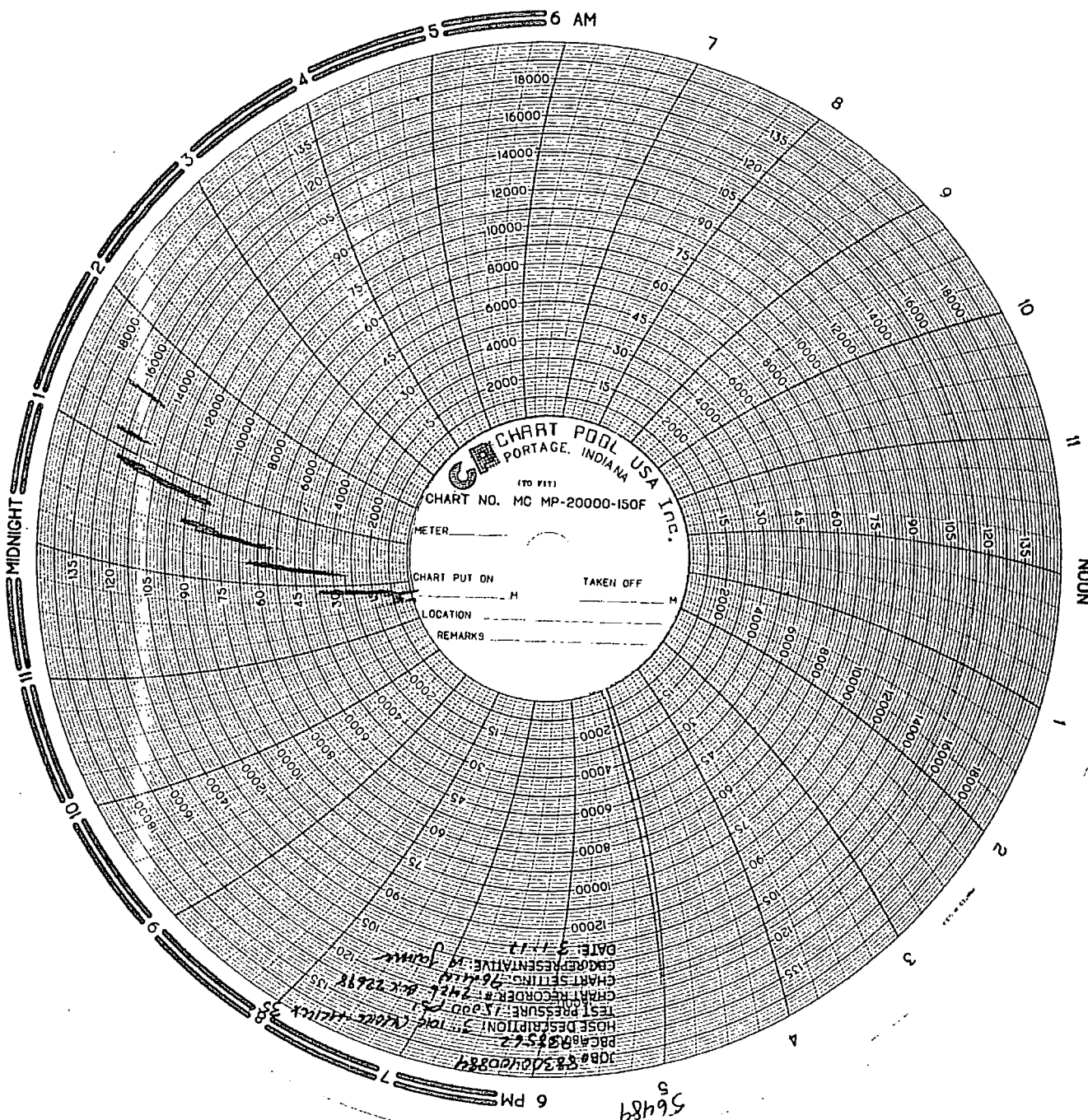
|                                                   |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange | End B: 4.1/16" 10Kpsi API Spec 6A Type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

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

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

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

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



DATE: 5-1-12  
CHART REPRESENTATIVE: M. J. JAMES  
CHART SETTING: 76 PSI  
CHART RECORDER: 2426 W. 22678  
TEST PRESSURE: 1500 PSI  
HOSE DESCRIPTION: 3" 100' (WIDE) MILK  
PBC# 9835-2  
JDB# 8330400884

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         |

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

### Connections

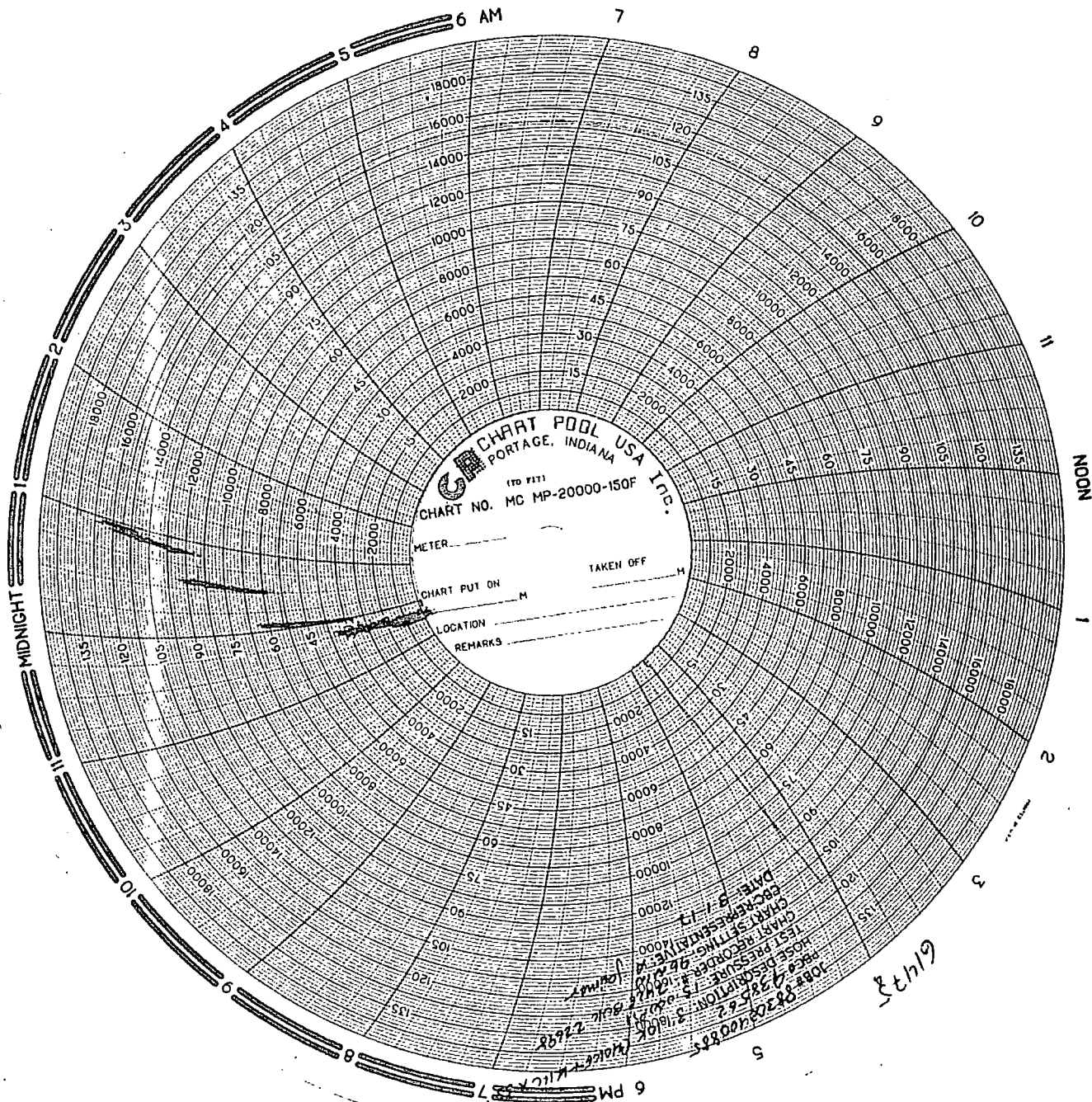
|                                                   |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange | End B: 4.1/16" 10Kpsi API Spec 6A Type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

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

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

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

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



## Hose Inspection Report

ContiTech Oil & Marine

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

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

### Connections

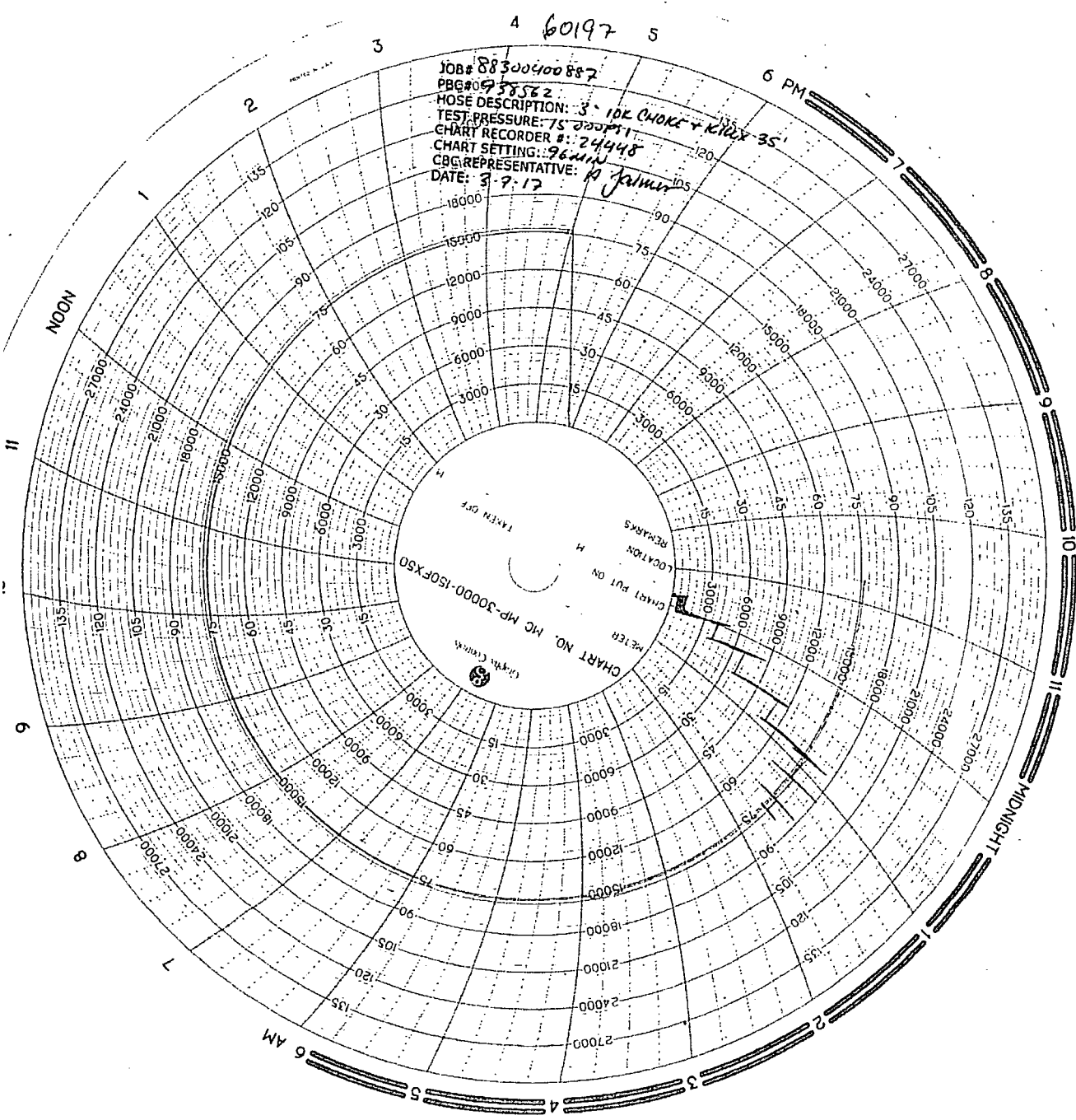
|                                                   |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange | End B: 4.1/16" 10Kpsi API Spec 6A Type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

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

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

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

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



4 60197 5  
JOB# 88300400887  
PBG# 938562  
HOSE DESCRIPTION: 3" 10K CHOKER + K10X-35'  
TEST PRESSURE: 75000 PSI  
CHART RECORDER #: 24448  
CBG REPRESENTATIVE: K. J. JAMES  
DATE: 3-7-17

CHART NO. MC MP-30000-150FX50  
METER  
CHART PUT ON  
LOCATION  
REMARKS  
TANK OFF

# Hose Inspection Report

ContiTech Oil & Marine

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

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

## Connections

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

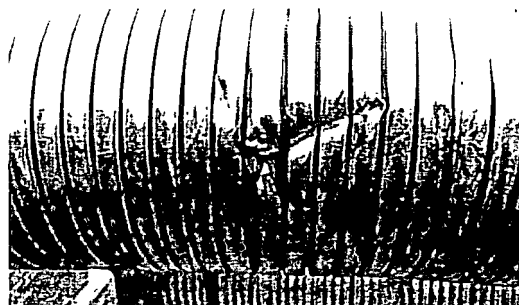
**Conclusion:** Hose #60197 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #60197 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. Hose #60197 is suitable for continued service.

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

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

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

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

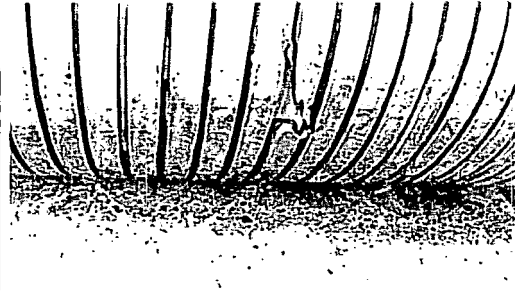


## Hose Inspection Report

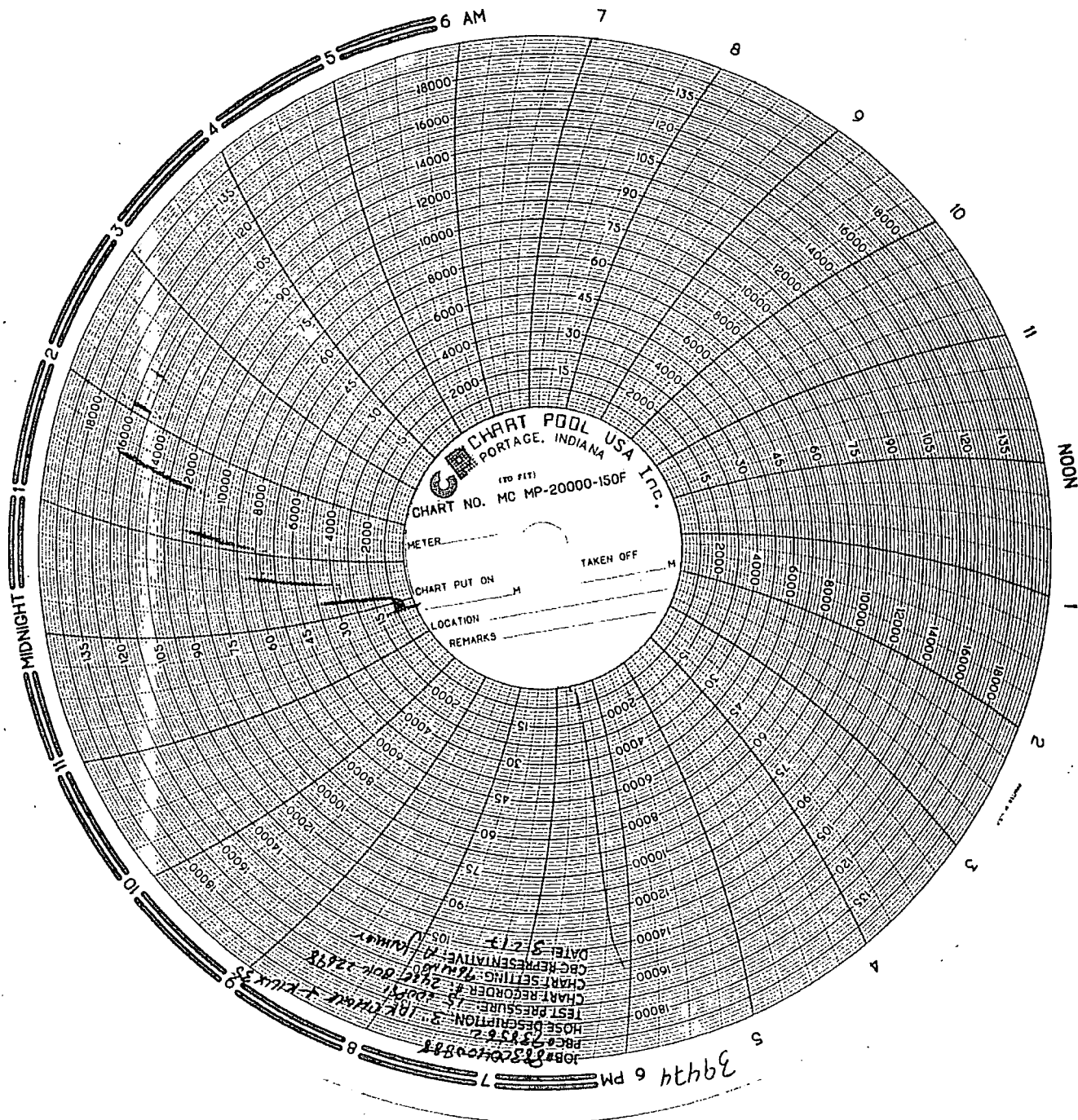
ContiTech Oil & Marine

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

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



PASS



# Hose Inspection Report

ContiTech Oil & Marine

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

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

## Connections

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

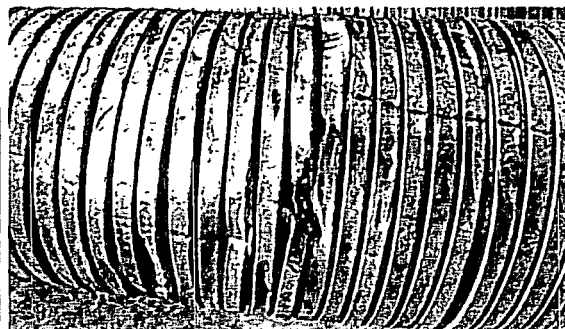
**Conclusion:** Hose #39474 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #39474 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. Hose #39474 is suitable for continued service.

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

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

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

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



5 60887 6 PM

JOB# 10300400 P89  
PBC# 93562  
HOSE DESCRIPTION: 5" 10K CHOKE #1444 35'  
TEST PRESSURE: 15.120 PSI  
CHART RECORDER # 24448  
CHART SETTING: 9000 in  
CBC REPRESENTATIVE: A. Janner  
DATE: 8-7-17

NOON

11

10

9

8

7

6 AM

CHART NO. MC MP-30000-150FX50

Graphic Symbols

METER

CHART PUT ON

LOCATION

REMARKS

TAKEN OFF

MIDNIGHT

10

9

8

7

4

3

2

1

# Hose Inspection Report

ContiTech Oil & Marine

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

| Hose Manufacturer | Contitech Rubber Industrial |
|-------------------|-----------------------------|
|-------------------|-----------------------------|

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

## Connections

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

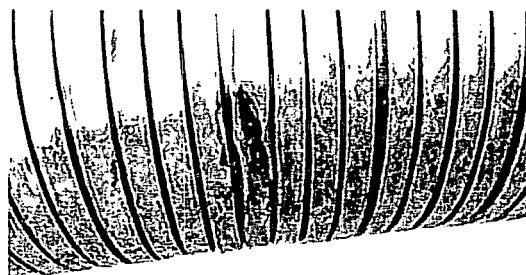
**Conclusion:** Hose #60887 passed the external inspection with minimal damage to the hose armor. Internal borescope showed no damage to the liner. Hose #60887 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. Hose #60887 is suitable for continued service.

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

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

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

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

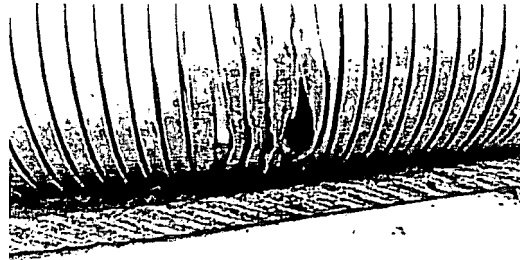


## Hose Inspection Report

ContiTech Oil & Marine

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

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



PASS

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

TXP® BTC

SHARE EXPORT DATA PRINT



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

|               |
|---------------|
| Clear Filters |
| Compare       |
| Request Info  |

#### CONNECTION INFORMATION

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

#### PIPE BODY DATA

##### GEOMETRY

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

##### PERFORMANCE

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

#### CONNECTION DATA

##### GEOMETRY

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

##### PERFORMANCE

|                            |               |                      |                   |                                           |               |
|----------------------------|---------------|----------------------|-------------------|-------------------------------------------|---------------|
| Tension Efficiency         | 100.0 %       | Joint Yield Strength | 641.000 x1000 lbs | Internal Pressure Capacity <sup>1/1</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 |
|---------|--------------|---------|--------------|---------|--------------|

##### OPERATION LIMIT TORQUES

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

# Wedge 521®

Printed on: 05/22/2018



|                  |           |                      |              |                   |                      |
|------------------|-----------|----------------------|--------------|-------------------|----------------------|
| Outside Diameter | 5.000 in. | Min. Wall Thickness  | 87.5%        | (*) Grade P110-IC |                      |
| Wall Thickness   | 0.362 in. | Connection OD Option | REGULAR      | COUPLING          | PIPE BODY            |
| Grade            | P110-IC*  | Drift                | API Standard | Body: White       | 1st Band: White      |
|                  |           | Type                 | Casing       | 1st Band: -       | 2nd Band: Pale Green |
|                  |           |                      |              | 2nd Band: -       | 3rd Band: -          |
|                  |           |                      |              | 3rd Band: -       | 4th Band: -          |

| GEOMETRY                   |               |                      |                   |                            |               |
|----------------------------|---------------|----------------------|-------------------|----------------------------|---------------|
| Nominal OD                 | 5.000 in.     | Nominal Weight       | 18.00 lbs/ft      | Drift                      | 4.151 in.     |
| Nominal ID                 | 4.276 in.     | Wall Thickness       | 0.362 in.         | Plain End Weight           | 17.95 lbs/ft  |
| OD Tolerance               | API           |                      |                   |                            |               |
| PERFORMANCE                |               |                      |                   |                            |               |
| Body Yield Strength        | 580 x1000 lbs | Internal Yield       | 13940 psi         | SMYS                       | 110000 psi    |
| Collapse                   | 14840 psi     |                      |                   |                            |               |
| GEOMETRY                   |               |                      |                   |                            |               |
| Connection OD              | 5.359 in.     | Connection ID        | 4.226 in.         | Make-up Loss               | 3.620 in.     |
| Threads per in             | 3.36          | Connection OD Option | REGULAR           |                            |               |
| PERFORMANCE                |               |                      |                   |                            |               |
| Tension Efficiency         | 73.8 %        | Joint Yield Strength | 428.040 x1000 lbs | Internal Pressure Capacity | 13940.000 psi |
| Compression Efficiency     | 88.7 %        | Compression Strength | 514.460 x1000 lbs | Max. Allowable Bending     | 74.5 °/100 ft |
| External Pressure Capacity | 14840.000 psi |                      |                   |                            |               |
| MAKE-UP TORQUES            |               |                      |                   |                            |               |
| Minimum                    | 6100 ft-lbs   | Optimum              | 7300 ft-lbs       | Maximum                    | 10700 ft-lbs  |
| OPERATION LIMIT TORQUES    |               |                      |                   |                            |               |
| Operating Torque           | 17300 ft-lbs  | Yield Torque         | 26000 ft-lbs      |                            |               |

## Notes

This connection is fully interchangeable with:

Wedge 521® - 5 in. - 13 / 15 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 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

### **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
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- Gas gravity 0.7
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- .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

## Wedge 513®

Printed on: 01/30/2018



|                  |           |                      |              |                |                 |
|------------------|-----------|----------------------|--------------|----------------|-----------------|
| Outside Diameter | 7.625 in. | Min. Wall Thickness  | 87.5%        | (*) Grade P110 |                 |
| Wall Thickness   | 0.375 in. | Connection OD Option | REGULAR      | COUPLING       | PIPE BODY       |
| Grade            | P110*     | Drift                | API Standard | Body: White    | 1st Band: 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 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

### 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.
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- 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



## 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 H<sub>2</sub>S has on tubulars good and other mechanical equipment

9 If H<sub>2</sub>S 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 H<sub>2</sub>S scavengers if necessary

11 Emergency Contacts

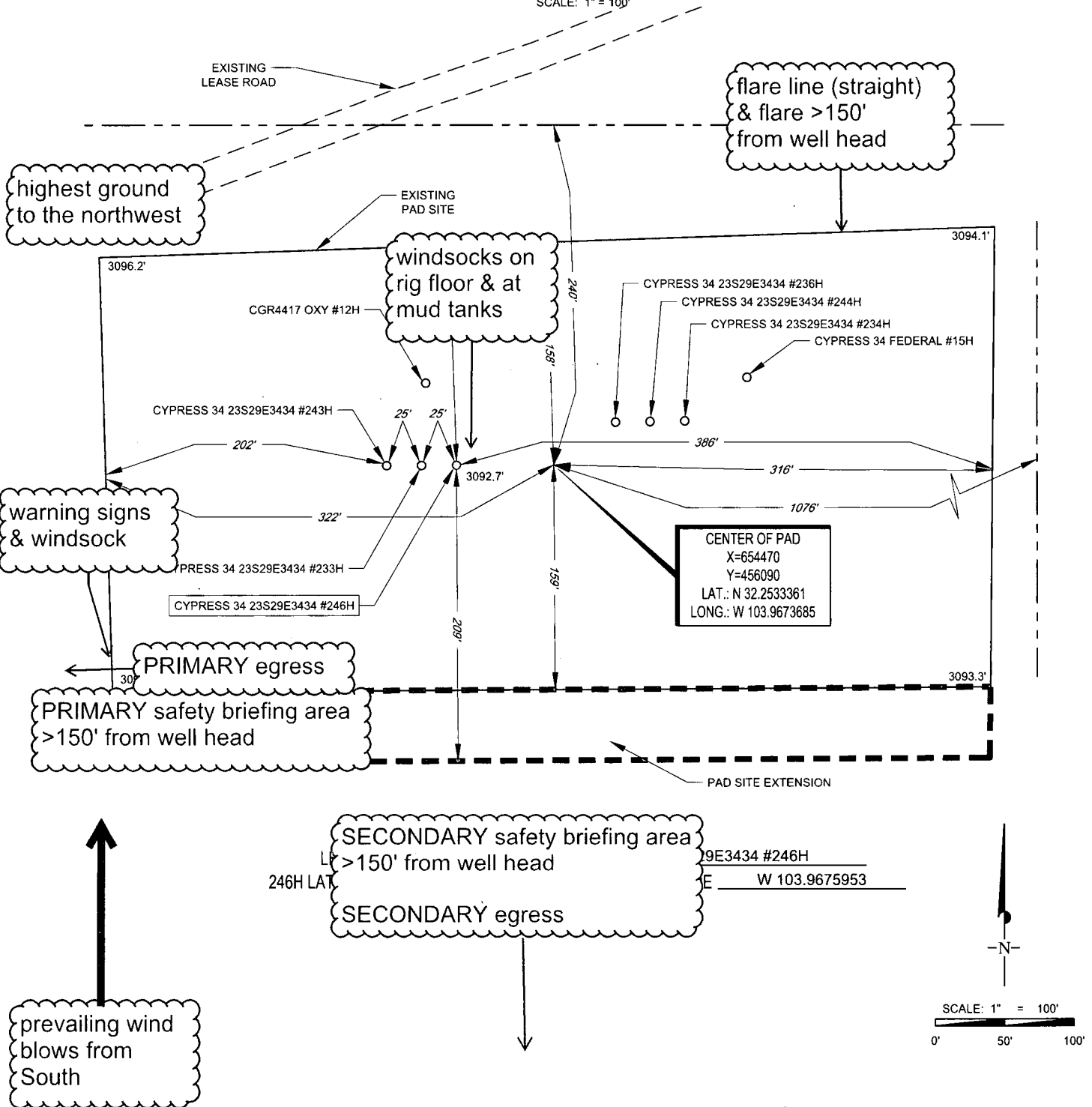
| Emergency Contacts                |              |     |
|-----------------------------------|--------------|-----|
| Carlsbad Police Department        | 575.887.7551 | 911 |
| Carlsbad Medical Center           | 575.887.4100 | 911 |
| Eddy County Fire Service          | 575.628.5450 | 911 |
| Eddy 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 |     |

# EXHIBIT 2B



SECTION 3, TOWNSHIP 24-S, RANGE 29-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

DETAIL VIEW  
SCALE: 1" = 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.

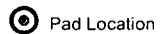


1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140  
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554  
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705  
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743  
WWW.TOPOGRAPHIC.COM

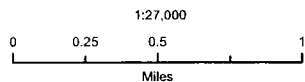
# Tap Rock Operating LLC

Cypress 34 Federal Well Pad  
H<sub>2</sub>S Contingency Plan:  
2 Mile Radius Map

Sec. 3, Township 24S, Range 29E  
Eddy County, New Mexico



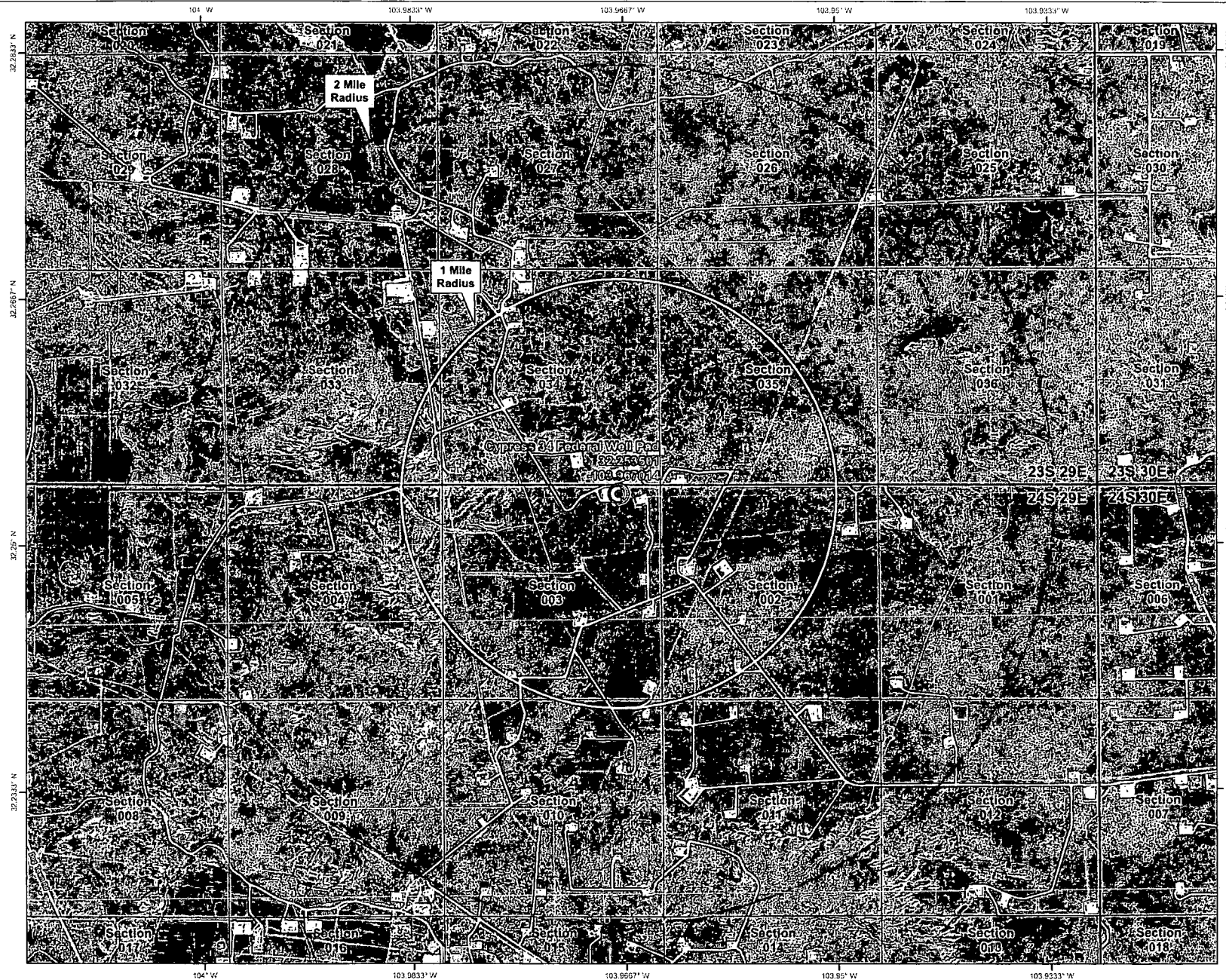
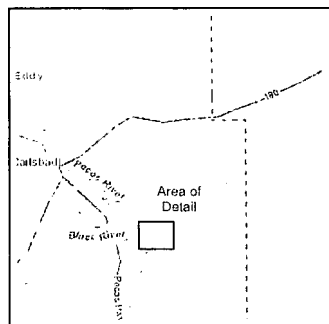
Pad Location



NAD 1983 New Mexico State Plane East  
FIPS 3001 Feet

PERMITS WEST, INC.  
PROVIDING PERMITS BY LAND USE

Prepared by Permits West, Inc., May 31, 2018  
for Tap Rock Operating, LLC





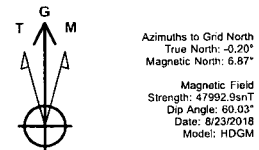
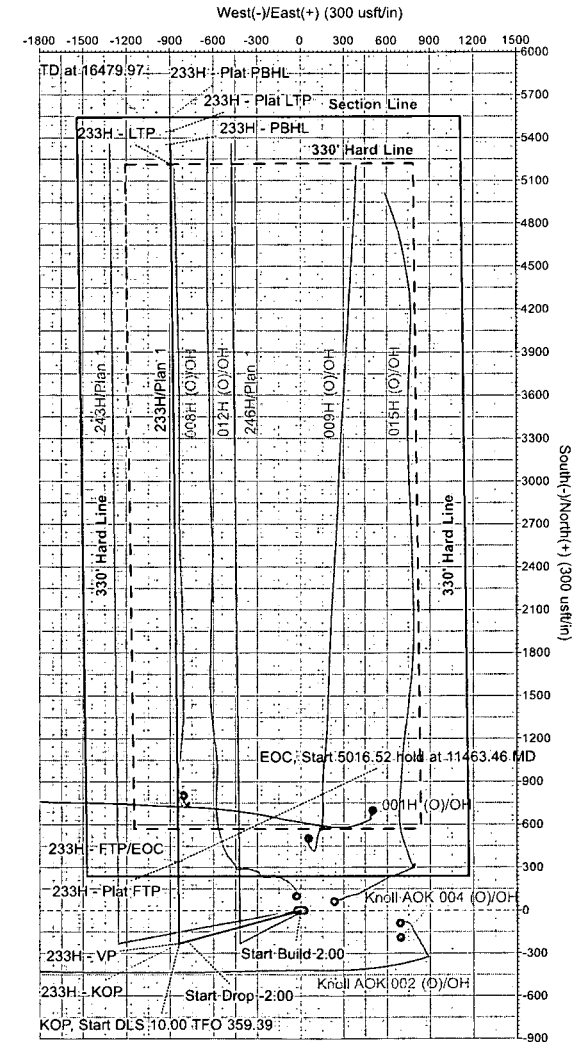
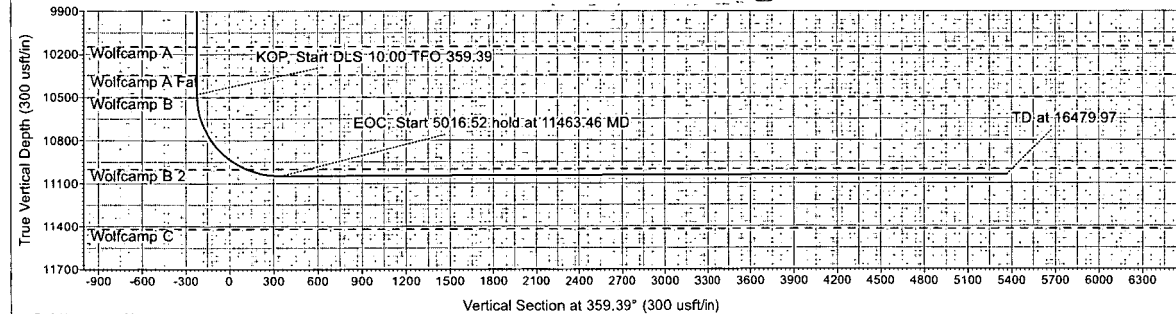
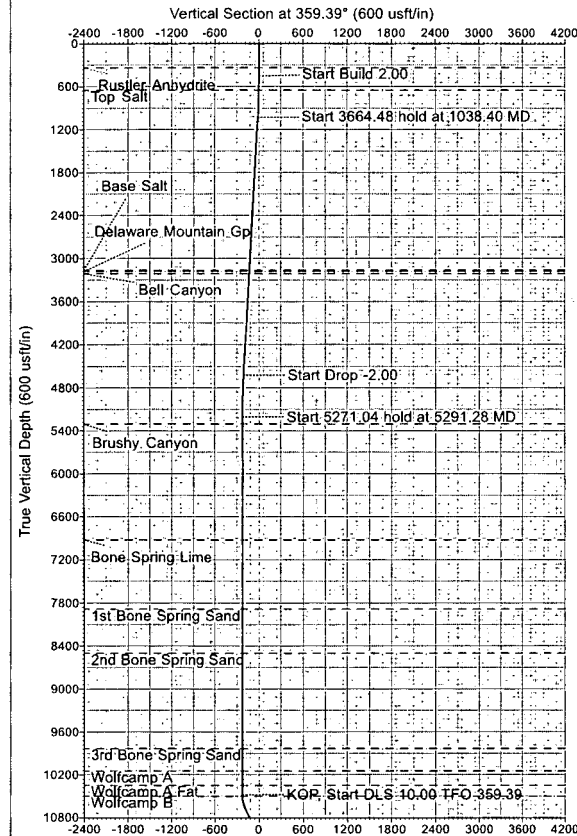
Tap Rock Operating, LLC  
Eddy County, NM (NAD 83)  
Cypress 34  
233H  
Plan 1  
GL: 3093' + Est. KB: 26.5'

US State Plane 1983  
North American Datum 1983  
GRS 1980  
New Mexico Eastern Zone  
Mean Sea Level

RKB Elevation: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')

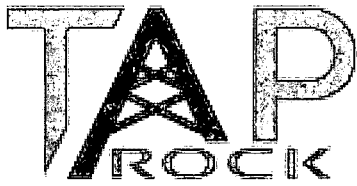
|                  | +N/-S    | +E/-W   | Northing  | Easting   | Latitude  | Longitude   | Slot  |         |
|------------------|----------|---------|-----------|-----------|-----------|-------------|-------|---------|
|                  | 0.00     | 0.00    | 456089.00 | 654374.00 | 32.253335 | -103.967678 |       |         |
| SECTION DETAILS  |          |         |           |           |           |             |       |         |
| Sec              | MD       | Inc     | Azi       | TVD       | +N/-S     | +E/-W       | Dleg  | VSec    |
| 1                | 0.00     | 0.00    | 0.00      | 0.00      | 0.00      | 0.00        | 0.00  | 0.00    |
| 2                | 450.00   | 0.00    | 0.00      | 450.00    | 0.00      | 0.00        | 0.00  | 0.00    |
| 3                | 1038.40  | 11.77   | 254.43    | 1034.27   | -16.17    | -58.00      | 2.00  | -15.55  |
| 4                | 4702.88  | 11.77   | 254.43    | 4621.73   | -216.82   | -777.93     | 0.00  | -208.53 |
| 5                | 5291.28  | 0.00    | 0.00      | 5206.00   | -232.99   | -835.93     | 2.00  | -224.08 |
| 6                | 10562.32 | 0.00    | 0.00      | 10477.04  | -232.99   | -835.93     | 0.00  | -224.08 |
| 7                | 11463.46 | 90.11   | 359.39    | 11050.00  | 341.08    | -842.00     | 10.00 | 350.02  |
| 8                | 16479.97 | 90.11   | 359.39    | 11040.00  | 5357.30   | -895.05     | 0.00  | 5366.53 |
| TARGET DETAILS   |          |         |           |           |           |             |       |         |
| Name             | TVD      | +N/-S   | +E/-W     | Northing  | Easting   | Shape       |       |         |
| 233H - Plat FTP  | 0.00     | 341.00  | -842.00   | 456430.00 | 653532.00 | Point       |       |         |
| 233H - Plat LTP  | 0.00     | 5447.00 | -896.00   | 461536.00 | 653478.00 | Point       |       |         |
| 233H - VP        | 0.00     | -232.99 | -835.93   | 455856.01 | 653538.07 | Point       |       |         |
| 233H - KOP       | 10477.04 | -232.99 | -835.93   | 455856.01 | 653538.07 | Point       |       |         |
| 233H - PBHL      | 11040.00 | 5357.30 | -895.05   | 461446.30 | 653478.95 | Point       |       |         |
| 233H - Plat PBHL | 11040.00 | 5542.00 | -897.00   | 461631.00 | 653477.00 | Point       |       |         |
| 233H - LTP       | 11040.28 | 5216.42 | -893.56   | 461305.42 | 653480.44 | Point       |       |         |
| 233H - FTP/EOC   | 11050.00 | 341.08  | -842.00   | 456430.08 | 653532.00 | Point       |       |         |

\*Note: Pro Directional is not responsible for any collision issues against unknown offset wells.  
The offset well information shown in this drawing was obtained from a public site;  
Which could be missing or have inaccurate data.



Azimuth Corrections  
Total Magnetic Corr. (M to G): 6.87°  
Declination (M to T): 7.07° East

36" x 48"



# **Tap Rock Operating, LLC**

**Eddy County, NM (NAD 83)**

**Cypress 34**

**233H**

**OH**

**Plan: Plan 1**

## **Standard Survey Report**

**28 August, 2018**





# Pro Directional Survey Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Site:** Cypress 34  
**Well:** 233H  
**Wellbore:** OH  
**Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** WellPlanner1

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | Eddy County, NM (NAD 83)  |                      |                |
| <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>                  | Cypress 34 |                          |                 |
| <b>Site Position:</b>        |            | <b>Northing:</b>         | 456,089.00 usft |
| <b>From:</b>                 | Map        | <b>Easting:</b>          | 654,374.00 usft |
| <b>Position Uncertainty:</b> | 0.00 usft  | <b>Slot Radius:</b>      | 13-3/16 "       |
|                              |            | <b>Latitude:</b>         | 32.253335       |
|                              |            | <b>Longitude:</b>        | -103.967678     |
|                              |            | <b>Grid Convergence:</b> | 0.20 °          |

|                             |           |                            |                                  |
|-----------------------------|-----------|----------------------------|----------------------------------|
| <b>Well</b>                 | 233H      |                            |                                  |
| <b>Well Position</b>        | +N/-S     | 0.00 usft                  | <b>Northing:</b> 456,089.00 usft |
|                             | +E/-W     | 0.00 usft                  | <b>Easting:</b> 654,374.00 usft  |
| <b>Position Uncertainty</b> | 0.00 usft | <b>Wellhead Elevation:</b> | usft                             |
|                             |           | <b>Latitude:</b>           | 32.253335                        |
|                             |           | <b>Longitude:</b>          | -103.967678                      |
|                             |           | <b>Ground Level:</b>       | 3,093.00 usft                    |

|                  |                   |                    |                                      |
|------------------|-------------------|--------------------|--------------------------------------|
| <b>Wellbore</b>  | OH                |                    |                                      |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination</b>                   |
|                  | HDGM              | 8/23/2018          | (°) 7.07                             |
|                  |                   |                    | <b>Dip Angle</b> (°) 60.03           |
|                  |                   |                    | <b>Field Strength</b> (nT) 47,992.90 |

|                          |                         |              |                             |
|--------------------------|-------------------------|--------------|-----------------------------|
| <b>Design</b>            | Plan 1                  |              |                             |
| <b>Audit Notes:</b>      |                         |              |                             |
| <b>Version:</b>          | <b>Phase:</b>           | PROTOTYPE    | <b>Tie On Depth:</b> 0.00   |
| <b>Vertical Section:</b> | <b>Depth From (TVD)</b> | <b>+N/-S</b> | <b>+E/-W</b>                |
|                          | (usft)                  | (usft)       | (usft)                      |
|                          | 0.00                    | 0.00         | 0.00                        |
|                          |                         |              | <b>Direction</b> (°) 359.39 |

|                            |                       |                          |                                    |
|----------------------------|-----------------------|--------------------------|------------------------------------|
| <b>Survey Tool Program</b> | <b>Date</b> 8/23/2018 |                          |                                    |
| <b>From</b>                | <b>To</b>             | <b>Survey (Wellbore)</b> | <b>Tool Name</b>                   |
| (usft)                     | (usft)                |                          |                                    |
| 0.00                       | 16,479.98             | Plan 1 (OH)              | MWD+HDGM                           |
|                            |                       |                          | <b>Description</b> OWSG MWD + HRGM |

|                          |                    |                |                       |              |              |                         |                    |                   |                  |
|--------------------------|--------------------|----------------|-----------------------|--------------|--------------|-------------------------|--------------------|-------------------|------------------|
| <b>Planned Survey</b>    |                    |                |                       |              |              |                         |                    |                   |                  |
| <b>Measured Depth</b>    | <b>Inclination</b> | <b>Azimuth</b> | <b>Vertical Depth</b> | <b>+N/-S</b> | <b>+E/-W</b> | <b>Vertical Section</b> | <b>Dogleg Rate</b> | <b>Build Rate</b> | <b>Turn Rate</b> |
| (usft)                   | (°)                | (°)            | (usft)                | (usft)       | (usft)       | (usft)                  | (°/100usft)        | (°/100usft)       | (°/100usft)      |
| 0.00                     | 0.00               | 0.00           | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00               | 0.00              | 0.00             |
| 100.00                   | 0.00               | 0.00           | 100.00                | 0.00         | 0.00         | 0.00                    | 0.00               | 0.00              | 0.00             |
| 200.00                   | 0.00               | 0.00           | 200.00                | 0.00         | 0.00         | 0.00                    | 0.00               | 0.00              | 0.00             |
| 300.00                   | 0.00               | 0.00           | 300.00                | 0.00         | 0.00         | 0.00                    | 0.00               | 0.00              | 0.00             |
| 336.00                   | 0.00               | 0.00           | 336.00                | 0.00         | 0.00         | 0.00                    | 0.00               | 0.00              | 0.00             |
| <b>Rustler Anhydrite</b> |                    |                |                       |              |              |                         |                    |                   |                  |
| 400.00                   | 0.00               | 0.00           | 400.00                | 0.00         | 0.00         | 0.00                    | 0.00               | 0.00              | 0.00             |
| 450.00                   | 0.00               | 0.00           | 450.00                | 0.00         | 0.00         | 0.00                    | 0.00               | 0.00              | 0.00             |
| <b>Start Build 2.00</b>  |                    |                |                       |              |              |                         |                    |                   |                  |
| 500.00                   | 1.00               | 254.43         | 500.00                | -0.12        | -0.42        | -0.11                   | 2.00               | 2.00              | 0.00             |



Pro Directional  
Survey Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Site: Cypress 34  
Well: 233H  
Wellbore: OH  
Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: WellPlanner1

Planned Survey

| Measured<br>Depth<br>(usft)      | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
|----------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 600.00                           | 3.00               | 254.43         | 599.93                      | -1.05           | -3.78           | -1.01                         | 2.00                          | 2.00                         | 0.00                        |
| 651.17                           | 4.02               | 254.43         | 651.00                      | -1.90           | -6.80           | -1.82                         | 2.00                          | 2.00                         | 0.00                        |
| Top Salt                         |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 700.00                           | 5.00               | 254.43         | 699.68                      | -2.93           | -10.50          | -2.81                         | 2.00                          | 2.00                         | 0.00                        |
| 800.00                           | 7.00               | 254.43         | 799.13                      | -5.73           | -20.57          | -5.51                         | 2.00                          | 2.00                         | 0.00                        |
| 900.00                           | 9.00               | 254.43         | 898.15                      | -9.47           | -33.98          | -9.11                         | 2.00                          | 2.00                         | 0.00                        |
| 1,000.00                         | 11.00              | 254.43         | 996.63                      | -14.13          | -50.70          | -13.59                        | 2.00                          | 2.00                         | 0.00                        |
| 1,038.40                         | 11.77              | 254.43         | 1,034.27                    | -16.17          | -58.00          | -15.55                        | 2.00                          | 2.00                         | 0.00                        |
| Start 3664.48 hold at 1038.40 MD |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 1,100.00                         | 11.77              | 254.43         | 1,094.58                    | -19.54          | -70.10          | -18.79                        | 0.00                          | 0.00                         | 0.00                        |
| 1,200.00                         | 11.77              | 254.43         | 1,192.48                    | -25.02          | -89.75          | -24.06                        | 0.00                          | 0.00                         | 0.00                        |
| 1,300.00                         | 11.77              | 254.43         | 1,290.37                    | -30.49          | -109.40         | -29.32                        | 0.00                          | 0.00                         | 0.00                        |
| 1,400.00                         | 11.77              | 254.43         | 1,388.27                    | -35.97          | -129.04         | -34.59                        | 0.00                          | 0.00                         | 0.00                        |
| 1,500.00                         | 11.77              | 254.43         | 1,486.17                    | -41.44          | -148.69         | -39.86                        | 0.00                          | 0.00                         | 0.00                        |
| 1,600.00                         | 11.77              | 254.43         | 1,584.07                    | -46.92          | -168.33         | -45.12                        | 0.00                          | 0.00                         | 0.00                        |
| 1,700.00                         | 11.77              | 254.43         | 1,681.97                    | -52.39          | -187.98         | -50.39                        | 0.00                          | 0.00                         | 0.00                        |
| 1,800.00                         | 11.77              | 254.43         | 1,779.86                    | -57.87          | -207.63         | -55.66                        | 0.00                          | 0.00                         | 0.00                        |
| 1,900.00                         | 11.77              | 254.43         | 1,877.76                    | -63.35          | -227.27         | -60.92                        | 0.00                          | 0.00                         | 0.00                        |
| 2,000.00                         | 11.77              | 254.43         | 1,975.66                    | -68.82          | -246.92         | -66.19                        | 0.00                          | 0.00                         | 0.00                        |
| 2,100.00                         | 11.77              | 254.43         | 2,073.56                    | -74.30          | -266.57         | -71.45                        | 0.00                          | 0.00                         | 0.00                        |
| 2,200.00                         | 11.77              | 254.43         | 2,171.46                    | -79.77          | -286.21         | -76.72                        | 0.00                          | 0.00                         | 0.00                        |
| 2,300.00                         | 11.77              | 254.43         | 2,269.36                    | -85.25          | -305.86         | -81.99                        | 0.00                          | 0.00                         | 0.00                        |
| 2,400.00                         | 11.77              | 254.43         | 2,367.25                    | -90.72          | -325.50         | -87.25                        | 0.00                          | 0.00                         | 0.00                        |
| 2,500.00                         | 11.77              | 254.43         | 2,465.15                    | -96.20          | -345.15         | -92.52                        | 0.00                          | 0.00                         | 0.00                        |
| 2,600.00                         | 11.77              | 254.43         | 2,563.05                    | -101.68         | -364.80         | -97.79                        | 0.00                          | 0.00                         | 0.00                        |
| 2,700.00                         | 11.77              | 254.43         | 2,660.95                    | -107.15         | -384.44         | -103.05                       | 0.00                          | 0.00                         | 0.00                        |
| 2,800.00                         | 11.77              | 254.43         | 2,758.85                    | -112.63         | -404.09         | -108.32                       | 0.00                          | 0.00                         | 0.00                        |
| 2,900.00                         | 11.77              | 254.43         | 2,856.74                    | -118.10         | -423.73         | -113.58                       | 0.00                          | 0.00                         | 0.00                        |
| 3,000.00                         | 11.77              | 254.43         | 2,954.64                    | -123.58         | -443.38         | -118.85                       | 0.00                          | 0.00                         | 0.00                        |
| 3,100.00                         | 11.77              | 254.43         | 3,052.54                    | -129.05         | -463.03         | -124.12                       | 0.00                          | 0.00                         | 0.00                        |
| 3,200.00                         | 11.77              | 254.43         | 3,150.44                    | -134.53         | -482.67         | -129.38                       | 0.00                          | 0.00                         | 0.00                        |
| 3,210.79                         | 11.77              | 254.43         | 3,161.00                    | -135.12         | -484.79         | -129.95                       | 0.00                          | 0.00                         | 0.00                        |
| Base Salt                        |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 3,231.22                         | 11.77              | 254.43         | 3,181.00                    | -136.24         | -488.80         | -131.03                       | 0.00                          | 0.00                         | 0.00                        |
| Delaware Mountain Gp             |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 3,261.86                         | 11.77              | 254.43         | 3,211.00                    | -137.92         | -494.82         | -132.64                       | 0.00                          | 0.00                         | 0.00                        |
| Bell Canyon                      |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 3,300.00                         | 11.77              | 254.43         | 3,248.34                    | -140.01         | -502.32         | -134.65                       | 0.00                          | 0.00                         | 0.00                        |
| 3,400.00                         | 11.77              | 254.43         | 3,346.23                    | -145.48         | -521.96         | -139.92                       | 0.00                          | 0.00                         | 0.00                        |
| 3,500.00                         | 11.77              | 254.43         | 3,444.13                    | -150.96         | -541.61         | -145.18                       | 0.00                          | 0.00                         | 0.00                        |
| 3,600.00                         | 11.77              | 254.43         | 3,542.03                    | -156.43         | -561.26         | -150.45                       | 0.00                          | 0.00                         | 0.00                        |
| 3,700.00                         | 11.77              | 254.43         | 3,639.93                    | -161.91         | -580.90         | -155.71                       | 0.00                          | 0.00                         | 0.00                        |
| 3,800.00                         | 11.77              | 254.43         | 3,737.83                    | -167.38         | -600.55         | -160.98                       | 0.00                          | 0.00                         | 0.00                        |
| 3,900.00                         | 11.77              | 254.43         | 3,835.73                    | -172.86         | -620.19         | -166.25                       | 0.00                          | 0.00                         | 0.00                        |



Pro Directional  
Survey Report



|           |                          |                              |                                                 |
|-----------|--------------------------|------------------------------|-------------------------------------------------|
| Company:  | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:  | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site:     | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Well:     | 233H                     | North Reference:             | Grid                                            |
| Wellbore: | OH                       | Survey Calculation Method:   | Minimum Curvature                               |
| Design:   | Plan 1                   | Database:                    | WellPlanner1                                    |

| Planned Survey                   |                 |             |                       |              |              |                         |                         |                        |                       |  |
|----------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft)            | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |  |
| 4,000.00                         | 11.77           | 254.43      | 3,933.62              | -178.34      | -639.84      | -171.51                 | 0.00                    | 0.00                   | 0.00                  |  |
| 4,100.00                         | 11.77           | 254.43      | 4,031.52              | -183.81      | -659.49      | -176.78                 | 0.00                    | 0.00                   | 0.00                  |  |
| 4,200.00                         | 11.77           | 254.43      | 4,129.42              | -189.29      | -679.13      | -182.05                 | 0.00                    | 0.00                   | 0.00                  |  |
| 4,300.00                         | 11.77           | 254.43      | 4,227.32              | -194.76      | -698.78      | -187.31                 | 0.00                    | 0.00                   | 0.00                  |  |
| 4,400.00                         | 11.77           | 254.43      | 4,325.22              | -200.24      | -718.42      | -192.58                 | 0.00                    | 0.00                   | 0.00                  |  |
| 4,500.00                         | 11.77           | 254.43      | 4,423.11              | -205.71      | -738.07      | -197.84                 | 0.00                    | 0.00                   | 0.00                  |  |
| 4,600.00                         | 11.77           | 254.43      | 4,521.01              | -211.19      | -757.72      | -203.11                 | 0.00                    | 0.00                   | 0.00                  |  |
| 4,702.88                         | 11.77           | 254.43      | 4,621.73              | -216.82      | -777.93      | -208.53                 | 0.00                    | 0.00                   | 0.00                  |  |
| Start Drop -2.00                 |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 4,800.00                         | 9.83            | 254.43      | 4,717.13              | -221.71      | -795.45      | -213.23                 | 2.00                    | -2.00                  | 0.00                  |  |
| 4,900.00                         | 7.83            | 254.43      | 4,815.94              | -225.83      | -810.23      | -217.19                 | 2.00                    | -2.00                  | 0.00                  |  |
| 5,000.00                         | 5.83            | 254.43      | 4,915.22              | -229.02      | -821.68      | -220.26                 | 2.00                    | -2.00                  | 0.00                  |  |
| 5,100.00                         | 3.83            | 254.43      | 5,014.86              | -231.28      | -829.78      | -222.43                 | 2.00                    | -2.00                  | 0.00                  |  |
| 5,200.00                         | 1.83            | 254.43      | 5,114.74              | -232.60      | -834.53      | -223.70                 | 2.00                    | -2.00                  | 0.00                  |  |
| 5,291.28                         | 0.00            | 0.01        | 5,206.00              | -232.99      | -835.93      | -224.08                 | 2.00                    | -2.00                  | 0.00                  |  |
| Start 5271.04 hold at 5291.28 MD |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 5,300.00                         | 0.00            | 0.00        | 5,214.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 5,391.28                         | 0.00            | 0.00        | 5,306.00              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| Brushy Canyon                    |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 5,400.00                         | 0.00            | 0.00        | 5,314.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 5,500.00                         | 0.00            | 0.00        | 5,414.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 5,600.00                         | 0.00            | 0.00        | 5,514.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 5,700.00                         | 0.00            | 0.00        | 5,614.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 5,800.00                         | 0.00            | 0.00        | 5,714.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 5,900.00                         | 0.00            | 0.00        | 5,814.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,000.00                         | 0.00            | 0.00        | 5,914.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,100.00                         | 0.00            | 0.00        | 6,014.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,200.00                         | 0.00            | 0.00        | 6,114.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,300.00                         | 0.00            | 0.00        | 6,214.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,400.00                         | 0.00            | 0.00        | 6,314.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,500.00                         | 0.00            | 0.00        | 6,414.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,600.00                         | 0.00            | 0.00        | 6,514.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,700.00                         | 0.00            | 0.00        | 6,614.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,800.00                         | 0.00            | 0.00        | 6,714.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 6,900.00                         | 0.00            | 0.00        | 6,814.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 7,000.00                         | 0.00            | 0.00        | 6,914.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 7,006.28                         | 0.00            | 0.00        | 6,921.00              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| Bone Spring Lime                 |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 7,100.00                         | 0.00            | 0.00        | 7,014.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 7,200.00                         | 0.00            | 0.00        | 7,114.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 7,300.00                         | 0.00            | 0.00        | 7,214.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 7,400.00                         | 0.00            | 0.00        | 7,314.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 7,500.00                         | 0.00            | 0.00        | 7,414.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |
| 7,600.00                         | 0.00            | 0.00        | 7,514.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |  |



# Pro Directional Survey Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Site: Cypress 34  
Well: 233H  
Wellbore: OH  
Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: WellPlanner1

## Planned Survey

| Measured Depth (usft)                  | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|----------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 7,700.00                               | 0.00            | 0.00        | 7,614.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 7,800.00                               | 0.00            | 0.00        | 7,714.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 7,900.00                               | 0.00            | 0.00        | 7,814.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 7,971.28                               | 0.00            | 0.00        | 7,886.00              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| <b>1st Bone Spring Sand</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,000.00                               | 0.00            | 0.00        | 7,914.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,100.00                               | 0.00            | 0.00        | 8,014.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,200.00                               | 0.00            | 0.00        | 8,114.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,300.00                               | 0.00            | 0.00        | 8,214.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,400.00                               | 0.00            | 0.00        | 8,314.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,500.00                               | 0.00            | 0.00        | 8,414.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,586.28                               | 0.00            | 0.00        | 8,501.00              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| <b>2nd Bone Spring Sand</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,600.00                               | 0.00            | 0.00        | 8,514.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,700.00                               | 0.00            | 0.00        | 8,614.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,800.00                               | 0.00            | 0.00        | 8,714.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 8,900.00                               | 0.00            | 0.00        | 8,814.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,000.00                               | 0.00            | 0.00        | 8,914.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,100.00                               | 0.00            | 0.00        | 9,014.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,200.00                               | 0.00            | 0.00        | 9,114.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,300.00                               | 0.00            | 0.00        | 9,214.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,400.00                               | 0.00            | 0.00        | 9,314.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,500.00                               | 0.00            | 0.00        | 9,414.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,600.00                               | 0.00            | 0.00        | 9,514.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,700.00                               | 0.00            | 0.00        | 9,614.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,800.00                               | 0.00            | 0.00        | 9,714.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,900.00                               | 0.00            | 0.00        | 9,814.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 9,916.28                               | 0.00            | 0.00        | 9,831.00              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| <b>3rd Bone Spring Sand</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,000.00                              | 0.00            | 0.00        | 9,914.72              | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 10,100.00                              | 0.00            | 0.00        | 10,014.72             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 10,200.00                              | 0.00            | 0.00        | 10,114.72             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 10,231.28                              | 0.00            | 0.00        | 10,146.00             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Wolfcamp A</b>                      |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,300.00                              | 0.00            | 0.00        | 10,214.72             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 10,400.00                              | 0.00            | 0.00        | 10,314.72             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 10,431.28                              | 0.00            | 0.00        | 10,346.00             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Wolfcamp A Fat</b>                  |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,500.00                              | 0.00            | 0.00        | 10,414.72             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| 10,562.32                              | 0.00            | 0.00        | 10,477.04             | -232.99      | -835.93      | -224.08                 | 0.00                    | 0.00                   | 0.00                  |
| <b>KOP, Start DLS 10.00 TFO 359.39</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,586.29                              | 2.40            | 359.39      | 10,501.00             | -232.49      | -835.94      | -223.58                 | 10.00                   | 10.00                  | 0.00                  |
| <b>Wolfcamp B</b>                      |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,600.00                              | 3.77            | 359.39      | 10,514.70             | -231.75      | -835.94      | -222.84                 | 10.00                   | 10.00                  | 0.00                  |
| 10,650.00                              | 8.77            | 359.39      | 10,564.38             | -226.29      | -836.00      | -217.38                 | 10.00                   | 10.00                  | 0.00                  |



# Pro Directional Survey Report



|                  |                          |                                     |                                                 |
|------------------|--------------------------|-------------------------------------|-------------------------------------------------|
| <b>Company:</b>  | Tap Rock Operating, LLC  | <b>Local Co-ordinate Reference:</b> | Well 233H                                       |
| <b>Project:</b>  | Eddy County, NM (NAD 83) | <b>TVD Reference:</b>               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Site:</b>     | Cypress 34               | <b>MD Reference:</b>                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Well:</b>     | 233H                     | <b>North Reference:</b>             | Grid                                            |
| <b>Wellbore:</b> | OH                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                               |
| <b>Design:</b>   | Plan 1                   | <b>Database:</b>                    | WellPlanner1                                    |

## Planned Survey

| Measured Depth (usft)                         | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 10,700.00                                     | 13.77           | 359.39      | 10,613.40             | -216.53      | -836.10      | -207.61                 | 10.00                   | 10.00                  | 0.00                  |
| 10,750.00                                     | 18.77           | 359.39      | 10,661.38             | -202.53      | -836.25      | -193.61                 | 10.00                   | 10.00                  | 0.00                  |
| 10,800.00                                     | 23.77           | 359.39      | 10,707.96             | -184.40      | -836.44      | -175.48                 | 10.00                   | 10.00                  | 0.00                  |
| 10,850.00                                     | 28.77           | 359.39      | 10,752.79             | -162.28      | -836.68      | -153.36                 | 10.00                   | 10.00                  | 0.00                  |
| 10,900.00                                     | 33.77           | 359.39      | 10,795.51             | -136.33      | -836.95      | -127.41                 | 10.00                   | 10.00                  | 0.00                  |
| 10,950.00                                     | 38.77           | 359.39      | 10,835.81             | -106.77      | -837.26      | -97.85                  | 10.00                   | 10.00                  | 0.00                  |
| 11,000.00                                     | 43.77           | 359.39      | 10,873.38             | -73.80       | -837.61      | -64.88                  | 10.00                   | 10.00                  | 0.00                  |
| 11,050.00                                     | 48.77           | 359.39      | 10,907.93             | -37.68       | -838.00      | -28.76                  | 10.00                   | 10.00                  | 0.00                  |
| 11,100.00                                     | 53.77           | 359.39      | 10,939.21             | 1.31         | -838.41      | 10.23                   | 10.00                   | 10.00                  | 0.00                  |
| 11,150.00                                     | 58.77           | 359.39      | 10,966.96             | 42.87        | -838.85      | 51.80                   | 10.00                   | 10.00                  | 0.00                  |
| 11,200.00                                     | 63.77           | 359.39      | 10,990.99             | 86.70        | -839.31      | 95.63                   | 10.00                   | 10.00                  | 0.00                  |
| 11,223.64                                     | 66.13           | 359.39      | 11,001.00             | 108.12       | -839.54      | 117.05                  | 10.00                   | 10.00                  | 0.00                  |
| <b>Wolfcamp B 2</b>                           |                 |             |                       |              |              |                         |                         |                        |                       |
| 11,250.00                                     | 68.77           | 359.39      | 11,011.11             | 132.46       | -839.79      | 141.39                  | 10.00                   | 10.00                  | 0.00                  |
| 11,300.00                                     | 73.77           | 359.39      | 11,027.16             | 179.79       | -840.30      | 188.73                  | 10.00                   | 10.00                  | 0.00                  |
| 11,350.00                                     | 78.77           | 359.39      | 11,039.02             | 228.34       | -840.81      | 237.28                  | 10.00                   | 10.00                  | 0.00                  |
| 11,400.00                                     | 83.77           | 359.39      | 11,046.61             | 277.74       | -841.33      | 286.69                  | 10.00                   | 10.00                  | 0.00                  |
| 11,450.00                                     | 88.77           | 359.39      | 11,049.87             | 327.62       | -841.86      | 336.56                  | 10.00                   | 10.00                  | 0.00                  |
| 11,463.46                                     | 90.11           | 359.39      | 11,050.00             | 341.08       | -842.00      | 350.02                  | 10.00                   | 10.00                  | 0.00                  |
| <b>EOC, Start 5016.52 hold at 11463.46 MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 11,500.00                                     | 90.11           | 359.39      | 11,049.92             | 377.62       | -842.39      | 386.56                  | 0.00                    | 0.00                   | 0.00                  |
| 11,600.00                                     | 90.11           | 359.39      | 11,049.72             | 477.61       | -843.44      | 486.56                  | 0.00                    | 0.00                   | 0.00                  |
| 11,700.00                                     | 90.11           | 359.39      | 11,049.53             | 577.60       | -844.50      | 586.56                  | 0.00                    | 0.00                   | 0.00                  |
| 11,800.00                                     | 90.11           | 359.39      | 11,049.33             | 677.60       | -845.56      | 686.56                  | 0.00                    | 0.00                   | 0.00                  |
| 11,900.00                                     | 90.11           | 359.39      | 11,049.13             | 777.59       | -846.62      | 786.56                  | 0.00                    | 0.00                   | 0.00                  |
| 12,000.00                                     | 90.11           | 359.39      | 11,048.93             | 877.59       | -847.67      | 886.56                  | 0.00                    | 0.00                   | 0.00                  |
| 12,100.00                                     | 90.11           | 359.39      | 11,048.73             | 977.58       | -848.73      | 986.56                  | 0.00                    | 0.00                   | 0.00                  |
| 12,200.00                                     | 90.11           | 359.39      | 11,048.53             | 1,077.58     | -849.79      | 1,086.56                | 0.00                    | 0.00                   | 0.00                  |
| 12,300.00                                     | 90.11           | 359.39      | 11,048.33             | 1,177.57     | -850.85      | 1,186.56                | 0.00                    | 0.00                   | 0.00                  |
| 12,400.00                                     | 90.11           | 359.39      | 11,048.13             | 1,277.56     | -851.90      | 1,286.56                | 0.00                    | 0.00                   | 0.00                  |
| 12,500.00                                     | 90.11           | 359.39      | 11,047.93             | 1,377.56     | -852.96      | 1,386.56                | 0.00                    | 0.00                   | 0.00                  |
| 12,600.00                                     | 90.11           | 359.39      | 11,047.73             | 1,477.55     | -854.02      | 1,486.56                | 0.00                    | 0.00                   | 0.00                  |
| 12,700.00                                     | 90.11           | 359.39      | 11,047.53             | 1,577.55     | -855.08      | 1,586.56                | 0.00                    | 0.00                   | 0.00                  |
| 12,800.00                                     | 90.11           | 359.39      | 11,047.33             | 1,677.54     | -856.13      | 1,686.56                | 0.00                    | 0.00                   | 0.00                  |
| 12,900.00                                     | 90.11           | 359.39      | 11,047.13             | 1,777.54     | -857.19      | 1,786.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,000.00                                     | 90.11           | 359.39      | 11,046.93             | 1,877.53     | -858.25      | 1,886.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,100.00                                     | 90.11           | 359.39      | 11,046.74             | 1,977.52     | -859.31      | 1,986.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,200.00                                     | 90.11           | 359.39      | 11,046.54             | 2,077.52     | -860.36      | 2,086.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,300.00                                     | 90.11           | 359.39      | 11,046.34             | 2,177.51     | -861.42      | 2,186.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,400.00                                     | 90.11           | 359.39      | 11,046.14             | 2,277.51     | -862.48      | 2,286.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,500.00                                     | 90.11           | 359.39      | 11,045.94             | 2,377.50     | -863.54      | 2,386.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,600.00                                     | 90.11           | 359.39      | 11,045.74             | 2,477.49     | -864.59      | 2,486.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,700.00                                     | 90.11           | 359.39      | 11,045.54             | 2,577.49     | -865.65      | 2,586.56                | 0.00                    | 0.00                   | 0.00                  |



# Pro Directional Survey Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Site:** Cypress 34  
**Well:** 233H  
**Wellbore:** OH  
**Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** WellPlanner1

## Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Bulld Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 13,800.00             | 90.11           | 359.39      | 11,045.34             | 2,677.48     | -866.71      | 2,686.56                | 0.00                    | 0.00                   | 0.00                  |
| 13,900.00             | 90.11           | 359.39      | 11,045.14             | 2,777.48     | -867.77      | 2,786.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,000.00             | 90.11           | 359.39      | 11,044.94             | 2,877.47     | -868.82      | 2,886.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,100.00             | 90.11           | 359.39      | 11,044.74             | 2,977.47     | -869.88      | 2,986.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,200.00             | 90.11           | 359.39      | 11,044.54             | 3,077.46     | -870.94      | 3,086.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,300.00             | 90.11           | 359.39      | 11,044.34             | 3,177.45     | -872.00      | 3,186.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,400.00             | 90.11           | 359.39      | 11,044.15             | 3,277.45     | -873.05      | 3,286.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,500.00             | 90.11           | 359.39      | 11,043.95             | 3,377.44     | -874.11      | 3,386.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,600.00             | 90.11           | 359.39      | 11,043.75             | 3,477.44     | -875.17      | 3,486.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,700.00             | 90.11           | 359.39      | 11,043.55             | 3,577.43     | -876.22      | 3,586.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,800.00             | 90.11           | 359.39      | 11,043.35             | 3,677.43     | -877.28      | 3,686.56                | 0.00                    | 0.00                   | 0.00                  |
| 14,900.00             | 90.11           | 359.39      | 11,043.15             | 3,777.42     | -878.34      | 3,786.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,000.00             | 90.11           | 359.39      | 11,042.95             | 3,877.41     | -879.40      | 3,886.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,100.00             | 90.11           | 359.39      | 11,042.75             | 3,977.41     | -880.45      | 3,986.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,200.00             | 90.11           | 359.39      | 11,042.55             | 4,077.40     | -881.51      | 4,086.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,300.00             | 90.11           | 359.39      | 11,042.35             | 4,177.40     | -882.57      | 4,186.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,400.00             | 90.11           | 359.39      | 11,042.15             | 4,277.39     | -883.63      | 4,286.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,500.00             | 90.11           | 359.39      | 11,041.95             | 4,377.38     | -884.68      | 4,386.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,600.00             | 90.11           | 359.39      | 11,041.75             | 4,477.38     | -885.74      | 4,486.56                | 0.00                    | 0.00                   | 0.00                  |
| 15,700.00             | 90.11           | 359.39      | 11,041.55             | 4,577.37     | -886.80      | 4,586.55                | 0.00                    | 0.00                   | 0.00                  |
| 15,800.00             | 90.11           | 359.39      | 11,041.36             | 4,677.37     | -887.86      | 4,686.55                | 0.00                    | 0.00                   | 0.00                  |
| 15,900.00             | 90.11           | 359.39      | 11,041.16             | 4,777.36     | -888.91      | 4,786.55                | 0.00                    | 0.00                   | 0.00                  |
| 16,000.00             | 90.11           | 359.39      | 11,040.96             | 4,877.36     | -889.97      | 4,886.55                | 0.00                    | 0.00                   | 0.00                  |
| 16,100.00             | 90.11           | 359.39      | 11,040.76             | 4,977.35     | -891.03      | 4,986.55                | 0.00                    | 0.00                   | 0.00                  |
| 16,200.00             | 90.11           | 359.39      | 11,040.56             | 5,077.34     | -892.09      | 5,086.55                | 0.00                    | 0.00                   | 0.00                  |
| 16,300.00             | 90.11           | 359.39      | 11,040.36             | 5,177.34     | -893.14      | 5,186.55                | 0.00                    | 0.00                   | 0.00                  |
| 16,400.00             | 90.11           | 359.39      | 11,040.16             | 5,277.33     | -894.20      | 5,286.55                | 0.00                    | 0.00                   | 0.00                  |
| 16,479.98             | 90.11           | 359.39      | 11,040.00             | 5,357.30     | -895.05      | 5,366.53                | 0.00                    | 0.00                   | 0.00                  |

TD at 16479.97



# Pro Directional Survey Report



|                  |                          |                                     |                                                 |
|------------------|--------------------------|-------------------------------------|-------------------------------------------------|
| <b>Company:</b>  | Tap Rock Operating, LLC  | <b>Local Co-ordinate Reference:</b> | Well 233H                                       |
| <b>Project:</b>  | Eddy County, NM (NAD 83) | <b>TVD Reference:</b>               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Site:</b>     | Cypress 34               | <b>MD Reference:</b>                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Well:</b>     | 233H                     | <b>North Reference:</b>             | Grid                                            |
| <b>Wellbore:</b> | OH                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                               |
| <b>Design:</b>   | Plan 1                   | <b>Database:</b>                    | WellPlanner1                                    |

| Design Targets                                                                                                        |                  |                 |               |                 |                 |                    |                   |           |             |
|-----------------------------------------------------------------------------------------------------------------------|------------------|-----------------|---------------|-----------------|-----------------|--------------------|-------------------|-----------|-------------|
| Target Name                                                                                                           | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude  | Longitude   |
| 233H - Plat LTP<br>- hit/miss target<br>- Shape                                                                       | 0.00             | 0.00            | 0.00          | 5,447.00        | -896.00         | 461,536.00         | 653,478.00        | 32.268316 | -103.970517 |
| - plan misses target center by 5520.20usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)                                  |                  |                 |               |                 |                 |                    |                   |           |             |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |
| 233H - Plat FTP<br>- plan misses target center by 908.43usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)                | 0.00             | 0.01            | 0.00          | 341.00          | -842.00         | 456,430.00         | 653,532.00        | 32.254280 | -103.970398 |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |
| 233H - VP<br>- plan misses target center by 867.79usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)                      | 0.00             | 0.01            | 0.00          | -232.99         | -835.93         | 455,856.01         | 653,538.07        | 32.252702 | -103.970384 |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |
| 233H - KOP<br>- plan hits target center                                                                               | 0.00             | 0.01            | 10,477.0<br>4 | -232.99         | -835.93         | 455,856.01         | 653,538.07        | 32.252702 | -103.970384 |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |
| 233H - Plat PBHL<br>- plan misses target center by 184.71usft at 16479.97usft MD (11040.00 TVD, 5357.30 N, -895.05 E) | 0.00             | 0.00            | 11,040.00     | 5,542.00        | -897.00         | 461,631.00         | 653,477.00        | 32.268577 | -103.970519 |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |
| 233H - PBHL<br>- plan hits target center                                                                              | 0.00             | 0.00            | 11,040.00     | 5,357.30        | -895.05         | 461,446.30         | 653,478.96        | 32.268070 | -103.970515 |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |
| 233H - LTP<br>- plan hits target center                                                                               | 0.00             | 0.00            | 11,040.28     | 5,216.42        | -893.56         | 461,305.42         | 653,480.45        | 32.267682 | -103.970511 |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |
| 233H - FTP/EOC<br>- plan hits target center                                                                           | 0.00             | 0.00            | 11,050.00     | 341.08          | -842.00         | 456,430.08         | 653,532.00        | 32.254280 | -103.970398 |
| - Point                                                                                                               |                  |                 |               |                 |                 |                    |                   |           |             |

| Formations                  |                             |                      |           |            |                         |  |
|-----------------------------|-----------------------------|----------------------|-----------|------------|-------------------------|--|
| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name                 | Lithology | Dip<br>(°) | Dip<br>Direction<br>(°) |  |
| 336.00                      | 336.00                      | Rustler Anhydrite    |           |            |                         |  |
| 651.17                      | 651.00                      | Top Salt             |           |            |                         |  |
| 3,210.79                    | 3,161.00                    | Base Salt            |           |            |                         |  |
| 3,231.22                    | 3,181.00                    | Delaware Mountain Gp |           |            |                         |  |
| 3,261.86                    | 3,211.00                    | Bell Canyon          |           |            |                         |  |
| 5,391.28                    | 5,306.00                    | Brushy Canyon        |           |            |                         |  |
| 7,006.28                    | 6,921.00                    | Bone Spring Lime     |           |            |                         |  |
| 7,971.28                    | 7,886.00                    | 1st Bone Spring Sand |           |            |                         |  |
| 8,586.28                    | 8,501.00                    | 2nd Bone Spring Sand |           |            |                         |  |
| 9,916.28                    | 9,831.00                    | 3rd Bone Spring Sand |           |            |                         |  |
| 10,231.28                   | 10,146.00                   | Wolfcamp A           |           |            |                         |  |
| 10,431.28                   | 10,346.00                   | Wolfcamp A Fat       |           |            |                         |  |
| 10,586.29                   | 10,501.00                   | Wolfcamp B           |           |            |                         |  |
| 11,223.64                   | 11,001.00                   | Wolfcamp B 2         |           |            |                         |  |



# Pro Directional

## Survey Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Site:** Cypress 34  
**Well:** 233H  
**Wellbore:** OH  
**Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** WellPlanner1

### Plan Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                                |
|-----------------------------|-----------------------------|-------------------|-----------------|----------------------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                                        |
| 450                         | 450                         | 0                 | 0               | Start Build 2.00                       |
| 1038                        | 1034                        | -16               | -58             | Start 3664.48 hold at 1038.40 MD       |
| 4703                        | 4622                        | -217              | -778            | Start Drop -2.00                       |
| 5291                        | 5206                        | -233              | -836            | Start 5271.04 hold at 5291.28 MD       |
| 10,562                      | 10,477                      | -233              | -836            | KOP, Start DLS 10.00 TFO 359.39        |
| 11,463                      | 11,050                      | 341               | -842            | EOC, Start 5016.52 hold at 11463.46 MD |
| 16,480                      | 11,040                      | 5357              | -895            | TD at 16479.97                         |

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



## **Tap Rock Operating, LLC**

**Eddy County, NM (NAD 83)**

**Cypress 34**

**233H**

**OH**

**Plan 1**

## **Anticollision Report**

**23 August, 2018**





# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)

**Local Co-ordinate Reference:**  
**TVD Reference:**

Well 233H  
Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')

**Reference Site:** Cypress 34

**MD Reference:**

Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')

**Site Error:** 0.00 usft

**North Reference:**

Grid

**Reference Well:** 233H

**Survey Calculation Method:**

Minimum Curvature

**Well Error:** 0.00 usft

**Output errors are at**

3.00 sigma

**Reference Wellbore**

**Database:**

WellPlanner1

**Reference Design:** Plan 1

**Offset TVD Reference:**

Offset Datum

|                                     |                                                                     |
|-------------------------------------|---------------------------------------------------------------------|
| <b>Reference</b>                    | Plan 1                                                              |
| <b>Filter type:</b>                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |
| <b>Interpolation Method:</b>        | Stations                                                            |
| <b>Depth Range:</b>                 | Unlimited                                                           |
| <b>Results Limited by:</b>          | Maximum center-center distance of 9,999.98 usft                     |
| <b>Warning Levels Evaluated at:</b> | 3.00 Sigma                                                          |
| <b>Error Model:</b>                 | ISCWSA                                                              |
| <b>Scan Method:</b>                 | Closest Approach 3D                                                 |
| <b>Error Surface:</b>               | Pedal Curve                                                         |
| <b>Casing Method:</b>               | Not applied                                                         |

|                     |           |                   |           |                 |
|---------------------|-----------|-------------------|-----------|-----------------|
| Survey Tool Program |           | Date 8/23/2018    |           |                 |
| From (usft)         | To (usft) | Survey (Wellbore) | Tool Name | Description     |
| 0.00                | 16,479.98 | Plan 1 (OH)       | MWD+HDGM  | OWSG MWD + HRGM |

| Summary                         |                                 |                              |                                 |                                  |                   |            |
|---------------------------------|---------------------------------|------------------------------|---------------------------------|----------------------------------|-------------------|------------|
| Site Name                       | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Separation Factor | Warning    |
| Offset Well - Wellbore - Design |                                 |                              |                                 |                                  |                   |            |
| Cypress 34                      |                                 |                              |                                 |                                  |                   |            |
| 001H (O) - OH - OH              | 512.38                          | 504.44                       | 858.72                          | 853.90                           | 178.487           | CC, ES     |
| 001H (O) - OH - OH              | 8,102.70                        | 9,089.60                     | 958.62                          | 855.45                           | 9.292             | SF         |
| 008H (O) - OH - OH              | 3,878.50                        | 3,778.16                     | 910.68                          | 870.37                           | 22.592            | CC         |
| 008H (O) - OH - OH              | 3,900.00                        | 3,794.37                     | 910.74                          | 870.27                           | 22.501            | ES         |
| 008H (O) - OH - OH              | 8,500.00                        | 8,278.96                     | 962.04                          | 883.20                           | 12.202            | SF         |
| 009H (O) - OH - OH              | 605.18                          | 620.39                       | 503.68                          | 498.84                           | 104.116           | CC         |
| 009H (O) - OH - OH              | 700.00                          | 715.63                       | 504.17                          | 498.32                           | 86.189            | ES         |
| 009H (O) - OH - OH              | 16,479.98                       | 13,333.00                    | 2,419.34                        | 2,252.59                         | 14.509            | SF         |
| 012H (O) - OH - OH              | 678.64                          | 681.28                       | 102.25                          | 96.47                            | 17.703            | CC         |
| 012H (O) - OH - OH              | 800.00                          | 802.39                       | 103.14                          | 96.06                            | 14.563            | ES         |
| 012H (O) - OH - OH              | 16,479.98                       | 15,029.08                    | 826.82                          | 676.55                           | 5.502             | SF         |
| 015H (O) - OH - OH              | 434.03                          | 408.53                       | 241.44                          | 237.46                           | 60.651            | CC         |
| 015H (O) - OH - OH              | 450.00                          | 423.60                       | 241.47                          | 237.33                           | 58.269            | ES         |
| 015H (O) - OH - OH              | 16,200.00                       | 14,857.00                    | 1,635.31                        | 1,408.01                         | 7.194             | SF         |
| 243H - OH - Plan 1              | 450.00                          | 450.00                       | 25.00                           | 20.84                            | 6.011             | CC         |
| 243H - OH - Plan 1              | 1,038.40                        | 1,033.38                     | 26.17                           | 15.85                            | 2.536             | ES         |
| 243H - OH - Plan 1              | 16,479.98                       | 16,773.25                    | 481.26                          | 248.72                           | 2.070             | SF         |
| 246H - OH - Plan 1              | 450.00                          | 450.00                       | 25.02                           | 20.86                            | 6.016             | CC         |
| 246H - OH - Plan 1              | 700.00                          | 701.96                       | 25.81                           | 19.07                            | 3.828             | ES         |
| 246H - OH - Plan 1              | 16,479.98                       | 16,655.50                    | 483.73                          | 240.36                           | 1.988             | SF         |
| Knoll AOK 002 (O) - OH - OH     | 8,059.79                        | 9,524.85                     | 204.50                          | 91.16                            | 1.804             | CC, ES, SF |

| <b>Offset Design</b> Cypress 34 - 001H (O) - OH - OH |                       |                       |                       |           |        |                       |                                     |              |                        |                         |
|------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------|--------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|
| Survey Program: 100-MWD+HDGM, 7420-MWD+HDGM          |                       |                       |                       |           |        |                       |                                     |              |                        |                         |
| Offset Site Error: 0.00 usft                         |                       |                       |                       |           |        |                       |                                     |              |                        |                         |
| Offset Well Error: 0.00 usft                         |                       |                       |                       |           |        |                       |                                     |              |                        |                         |
| Reference                                            | Offset                | Semi Major Axis       |                       | Distance  |        | Minimum Separation    |                                     | Warning      |                        |                         |
| Measured Depth (usft)                                | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference | Offset | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) |
| 0.00                                                 | 0.00                  | 0.00                  | 0.00                  | 0.00      | 0.00   | 35.58                 | 699.33                              | 500.34       | 860.18                 |                         |
| 100.00                                               | 100.00                | 74.12                 | 74.12                 | 0.20      | 0.20   | 35.58                 | 699.47                              | 500.40       | 860.04                 | 859.64                  |
| 200.00                                               | 200.00                | 174.43                | 174.43                | 0.74      | 0.67   | 35.57                 | 699.89                              | 500.58       | 860.49                 | 859.08                  |
| 300.00                                               | 300.00                | 279.53                | 279.53                | 1.27      | 1.23   | 35.54                 | 700.26                              | 500.24       | 860.59                 | 858.09                  |
| 400.00                                               | 400.00                | 388.23                | 388.21                | 1.81      | 1.79   | 35.43                 | 700.60                              | 498.43       | 859.88                 | 856.27                  |
|                                                      |                       |                       |                       |           |        |                       |                                     |              | 3.61                   | 238.482                 |

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



# Pro Directional Anticollision Report



|                           |                          |                                     |                                                 |
|---------------------------|--------------------------|-------------------------------------|-------------------------------------------------|
| <b>Company:</b>           | Tap Rock Operating, LLC  | <b>Local Co-ordinate Reference:</b> | Well 233H                                       |
| <b>Project:</b>           | Eddy County, NM (NAD 83) | <b>TVD Reference:</b>               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Reference Site:</b>    | Cypress 34               | <b>MD Reference:</b>                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Site Error:</b>        | 0.00 usft                | <b>North Reference:</b>             | Grid                                            |
| <b>Reference Well:</b>    | 233H                     | <b>Survey Calculation Method:</b>   | Minimum Curvature                               |
| <b>Well Error:</b>        | 0.00 usft                | <b>Output errors are at</b>         | 3.00 sigma                                      |
| <b>Reference Wellbore</b> | OH                       | <b>Database:</b>                    | WellPlanner1                                    |
| <b>Reference Design:</b>  | Plan 1                   | <b>Offset TVD Reference:</b>        | Offset Datum                                    |

| Offset Design      Cypress 34 - 001H (O) - OH - OH |                             |                             |                             |                     |                  |                            |                        |                 |                              |                               |                                 |                      | Offset Site Error: | 0.00 usft |
|----------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|----------------------------|------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|--------------------|-----------|
| Survey Program: 100-MWD+HDGM, 7420-MWD+HDGM        |                             |                             |                             |                     |                  |                            |                        |                 |                              |                               |                                 |                      | Offset Well Error: | 0.00 usft |
| Reference                                          |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Tooface<br>(") | Offset Wellbore Centre |                 | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning            |           |
| Measured<br>Depth<br>(usft)                        | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                            | +N/-S<br>(usft)        | +E/-W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |                    |           |
| 450.00                                             | 450.00                      | 440.32                      | 440.28                      | 2.08                | 2.07             | 35.36                      | 700.63                 | 497.13          | 859.18                       | 855.03                        | 4.15                            | 207.092              |                    |           |
| 500.00                                             | 500.00                      | 491.71                      | 491.66                      | 2.34                | 2.34             | 140.88                     | 700.63                 | 495.75          | 858.73                       | 854.05                        | 4.68                            | 183.478              |                    |           |
| 512.38                                             | 512.38                      | 504.44                      | 504.38                      | 2.40                | 2.41             | 140.87                     | 700.62                 | 495.39          | 858.72                       | 853.90                        | 4.81                            | 178.487              | CC, ES             |           |
| 600.00                                             | 599.93                      | 588.52                      | 588.42                      | 2.86                | 2.86             | 140.85                     | 700.79                 | 493.02          | 859.95                       | 854.24                        | 5.71                            | 150.607              |                    |           |
| 700.00                                             | 699.68                      | 687.42                      | 687.28                      | 3.38                | 3.39             | 140.92                     | 701.32                 | 490.21          | 864.16                       | 857.40                        | 6.77                            | 127.708              |                    |           |
| 800.00                                             | 799.13                      | 791.36                      | 791.19                      | 3.93                | 3.95             | 141.13                     | 701.51                 | 487.47          | 870.92                       | 863.06                        | 7.86                            | 110.821              |                    |           |
| 900.00                                             | 898.15                      | 890.68                      | 890.48                      | 4.49                | 4.48             | 141.50                     | 700.90                 | 485.43          | 880.13                       | 871.19                        | 8.93                            | 98.504               |                    |           |
| 1,000.00                                           | 996.63                      | 984.53                      | 984.33                      | 5.08                | 4.97             | 141.95                     | 700.24                 | 484.04          | 892.40                       | 882.41                        | 9.99                            | 89.296               |                    |           |
| 1,038.40                                           | 1,034.27                    | 1,020.78                    | 1,020.57                    | 5.32                | 5.17             | 142.16                     | 700.02                 | 483.70          | 898.03                       | 887.62                        | 10.41                           | 86.293               |                    |           |
| 1,100.00                                           | 1,094.58                    | 1,079.52                    | 1,079.31                    | 5.70                | 5.48             | 142.62                     | 699.69                 | 483.28          | 907.51                       | 896.45                        | 11.07                           | 82.007               |                    |           |
| 1,200.00                                           | 1,192.48                    | 1,164.75                    | 1,164.53                    | 6.34                | 5.92             | 143.28                     | 699.54                 | 483.14          | 923.70                       | 911.62                        | 12.08                           | 76.481               |                    |           |
| 1,300.00                                           | 1,290.37                    | 1,246.99                    | 1,246.77                    | 6.98                | 6.34             | 143.91                     | 700.45                 | 483.87          | 941.64                       | 928.58                        | 13.07                           | 72.062               |                    |           |
| 1,400.00                                           | 1,388.27                    | 1,334.23                    | 1,333.97                    | 7.64                | 6.79             | 144.54                     | 702.55                 | 485.40          | 961.23                       | 947.15                        | 14.08                           | 68.262               |                    |           |
| 1,500.00                                           | 1,486.17                    | 1,435.69                    | 1,435.38                    | 8.30                | 7.31             | 145.24                     | 705.24                 | 487.34          | 981.25                       | 966.07                        | 15.18                           | 64.628               |                    |           |
| 1,600.00                                           | 1,584.07                    | 1,544.80                    | 1,544.46                    | 8.96                | 7.88             | 145.96                     | 707.26                 | 488.71          | 1,000.40                     | 984.06                        | 16.34                           | 61.240               |                    |           |
| 1,700.00                                           | 1,681.97                    | 1,649.98                    | 1,649.63                    | 9.63                | 8.42             | 146.64                     | 708.39                 | 489.53          | 1,018.78                     | 1,001.31                      | 17.47                           | 58.324               |                    |           |
| 1,800.00                                           | 1,779.86                    | 1,752.32                    | 1,751.96                    | 10.30               | 8.95             | 147.30                     | 708.77                 | 490.18          | 1,036.67                     | 1,018.09                      | 18.58                           | 55.792               |                    |           |
| 1,900.00                                           | 1,877.76                    | 1,851.49                    | 1,851.13                    | 10.98               | 9.47             | 147.93                     | 708.76                 | 490.82          | 1,054.42                     | 1,034.75                      | 19.67                           | 53.595               |                    |           |
| 2,000.00                                           | 1,975.66                    | 1,947.08                    | 1,946.71                    | 11.66               | 9.96             | 148.53                     | 708.58                 | 491.61          | 1,072.30                     | 1,051.55                      | 20.75                           | 51.689               |                    |           |
| 2,100.00                                           | 2,073.56                    | 2,043.41                    | 2,043.05                    | 12.33               | 10.46            | 149.11                     | 708.73                 | 492.51          | 1,090.59                     | 1,068.77                      | 21.82                           | 49.972               |                    |           |
| 2,200.00                                           | 2,171.46                    | 2,142.81                    | 2,142.44                    | 13.01               | 10.98            | 149.67                     | 708.95                 | 493.18          | 1,108.86                     | 1,085.94                      | 22.92                           | 48.370               |                    |           |
| 2,300.00                                           | 2,269.36                    | 2,238.24                    | 2,237.87                    | 13.69               | 11.48            | 150.20                     | 709.12                 | 493.85          | 1,127.23                     | 1,103.23                      | 24.00                           | 46.967               |                    |           |
| 2,400.00                                           | 2,367.25                    | 2,332.28                    | 2,331.90                    | 14.38               | 11.98            | 150.70                     | 709.60                 | 494.74          | 1,146.07                     | 1,121.00                      | 25.07                           | 45.719               |                    |           |
| 2,500.00                                           | 2,465.15                    | 2,430.50                    | 2,430.12                    | 15.06               | 12.50            | 151.20                     | 710.22                 | 495.64          | 1,165.07                     | 1,138.91                      | 26.16                           | 44.530               |                    |           |
| 2,600.00                                           | 2,563.05                    | 2,529.51                    | 2,529.12                    | 15.74               | 13.02            | 151.70                     | 710.61                 | 496.69          | 1,184.10                     | 1,156.84                      | 27.26                           | 43.432               |                    |           |
| 2,700.00                                           | 2,660.95                    | 2,630.05                    | 2,629.65                    | 16.43               | 13.55            | 152.21                     | 710.58                 | 497.88          | 1,203.02                     | 1,174.65                      | 28.37                           | 42.404               |                    |           |
| 2,800.00                                           | 2,758.85                    | 2,731.37                    | 2,730.96                    | 17.11               | 14.08            | 152.73                     | 710.12                 | 499.15          | 1,221.79                     | 1,192.31                      | 29.48                           | 41.445               |                    |           |
| 2,900.00                                           | 2,856.74                    | 2,833.93                    | 2,833.51                    | 17.80               | 14.62            | 153.26                     | 708.96                 | 500.48          | 1,240.25                     | 1,209.65                      | 30.60                           | 40.537               |                    |           |
| 3,000.00                                           | 2,954.64                    | 2,935.08                    | 2,934.63                    | 18.48               | 15.15            | 153.80                     | 707.18                 | 502.03          | 1,258.55                     | 1,226.85                      | 31.70                           | 39.703               |                    |           |
| 3,100.00                                           | 3,052.54                    | 3,039.98                    | 3,039.49                    | 19.17               | 15.69            | 154.36                     | 704.62                 | 503.62          | 1,276.52                     | 1,243.69                      | 32.83                           | 38.887               |                    |           |
| 3,200.00                                           | 3,150.44                    | 3,143.19                    | 3,142.64                    | 19.86               | 16.23            | 154.91                     | 701.63                 | 504.82          | 1,294.03                     | 1,260.09                      | 33.94                           | 38.126               |                    |           |
| 3,300.00                                           | 3,248.34                    | 3,242.45                    | 3,241.86                    | 20.54               | 16.75            | 155.41                     | 698.84                 | 505.62          | 1,311.44                     | 1,276.40                      | 35.03                           | 37.436               |                    |           |
| 3,400.00                                           | 3,346.23                    | 3,340.06                    | 3,339.44                    | 21.23               | 17.26            | 155.87                     | 696.27                 | 506.20          | 1,328.87                     | 1,292.76                      | 36.11                           | 36.800               |                    |           |
| 3,500.00                                           | 3,444.13                    | 3,437.62                    | 3,436.97                    | 21.92               | 17.77            | 156.31                     | 693.96                 | 506.65          | 1,346.47                     | 1,309.28                      | 37.19                           | 36.205               |                    |           |
| 3,600.00                                           | 3,542.03                    | 3,537.41                    | 3,536.74                    | 22.61               | 18.29            | 156.74                     | 691.75                 | 506.88          | 1,364.05                     | 1,325.76                      | 38.28                           | 35.629               |                    |           |
| 3,700.00                                           | 3,639.93                    | 3,635.92                    | 3,635.22                    | 23.30               | 18.81            | 157.15                     | 689.58                 | 506.97          | 1,381.60                     | 1,342.23                      | 39.37                           | 35.092               |                    |           |
| 3,800.00                                           | 3,737.83                    | 3,731.68                    | 3,730.96                    | 23.99               | 19.31            | 157.53                     | 687.64                 | 506.98          | 1,399.26                     | 1,358.82                      | 40.44                           | 34.602               |                    |           |
| 3,900.00                                           | 3,835.73                    | 3,826.32                    | 3,825.59                    | 24.67               | 19.81            | 157.89                     | 685.91                 | 507.17          | 1,417.25                     | 1,375.75                      | 41.50                           | 34.151               |                    |           |
| 4,000.00                                           | 3,933.62                    | 3,924.26                    | 3,923.52                    | 25.36               | 20.33            | 158.25                     | 684.29                 | 507.29          | 1,435.33                     | 1,392.75                      | 42.58                           | 33.706               |                    |           |
| 4,100.00                                           | 4,031.52                    | 4,017.89                    | 4,017.13                    | 26.05               | 20.82            | 158.58                     | 683.00                 | 507.42          | 1,453.65                     | 1,410.02                      | 43.64                           | 33.312               |                    |           |
| 4,200.00                                           | 4,129.42                    | 4,112.19                    | 4,111.43                    | 26.74               | 21.32            | 158.90                     | 682.03                 | 507.64          | 1,472.30                     | 1,427.60                      | 44.70                           | 32.939               |                    |           |
| 4,300.00                                           | 4,227.32                    | 4,208.50                    | 4,207.74                    | 27.43               | 21.83            | 159.20                     | 681.29                 | 507.89          | 1,491.15                     | 1,445.38                      | 45.77                           | 32.578               |                    |           |
| 4,400.00                                           | 4,325.22                    | 4,305.48                    | 4,304.72                    | 28.12               | 22.34            | 159.49                     | 680.76                 | 508.08          | 1,510.12                     | 1,463.27                      | 46.85                           | 32.232               |                    |           |
| 4,500.00                                           | 4,423.11                    | 4,404.17                    | 4,403.40                    | 28.81               | 22.86            | 159.78                     | 680.32                 | 508.20          | 1,529.14                     | 1,481.19                      | 47.94                           | 31.894               |                    |           |
| 4,600.00                                           | 4,521.01                    | 4,502.23                    | 4,501.46                    | 29.50               | 23.38            | 160.06                     | 679.85                 | 508.32          | 1,548.16                     | 1,499.12                      | 49.03                           | 31.574               |                    |           |
| 4,702.88                                           | 4,621.73                    | 4,602.82                    | 4,602.05                    | 30.21               | 23.92            | 160.33                     | 679.36                 | 508.43          | 1,567.76                     | 1,517.61                      | 50.15                           | 31.261               |                    |           |
| 4,800.00                                           | 4,717.13                    | 4,698.12                    | 4,697.35                    | 30.86               | 24.42            | 160.68                     | 678.96                 | 508.50          | 1,584.77                     | 1,533.57                      | 51.20                           | 30.952               |                    |           |
| 4,900.00                                           | 4,815.94                    | 4,801.51                    | 4,800.74                    | 31.48               | 24.97            | 160.98                     | 678.50                 | 508.43          | 1,598.98                     | 1,546.67                      | 52.31                           | 30.588               |                    |           |
| 5,000.00                                           | 4,915.22                    | 4,902.89                    | 4,902.12                    | 32.07               | 25.50            | 161.20                     | 677.94                 | 508.17          | 1,609.71                     | 1,556.32                      | 53.39                           | 30.153               |                    |           |
| 5,100.00                                           | 5,014.86                    | 5,002.72                    | 5,001.94                    | 32.61               | 26.03            | 161.35                     | 677.44                 | 507.81          | 1,617.10                     | 1,562.66                      | 54.44                           | 29.706               |                    |           |
| 5,200.00                                           | 5,114.74                    | 5,108.68                    | 5,107.90                    | 33.11               | 26.58            | 161.44                     | 676.88                 | 507.20          | 1,620.99                     | 1,565.48                      | 55.52                           | 29.197               |                    |           |

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



# Pro Directional Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 001H (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: 0.00 usft  |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|-------------------------------|
| Survey Program: 100-MWD+HDGM, 7420-MWD+HDGM   |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: -0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   | Warning                       |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                               |
| 5,291.28                                      | 5,206.00              | 5,202.04              | 5,201.26              | 33.52            | 27.07         | 55.89                 | 676.17                              | 506.52       | 1,621.44               | 1,564.98                | 56.46                     | 28.719            |                               |
| 5,300.00                                      | 5,214.72              | 5,210.99              | 5,210.21              | 33.55            | 27.12         | 55.89                 | 676.09                              | 506.46       | 1,621.34               | 1,564.80                | 56.55                     | 28.672            |                               |
| 5,400.00                                      | 5,314.72              | 5,311.64              | 5,310.85              | 33.98            | 27.65         | 55.90                 | 675.31                              | 505.67       | 1,620.26               | 1,562.71                | 57.55                     | 28.154            |                               |
| 5,500.00                                      | 5,414.72              | 5,421.27              | 5,420.46              | 34.41            | 28.22         | 55.90                 | 674.47                              | 504.25       | 1,618.76               | 1,560.14                | 58.62                     | 27.615            |                               |
| 5,600.00                                      | 5,514.72              | 5,522.28              | 5,521.46              | 34.84            | 28.75         | 55.89                 | 673.60                              | 502.68       | 1,616.98               | 1,557.36                | 59.63                     | 27.119            |                               |
| 5,700.00                                      | 5,614.72              | 5,622.75              | 5,621.92              | 35.27            | 29.28         | 55.88                 | 672.77                              | 501.01       | 1,615.14               | 1,554.51                | 60.63                     | 26.639            |                               |
| 5,800.00                                      | 5,714.72              | 5,722.35              | 5,721.49              | 35.70            | 29.80         | 55.87                 | 671.96                              | 499.39       | 1,613.34               | 1,551.71                | 61.63                     | 26.176            |                               |
| 5,900.00                                      | 5,814.72              | 5,824.22              | 5,823.35              | 36.14            | 30.33         | 55.87                 | 671.07                              | 497.65       | 1,611.44               | 1,548.78                | 62.65                     | 25.719            |                               |
| 6,000.00                                      | 5,914.72              | 5,922.23              | 5,921.34              | 36.59            | 30.85         | 55.86                 | 670.07                              | 496.13       | 1,609.58               | 1,545.93                | 63.65                     | 25.288            |                               |
| 6,100.00                                      | 6,014.72              | 6,021.70              | 6,020.79              | 37.03            | 31.38         | 55.87                 | 669.00                              | 494.69       | 1,607.78               | 1,543.12                | 64.66                     | 24.865            |                               |
| 6,200.00                                      | 6,114.72              | 6,120.16              | 6,119.25              | 37.48            | 31.90         | 55.87                 | 668.01                              | 493.30       | 1,606.04               | 1,540.38                | 65.66                     | 24.459            |                               |
| 6,300.00                                      | 6,214.72              | 6,218.19              | 6,217.26              | 37.92            | 32.41         | 55.88                 | 666.94                              | 492.11       | 1,604.43               | 1,537.76                | 66.67                     | 24.067            |                               |
| 6,400.00                                      | 6,314.72              | 6,317.79              | 6,316.84              | 38.38            | 32.94         | 55.89                 | 665.78                              | 491.06       | 1,602.90               | 1,535.22                | 67.68                     | 23.683            |                               |
| 6,500.00                                      | 6,414.72              | 6,419.71              | 6,418.75              | 38.83            | 33.48         | 55.91                 | 664.38                              | 490.01       | 1,601.28               | 1,532.56                | 68.72                     | 23.303            |                               |
| 6,600.00                                      | 6,514.72              | 6,518.11              | 6,517.14              | 39.28            | 34.01         | 55.93                 | 662.96                              | 489.07       | 1,599.68               | 1,529.95                | 69.73                     | 22.942            |                               |
| 6,700.00                                      | 6,614.72              | 6,617.72              | 6,616.73              | 39.74            | 34.54         | 55.96                 | 661.54                              | 488.15       | 1,598.12               | 1,527.36                | 70.75                     | 22.588            |                               |
| 6,800.00                                      | 6,714.72              | 6,714.11              | 6,713.11              | 40.20            | 35.05         | 55.98                 | 660.27                              | 487.37       | 1,596.70               | 1,524.95                | 71.75                     | 22.254            |                               |
| 6,900.00                                      | 6,814.72              | 6,818.56              | 6,817.56              | 40.66            | 35.56         | 1.41                  | 725.50                              | -812.33      | 1,537.89               | 1,468.08                | 69.81                     | 22.030            |                               |
| 7,000.00                                      | 6,914.72              | 6,917.07              | 6,916.08              | 41.13            | 36.07         | 1.50                  | 725.44                              | -810.84      | 1,461.03               | 1,388.52                | 72.51                     | 20.150            |                               |
| 7,100.00                                      | 7,014.72              | 6,915.57              | 6,914.57              | 41.59            | 36.58         | 1.59                  | 725.37                              | -809.34      | 1,387.13               | 1,311.71                | 75.42                     | 18.392            |                               |
| 7,200.00                                      | 7,114.72              | 6,914.05              | 6,913.05              | 42.06            | 37.09         | 1.68                  | 725.31                              | -807.83      | 1,316.67               | 1,238.14                | 78.53                     | 16.767            |                               |
| 7,300.00                                      | 7,214.72              | 6,912.52              | 6,911.52              | 42.53            | 37.60         | 1.77                  | 725.25                              | -806.30      | 1,250.25               | 1,168.43                | 81.82                     | 15.280            |                               |
| 7,400.00                                      | 7,314.72              | 6,910.97              | 6,909.97              | 43.00            | 38.11         | 1.86                  | 725.18                              | -804.75      | 1,188.54               | 1,103.29                | 85.25                     | 13.942            |                               |
| 7,500.00                                      | 7,414.72              | 6,909.40              | 6,908.40              | 43.47            | 38.62         | 1.96                  | 725.11                              | -803.18      | 1,132.30               | 1,043.56                | 88.74                     | 12.760            |                               |
| 7,600.00                                      | 7,514.72              | 6,907.82              | 6,906.82              | 43.94            | 39.13         | 2.05                  | 725.05                              | -801.60      | 1,082.40               | 990.21                  | 92.19                     | 11.741            |                               |
| 7,700.00                                      | 7,614.72              | 6,906.22              | 6,905.22              | 44.42            | 39.64         | 2.15                  | 724.98                              | -800.00      | 1,039.75               | 944.29                  | 95.46                     | 10.892            |                               |
| 7,800.00                                      | 7,714.72              | 6,904.60              | 6,903.60              | 44.89            | 40.15         | 2.24                  | 724.91                              | -798.39      | 1,005.26               | 906.90                  | 98.37                     | 10.219            |                               |
| 7,900.00                                      | 7,814.72              | 6,902.97              | 6,901.97              | 45.37            | 40.66         | 2.34                  | 724.84                              | -796.75      | 979.81                 | 879.08                  | 100.73                    | 9.727             |                               |
| 8,000.00                                      | 7,914.72              | 6,901.32              | 6,900.32              | 45.85            | 41.17         | 2.44                  | 724.76                              | -795.10      | 964.10                 | 861.73                  | 102.37                    | 9.418             |                               |
| 8,100.00                                      | 8,014.72              | 6,900.65              | 6,899.65              | 46.33            | 41.68         | 2.54                  | 724.69                              | -793.43      | 958.62                 | 855.47                  | 103.16                    | 9.293             |                               |
| 8,102.70                                      | 8,017.42              | 6,909.60              | 6,908.60              | 46.34            | 41.69         | 2.54                  | 724.69                              | -793.39      | 958.62                 | 855.45                  | 103.17                    | 9.292 SF          |                               |
| 8,200.00                                      | 8,114.72              | 6,907.96              | 6,906.96              | 46.81            | 42.19         | 2.64                  | 724.61                              | -791.75      | 963.55                 | 860.50                  | 103.05                    | 9.350             |                               |
| 8,300.00                                      | 8,214.72              | 6,906.25              | 6,905.25              | 47.29            | 42.70         | 2.74                  | 724.54                              | -790.04      | 978.71                 | 876.63                  | 102.08                    | 9.587             |                               |
| 8,400.00                                      | 8,314.72              | 6,904.52              | 6,903.52              | 47.78            | 43.21         | 2.85                  | 724.46                              | -788.31      | 1,003.65               | 903.28                  | 100.38                    | 9.999             |                               |
| 8,500.00                                      | 8,414.72              | 6,902.77              | 6,901.77              | 48.26            | 43.72         | 2.95                  | 724.38                              | -786.57      | 1,037.67               | 939.57                  | 98.11                     | 10.577            |                               |
| 8,600.00                                      | 8,514.72              | 6,901.01              | 6,900.01              | 48.75            | 44.23         | 3.06                  | 724.30                              | -784.80      | 1,079.91               | 984.44                  | 95.47                     | 11.312            |                               |
| 8,700.00                                      | 8,614.72              | 6,909.22              | 6,908.22              | 49.23            | 44.74         | 3.16                  | 724.22                              | -783.02      | 1,129.44               | 1,036.82                | 92.63                     | 12.193            |                               |
| 8,800.00                                      | 8,714.72              | 6,907.41              | 6,906.41              | 49.72            | 45.25         | 3.27                  | 724.13                              | -781.21      | 1,185.36               | 1,095.62                | 89.74                     | 13.209            |                               |
| 8,900.00                                      | 8,814.72              | 6,905.58              | 6,904.58              | 50.21            | 45.76         | 3.38                  | 724.05                              | -779.39      | 1,246.79               | 1,159.88                | 86.91                     | 14.345            |                               |
| 9,000.00                                      | 8,914.72              | 6,903.73              | 6,902.73              | 50.70            | 46.27         | 3.49                  | 723.96                              | -777.54      | 1,312.98               | 1,228.75                | 84.22                     | 15.589            |                               |
| 9,100.00                                      | 9,014.72              | 6,901.86              | 6,900.86              | 51.19            | 46.78         | 3.60                  | 723.87                              | -775.67      | 1,383.23               | 1,301.51                | 81.72                     | 16.926            |                               |
| 9,200.00                                      | 9,114.72              | 6,909.97              | 6,908.97              | 51.68            | 47.29         | 3.72                  | 723.78                              | -773.78      | 1,456.96               | 1,377.53                | 79.43                     | 18.343            |                               |
| 9,300.00                                      | 9,214.72              | 6,908.05              | 6,907.05              | 52.18            | 47.80         | 3.83                  | 723.69                              | -771.87      | 1,533.67               | 1,456.31                | 77.35                     | 19.827            |                               |
| 9,400.00                                      | 9,314.72              | 6,906.11              | 6,905.11              | 52.67            | 48.31         | 3.95                  | 723.60                              | -769.93      | 1,612.92               | 1,537.43                | 75.49                     | 21.366            |                               |
| 9,500.00                                      | 9,414.72              | 6,904.15              | 6,903.15              | 53.17            | 48.82         | 4.06                  | 723.50                              | -767.97      | 1,694.38               | 1,620.54                | 73.84                     | 22.947            |                               |
| 9,600.00                                      | 9,514.72              | 6,902.17              | 6,901.17              | 53.66            | 49.33         | 4.18                  | 723.41                              | -765.99      | 1,777.72               | 1,705.34                | 72.38                     | 24.561            |                               |
| 9,700.00                                      | 9,614.72              | 6,900.16              | 6,899.16              | 54.16            | 49.84         | 4.30                  | 723.31                              | -763.98      | 1,862.71               | 1,791.60                | 71.10                     | 26.198            |                               |
| 9,800.00                                      | 9,714.72              | 6,908.13              | 6,907.13              | 54.65            | 50.35         | 4.42                  | 723.21                              | -761.95      | 1,949.11               | 1,879.13                | 69.99                     | 27.850            |                               |
| 9,900.00                                      | 9,814.72              | 6,906.07              | 6,905.07              | 55.15            | 50.86         | 4.55                  | 723.11                              | -759.90      | 2,036.76               | 1,967.74                | 69.02                     | 29.509            |                               |
| 10,000.00                                     | 9,914.72              | 6,903.98              | 6,902.98              | 55.65            | 51.37         | 4.67                  | 723.00                              | -757.82      | 2,125.50               | 2,057.31                | 68.19                     | 31.168            |                               |

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



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 001H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      |         |                      | Offset Site Error:   | 0.00 usft            |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|----------------------|----------------------|----------------------|
| Survey Program: 100-MWD+HDGM, 7420-MWD+HDGM   |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      |         |                      | Offset Well Error:   | 0.00 usft            |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                      |                      |                      |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |         | Offset TVD<br>(usft) | Offset TVD<br>(usft) | Offset TVD<br>(usft) |
| 10,100.00                                     | 10,014.72                   | 9,051.87                    | 7,995.48                    | 56.15               | 56.25            | 4.80                        | 722.89                       | -755.71                       | 2,215.20                        | 2,147.71             | 67.49   | 32.823               |                      |                      |
| 10,200.00                                     | 10,114.72                   | 9,049.74                    | 7,995.52                    | 56.65               | 56.20            | 4.92                        | 722.79                       | -753.58                       | 2,305.75                        | 2,238.85             | 66.89   | 34.469               |                      |                      |
| 10,300.00                                     | 10,214.72                   | 9,047.64                    | 7,995.55                    | 57.15               | 56.15            | 5.05                        | 722.68                       | -751.48                       | 2,397.04                        | 2,330.64             | 66.40   | 36.101               |                      |                      |
| 10,400.00                                     | 10,314.72                   | 9,045.77                    | 7,995.58                    | 57.65               | 56.10            | 5.16                        | 722.58                       | -749.62                       | 2,489.00                        | 2,423.00             | 66.00   | 37.714               |                      |                      |
| 10,500.00                                     | 10,414.72                   | 9,043.91                    | 7,995.61                    | 58.15               | 56.06            | 5.27                        | 722.49                       | -747.75                       | 2,581.56                        | 2,515.88             | 65.68   | 39.307               |                      |                      |
| 10,562.32                                     | 10,477.04                   | 9,042.75                    | 7,995.63                    | 58.47               | 56.03            | 5.34                        | 722.43                       | -746.59                       | 2,639.52                        | 2,574.00             | 65.52   | 40.288               |                      |                      |
| 10,600.00                                     | 10,514.70                   | 9,042.13                    | 7,995.64                    | 58.65               | 56.01            | 5.13                        | 722.39                       | -745.98                       | 2,674.19                        | 2,608.78             | 65.41   | 40.885               |                      |                      |
| 10,650.00                                     | 10,564.38                   | 9,041.61                    | 7,995.65                    | 58.90               | 56.00            | 4.34                        | 722.37                       | -745.46                       | 2,718.72                        | 2,653.50             | 65.22   | 41.686               |                      |                      |
| 10,700.00                                     | 10,613.40                   | 9,041.40                    | 7,995.65                    | 59.13               | 55.99            | 3.77                        | 722.36                       | -745.26                       | 2,761.35                        | 2,696.37             | 64.99   | 42.492               |                      |                      |
| 10,750.00                                     | 10,661.38                   | 9,041.53                    | 7,995.65                    | 59.35               | 56.00            | 3.34                        | 722.36                       | -745.38                       | 2,801.85                        | 2,737.14             | 64.71   | 43.297               |                      |                      |
| 10,800.00                                     | 10,707.96                   | 9,041.98                    | 7,995.64                    | 59.56               | 56.01            | 3.00                        | 722.39                       | -745.83                       | 2,840.00                        | 2,775.60             | 64.41   | 44.095               |                      |                      |
| 10,850.00                                     | 10,752.79                   | 9,042.75                    | 7,995.63                    | 59.75               | 56.03            | 2.72                        | 722.43                       | -746.59                       | 2,875.61                        | 2,811.55             | 64.07   | 44.883               |                      |                      |
| 10,900.00                                     | 10,795.51                   | 9,043.82                    | 7,995.61                    | 59.92               | 56.05            | 2.50                        | 722.48                       | -747.66                       | 2,908.52                        | 2,844.81             | 63.71   | 45.654               |                      |                      |
| 10,950.00                                     | 10,835.81                   | 9,045.18                    | 7,995.59                    | 60.06               | 56.09            | 2.30                        | 722.55                       | -749.03                       | 2,938.55                        | 2,875.23             | 63.33   | 46.402               |                      |                      |
| 11,000.00                                     | 10,873.38                   | 9,046.82                    | 7,995.56                    | 60.19               | 56.13            | 2.14                        | 722.64                       | -750.66                       | 2,965.59                        | 2,902.65             | 62.93   | 47.121               |                      |                      |
| 11,050.00                                     | 10,907.93                   | 9,048.86                    | 7,995.53                    | 60.30               | 56.18            | 2.00                        | 722.74                       | -752.70                       | 2,989.49                        | 2,926.95             | 62.54   | 47.805               |                      |                      |
| 11,100.00                                     | 10,939.21                   | 9,051.42                    | 7,995.49                    | 60.39               | 56.24            | 1.87                        | 722.87                       | -755.25                       | 3,010.16                        | 2,948.02             | 62.14   | 48.443               |                      |                      |
| 11,150.00                                     | 10,966.96                   | 9,054.23                    | 7,995.45                    | 60.46               | 56.31            | 1.75                        | 723.01                       | -758.06                       | 3,027.51                        | 2,965.76             | 61.75   | 49.032               |                      |                      |
| 11,200.00                                     | 10,990.99                   | 9,057.25                    | 7,995.40                    | 60.51               | 56.39            | 1.65                        | 723.16                       | -761.08                       | 3,041.46                        | 2,980.10             | 61.37   | 49.563               |                      |                      |
| 11,250.00                                     | 11,011.11                   | 9,060.46                    | 7,995.35                    | 60.55               | 56.47            | 1.56                        | 723.32                       | -764.28                       | 3,051.95                        | 2,990.95             | 61.00   | 50.030               |                      |                      |
| 11,300.00                                     | 11,027.16                   | 9,063.81                    | 7,995.30                    | 60.59               | 56.55            | 1.48                        | 723.49                       | -767.63                       | 3,058.95                        | 2,998.28             | 60.66   | 50.425               |                      |                      |
| 11,350.00                                     | 11,039.02                   | 9,067.28                    | 7,995.24                    | 60.62               | 56.64            | 1.40                        | 723.66                       | -771.09                       | 3,062.41                        | 3,002.05             | 60.35   | 50.740               |                      |                      |
| 11,400.00                                     | 11,046.61                   | 9,070.82                    | 7,995.19                    | 60.65               | 56.73            | 1.34                        | 723.82                       | -774.63                       | 3,062.32                        | 3,002.24             | 60.08   | 50.971               |                      |                      |
| 11,450.00                                     | 11,049.87                   | 9,074.41                    | 7,995.14                    | 60.70               | 56.82            | 1.28                        | 723.99                       | -778.22                       | 3,058.69                        | 2,998.84             | 59.84   | 51.111               |                      |                      |
| 11,463.46                                     | 11,050.00                   | 9,075.38                    | 7,995.12                    | 60.71               | 56.84            | 1.26                        | 724.04                       | -779.19                       | 3,057.11                        | 2,997.32             | 59.79   | 51.131               |                      |                      |
| 11,500.00                                     | 11,049.92                   | 9,078.00                    | 7,995.08                    | 60.76               | 56.91            | 1.21                        | 724.16                       | -781.80                       | 3,052.68                        | 2,993.03             | 59.65   | 51.173               |                      |                      |
| 11,600.00                                     | 11,049.72                   | 9,084.95                    | 7,994.98                    | 60.97               | 57.08            | 1.08                        | 724.48                       | -788.74                       | 3,042.77                        | 2,983.33             | 59.44   | 51.193               |                      |                      |
| 11,700.00                                     | 11,049.53                   | 9,091.63                    | 7,994.89                    | 61.29               | 57.25            | 0.96                        | 724.78                       | -795.42                       | 3,036.10                        | 2,976.64             | 59.46   | 51.062               |                      |                      |
| 11,800.00                                     | 11,049.33                   | 9,098.05                    | 7,994.80                    | 61.73               | 57.41            | 0.84                        | 725.06                       | -801.83                       | 3,032.71                        | 2,972.99             | 59.73   | 50.777               |                      |                      |
| 11,853.21                                     | 11,049.22                   | 9,101.36                    | 7,994.75                    | 62.00               | 57.50            | 0.77                        | 725.20                       | -805.14                       | 3,032.25                        | 2,972.28             | 59.97   | 50.561               |                      |                      |
| 11,900.00                                     | 11,049.13                   | 9,104.22                    | 7,994.72                    | 62.27               | 57.57            | 0.72                        | 725.32                       | -807.99                       | 3,032.61                        | 2,972.37             | 60.24   | 50.344               |                      |                      |
| 12,000.00                                     | 11,048.93                   | 9,110.16                    | 7,994.64                    | 62.89               | 57.72            | 0.61                        | 725.56                       | -813.93                       | 3,035.79                        | 2,974.80             | 60.99   | 49.777               |                      |                      |
| 12,100.00                                     | 11,048.73                   | 9,116.96                    | 7,994.55                    | 63.59               | 57.89            | 0.48                        | 725.84                       | -820.72                       | 3,042.24                        | 2,980.27             | 61.98   | 49.087               |                      |                      |
| 12,200.00                                     | 11,048.53                   | 9,124.26                    | 7,994.46                    | 64.37               | 58.08            | 0.34                        | 726.14                       | -828.02                       | 3,051.95                        | 2,988.76             | 63.19   | 48.302               |                      |                      |
| 12,300.00                                     | 11,048.33                   | 9,131.61                    | 7,994.37                    | 65.21               | 58.27            | 0.20                        | 726.44                       | -835.36                       | 3,064.88                        | 3,000.29             | 64.59   | 47.453               |                      |                      |
| 12,400.00                                     | 11,048.13                   | 9,139.00                    | 7,994.29                    | 66.11               | 58.46            | 0.06                        | 726.75                       | -842.75                       | 3,080.99                        | 3,014.83             | 66.16   | 46.567               |                      |                      |
| 12,500.00                                     | 11,047.93                   | 9,146.44                    | 7,994.22                    | 67.07               | 58.65            | -0.08                       | 727.05                       | -850.18                       | 3,100.23                        | 3,032.34             | 67.88   | 45.669               |                      |                      |
| 12,600.00                                     | 11,047.73                   | 9,153.93                    | 7,994.15                    | 68.09               | 58.84            | -0.22                       | 727.36                       | -857.66                       | 3,122.54                        | 3,052.81             | 69.73   | 44.781               |                      |                      |
| 12,700.00                                     | 11,047.53                   | 9,161.47                    | 7,994.08                    | 69.16               | 59.04            | -0.36                       | 727.68                       | -865.19                       | 3,147.86                        | 3,076.19             | 71.67   | 43.919               |                      |                      |
| 12,800.00                                     | 11,047.33                   | 9,169.05                    | 7,994.02                    | 70.28               | 59.23            | -0.50                       | 727.99                       | -872.76                       | 3,176.12                        | 3,102.43             | 73.70   | 43.098               |                      |                      |
| 12,900.00                                     | 11,047.13                   | 9,176.68                    | 7,993.97                    | 71.45               | 59.43            | -0.65                       | 728.31                       | -880.38                       | 3,207.23                        | 3,131.46             | 75.77   | 42.327               |                      |                      |
| 13,000.00                                     | 11,046.93                   | 9,184.35                    | 7,993.92                    | 72.67               | 59.62            | -0.79                       | 728.64                       | -888.05                       | 3,241.12                        | 3,163.24             | 77.89   | 41.614               |                      |                      |
| 13,100.00                                     | 11,046.74                   | 9,186.48                    | 7,993.89                    | 73.92               | 59.82            | -0.93                       | 728.95                       | -895.30                       | 3,277.71                        | 3,197.78             | 79.94   | 41.005               |                      |                      |
| 13,200.00                                     | 11,046.54                   | 9,191.61                    | 7,993.86                    | 75.22               | 59.96            | -1.03                       | 729.18                       | -900.50                       | 3,316.90                        | 3,234.88             | 82.03   | 40.436               |                      |                      |
| 13,300.00                                     | 11,046.34                   | 9,196.81                    | 7,993.81                    | 76.56               | 59.96            | -1.13                       | 729.41                       | -905.77                       | 3,358.61                        | 3,274.50             | 84.11   | 39.931               |                      |                      |
| 13,400.00                                     | 11,046.14                   | 9,202.09                    | 7,993.77                    | 77.94               | 60.09            | -1.23                       | 729.64                       | -911.12                       | 3,402.73                        | 3,316.56             | 86.17   | 39.488               |                      |                      |
| 13,500.00                                     | 11,045.94                   | 9,207.44                    | 7,993.73                    | 79.34               | 60.24            | -1.33                       | 729.89                       | -916.54                       | 3,449.18                        | 3,360.98             | 88.20   | 39.105               |                      |                      |
| 13,600.00                                     | 11,045.74                   | 9,212.87                    | 7,993.68                    | 80.79               | 60.38            | -1.43                       | 730.13                       | -922.05                       | 3,497.86                        | 3,407.67             | 90.20   | 38.780               |                      |                      |
| 13,700.00                                     | 11,045.54                   | 9,218.38                    | 7,993.63                    | 82.26               | 60.52            | -1.54                       | 730.39                       | -927.63                       | 3,548.69                        | 3,456.54             | 92.15   | 38.511               |                      |                      |
| 13,800.00                                     | 11,045.34                   | 9,223.97                    | 7,993.58                    | 83.77               | 60.67            | -1.65                       | 730.65                       | -933.30                       | 3,601.57                        | 3,507.52             | 94.05   | 38.293               |                      |                      |
| 13,900.00                                     | 11,045.14                   | 9,229.65                    | 7,993.53                    | 85.30               | 60.82            | -1.65                       | 730.65                       | -933.30                       | 3,656.41                        | 3,560.50             | 95.91   | 38.125               |                      |                      |

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



Pro Directional  
Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 001H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      | Offset Site Error: 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|------------------------------|
| Survey Program: 100-MWD+HDGM, 7420-MWD+HDGM   |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      | Offset Well Error: 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                                  |                 | Between<br>Centras<br>(usft) | Between<br>Ellipses<br>(usft) | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning                      |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) |                              |                               |                                 |                      |                              |
| 14,000.00                                     | 11,044.94                   | 9,235.40                    | 7,993.47                    | 86.86               | 60.97            | -1.75                       | 730.91                                    | -939.05         | 3,713.12                     | 3,615.42                      | 97.71                           | 38.002               |                              |
| 14,100.00                                     | 11,044.74                   | 9,241.25                    | 7,993.42                    | 88.44               | 61.12            | -1.86                       | 731.19                                    | -944.89         | 3,771.63                     | 3,672.17                      | 99.46                           | 37.922               |                              |
| 14,200.00                                     | 11,044.54                   | 9,247.19                    | 7,993.36                    | 90.05               | 61.28            | -1.98                       | 731.47                                    | -950.82         | 3,831.84                     | 3,730.69                      | 101.15                          | 37.882               |                              |
| 14,300.00                                     | 11,044.34                   | 9,250.28                    | 7,993.33                    | 91.68               | 61.37            | -2.03                       | 731.60                                    | -953.92         | 3,893.69                     | 3,790.96                      | 102.73                          | 37.901               |                              |
| 14,400.00                                     | 11,044.15                   | 9,254.82                    | 7,993.28                    | 93.34               | 61.49            | -2.12                       | 731.81                                    | -958.44         | 3,957.09                     | 3,852.80                      | 104.28                          | 37.945               |                              |
| 14,500.00                                     | 11,043.95                   | 9,259.28                    | 7,993.24                    | 95.01               | 61.61            | -2.20                       | 732.01                                    | -962.90         | 4,021.97                     | 3,916.19                      | 105.78                          | 38.022               |                              |
| 14,600.00                                     | 11,043.75                   | 9,263.68                    | 7,993.19                    | 96.70               | 61.72            | -2.29                       | 732.21                                    | -967.30         | 4,088.26                     | 3,981.04                      | 107.22                          | 38.130               |                              |
| 14,700.00                                     | 11,043.55                   | 9,268.01                    | 7,993.15                    | 98.41               | 61.84            | -2.37                       | 732.40                                    | -971.62         | 4,155.90                     | 4,047.29                      | 108.60                          | 38.267               |                              |
| 14,800.00                                     | 11,043.35                   | 9,272.28                    | 7,993.11                    | 100.14              | 61.96            | -2.45                       | 732.59                                    | -975.89         | 4,224.81                     | 4,114.88                      | 109.93                          | 38.431               |                              |
| 14,900.00                                     | 11,043.15                   | 9,276.48                    | 7,993.07                    | 101.89              | 62.07            | -2.53                       | 732.77                                    | -980.08         | 4,294.94                     | 4,183.73                      | 111.21                          | 38.620               |                              |
| 15,000.00                                     | 11,042.95                   | 9,280.62                    | 7,993.02                    | 103.65              | 62.18            | -2.61                       | 732.95                                    | -984.22         | 4,366.23                     | 4,253.79                      | 112.44                          | 38.832               |                              |
| 15,100.00                                     | 11,042.75                   | 9,284.70                    | 7,992.98                    | 105.42              | 62.29            | -2.68                       | 733.12                                    | -988.30         | 4,438.62                     | 4,325.00                      | 113.62                          | 39.065               |                              |
| 15,200.00                                     | 11,042.55                   | 9,288.73                    | 7,992.94                    | 107.21              | 62.40            | -2.76                       | 733.29                                    | -992.32         | 4,512.06                     | 4,397.31                      | 114.76                          | 39.319               |                              |
| 15,300.00                                     | 11,042.35                   | 9,292.69                    | 7,992.90                    | 109.02              | 62.50            | -2.83                       | 733.46                                    | -996.28         | 4,586.51                     | 4,470.66                      | 115.85                          | 39.591               |                              |
| 15,400.00                                     | 11,042.15                   | 9,296.60                    | 7,992.87                    | 110.83              | 62.61            | -2.91                       | 733.62                                    | -1,000.19       | 4,661.90                     | 4,545.01                      | 116.89                          | 39.881               |                              |
| 15,500.00                                     | 11,041.95                   | 9,300.45                    | 7,992.83                    | 112.66              | 62.71            | -2.98                       | 733.78                                    | -1,004.04       | 4,738.20                     | 4,620.30                      | 117.90                          | 40.188               |                              |
| 15,600.00                                     | 11,041.75                   | 9,304.00                    | 7,992.79                    | 114.50              | 62.80            | -3.05                       | 733.92                                    | -1,007.58       | 4,815.37                     | 4,696.50                      | 118.86                          | 40.512               |                              |
| 15,700.00                                     | 11,041.55                   | 9,308.40                    | 7,992.74                    | 116.35              | 62.92            | -3.13                       | 734.11                                    | -1,011.98       | 4,893.36                     | 4,773.54                      | 119.81                          | 40.841               |                              |
| 15,800.00                                     | 11,041.36                   | 9,312.70                    | 7,992.69                    | 118.22              | 63.04            | -3.21                       | 734.29                                    | -1,016.27       | 4,972.13                     | 4,851.40                      | 120.73                          | 41.184               |                              |
| 15,900.00                                     | 11,041.16                   | 9,317.17                    | 7,992.63                    | 120.09              | 63.16            | -3.29                       | 734.48                                    | -1,020.73       | 5,051.64                     | 4,930.03                      | 121.62                          | 41.537               |                              |
| 16,000.00                                     | 11,040.96                   | 9,321.82                    | 7,992.55                    | 121.97              | 63.29            | -3.38                       | 734.69                                    | -1,025.38       | 5,131.87                     | 5,009.39                      | 122.48                          | 41.900               |                              |
| 16,100.00                                     | 11,040.76                   | 9,326.66                    | 7,992.47                    | 123.86              | 63.42            | -3.47                       | 734.91                                    | -1,030.22       | 5,212.78                     | 5,089.46                      | 123.32                          | 42.271               |                              |
| 16,200.00                                     | 11,040.56                   | 9,331.72                    | 7,992.37                    | 125.76              | 63.56            | -3.57                       | 735.14                                    | -1,035.27       | 5,294.34                     | 5,170.20                      | 124.14                          | 42.649               |                              |
| 16,300.00                                     | 11,040.36                   | 9,336.99                    | 7,992.25                    | 127.67              | 63.70            | -3.66                       | 735.40                                    | -1,040.53       | 5,376.51                     | 5,251.57                      | 124.94                          | 43.034               |                              |
| 16,400.00                                     | 11,040.16                   | 9,342.50                    | 7,992.12                    | 129.59              | 63.85            | -3.77                       | 735.67                                    | -1,046.03       | 5,459.27                     | 5,333.55                      | 125.72                          | 43.424               |                              |
| 16,479.98                                     | 11,040.00                   | 9,347.09                    | 7,992.01                    | 131.12              | 63.98            | -3.85                       | 735.90                                    | -1,050.61       | 5,525.87                     | 5,399.53                      | 126.33                          | 43.740               |                              |



Pro Directional  
Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 008H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                        |                |                              |                               |                                 |                      | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------|----------------|------------------------------|-------------------------------|---------------------------------|----------------------|--------------------|-----------|
| Survey Program: 408-MWD+HDGM, 3154-MWD+HDGM   |                             |                             |                             |                     |                  |                             |                        |                |                              |                               |                                 |                      | Offset Well Error: | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Offset Wellbore Centre |                | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning            |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | +N-S<br>(usft)         | +E-W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |                    |           |
| 0.00                                          | 0.00                        | 0.00                        | 0.00                        | 0.00                | 0.00             | -45.05                      | 805.13                 | -806.56        | 1,140.94                     |                               |                                 |                      |                    |           |
| 100.00                                        | 100.00                      | 45.50                       | 45.50                       | 0.20                | 0.12             | -45.05                      | 805.13                 | -806.56        | 1,139.64                     | 1,139.32                      | 0.31                            | 3,644.038            |                    |           |
| 200.00                                        | 200.00                      | 145.50                      | 145.50                      | 0.74                | 0.37             | -45.05                      | 805.13                 | -806.56        | 1,139.64                     | 1,138.53                      | 1.10                            | 1,032.761            |                    |           |
| 300.00                                        | 300.00                      | 245.50                      | 245.50                      | 1.27                | 0.62             | -45.05                      | 805.13                 | -806.56        | 1,139.64                     | 1,137.74                      | 1.89                            | 601.636              |                    |           |
| 400.00                                        | 400.00                      | 345.50                      | 345.50                      | 1.81                | 0.87             | -45.05                      | 805.13                 | -806.56        | 1,139.64                     | 1,136.95                      | 2.68                            | 424.449              |                    |           |
| 450.00                                        | 450.00                      | 395.50                      | 395.50                      | 2.08                | 1.00             | -45.05                      | 805.13                 | -806.56        | 1,139.64                     | 1,136.56                      | 3.08                            | 369.970              |                    |           |
| 500.00                                        | 500.00                      | 465.03                      | 465.02                      | 2.34                | 1.33             | 60.55                       | 804.62                 | -806.26        | 1,139.02                     | 1,135.35                      | 3.67                            | 310.586              |                    |           |
| 600.00                                        | 599.93                      | 565.60                      | 565.58                      | 2.86                | 1.85             | 60.74                       | 803.05                 | -805.35        | 1,135.56                     | 1,130.86                      | 4.70                            | 241.579              |                    |           |
| 700.00                                        | 699.68                      | 665.97                      | 665.94                      | 3.38                | 2.36             | 61.12                       | 801.40                 | -804.44        | 1,130.36                     | 1,124.61                      | 5.75                            | 196.716              |                    |           |
| 800.00                                        | 799.13                      | 766.19                      | 766.13                      | 3.93                | 2.89             | 61.67                       | 799.57                 | -803.62        | 1,123.46                     | 1,116.64                      | 6.82                            | 164.801              |                    |           |
| 900.00                                        | 898.15                      | 865.58                      | 865.49                      | 4.49                | 3.42             | 62.40                       | 797.43                 | -803.05        | 1,114.92                     | 1,107.02                      | 7.90                            | 141.072              |                    |           |
| 1,000.00                                      | 996.63                      | 963.08                      | 962.97                      | 5.08                | 3.94             | 63.30                       | 795.23                 | -802.66        | 1,104.96                     | 1,095.95                      | 9.00                            | 122.712              |                    |           |
| 1,038.40                                      | 1,034.27                    | 1,000.36                    | 1,000.25                    | 5.32                | 4.14             | 63.69                       | 794.37                 | -802.55        | 1,100.80                     | 1,091.36                      | 9.43                            | 116.678              |                    |           |
| 1,100.00                                      | 1,094.58                    | 1,061.01                    | 1,060.87                    | 5.70                | 4.47             | 64.23                       | 792.96                 | -802.43        | 1,094.02                     | 1,083.89                      | 10.13                           | 107.965              |                    |           |
| 1,200.00                                      | 1,192.48                    | 1,160.54                    | 1,160.37                    | 6.34                | 5.00             | 65.11                       | 790.39                 | -802.36        | 1,083.14                     | 1,071.85                      | 11.29                           | 95.977               |                    |           |
| 1,300.00                                      | 1,290.37                    | 1,259.64                    | 1,259.43                    | 6.98                | 5.53             | 65.99                       | 787.50                 | -802.45        | 1,072.37                     | 1,059.93                      | 12.45                           | 86.146               |                    |           |
| 1,400.00                                      | 1,388.27                    | 1,357.90                    | 1,357.64                    | 7.64                | 6.06             | 66.88                       | 784.50                 | -802.63        | 1,061.82                     | 1,048.20                      | 13.62                           | 77.976               |                    |           |
| 1,500.00                                      | 1,486.17                    | 1,455.93                    | 1,455.62                    | 8.30                | 6.59             | 67.77                       | 781.45                 | -802.87        | 1,051.51                     | 1,036.72                      | 14.79                           | 71.079               |                    |           |
| 1,600.00                                      | 1,584.07                    | 1,553.56                    | 1,553.20                    | 8.96                | 7.12             | 68.67                       | 778.40                 | -803.17        | 1,041.50                     | 1,025.53                      | 15.98                           | 65.194               |                    |           |
| 1,700.00                                      | 1,681.97                    | 1,650.48                    | 1,650.08                    | 9.63                | 7.64             | 69.59                       | 775.41                 | -803.51        | 1,031.82                     | 1,014.66                      | 17.16                           | 60.130               |                    |           |
| 1,800.00                                      | 1,779.86                    | 1,746.41                    | 1,745.98                    | 10.30               | 8.16             | 70.52                       | 772.79                 | -803.67        | 1,022.59                     | 1,004.24                      | 18.34                           | 55.744               |                    |           |
| 1,900.00                                      | 1,877.76                    | 1,841.21                    | 1,840.75                    | 10.98               | 8.67             | 71.49                       | 770.59                 | -803.66        | 1,013.89                     | 994.36                        | 19.53                           | 51.919               |                    |           |
| 2,000.00                                      | 1,975.66                    | 1,934.64                    | 1,934.17                    | 11.66               | 9.17             | 72.47                       | 768.91                 | -803.63        | 1,005.93                     | 985.22                        | 20.71                           | 48.573               |                    |           |
| 2,100.00                                      | 2,073.56                    | 2,029.87                    | 2,029.38                    | 12.33               | 9.68             | 73.50                       | 767.67                 | -803.60        | 998.71                       | 976.80                        | 21.90                           | 45.598               |                    |           |
| 2,200.00                                      | 2,171.46                    | 2,127.60                    | 2,127.11                    | 13.01               | 10.21            | 74.57                       | 766.55                 | -803.49        | 991.94                       | 968.83                        | 23.11                           | 42.920               |                    |           |
| 2,300.00                                      | 2,269.36                    | 2,224.24                    | 2,223.75                    | 13.69               | 10.73            | 75.66                       | 765.53                 | -803.33        | 985.59                       | 961.27                        | 24.32                           | 40.531               |                    |           |
| 2,400.00                                      | 2,367.25                    | 2,319.80                    | 2,319.30                    | 14.38               | 11.24            | 76.74                       | 764.69                 | -803.28        | 979.82                       | 954.30                        | 25.52                           | 38.396               |                    |           |
| 2,500.00                                      | 2,465.15                    | 2,421.01                    | 2,420.51                    | 15.06               | 11.78            | 77.90                       | 763.89                 | -803.26        | 974.53                       | 947.78                        | 26.75                           | 36.430               |                    |           |
| 2,600.00                                      | 2,563.05                    | 2,527.07                    | 2,526.56                    | 15.74               | 12.35            | 79.15                       | 762.53                 | -802.57        | 968.93                       | 940.92                        | 28.01                           | 34.597               |                    |           |
| 2,700.00                                      | 2,660.95                    | 2,631.06                    | 2,630.52                    | 16.43               | 12.91            | 80.41                       | 760.58                 | -801.35        | 962.99                       | 933.74                        | 29.25                           | 32.921               |                    |           |
| 2,800.00                                      | 2,758.85                    | 2,734.50                    | 2,733.92                    | 17.11               | 13.47            | 81.66                       | 757.97                 | -800.12        | 956.90                       | 926.40                        | 30.49                           | 31.379               |                    |           |
| 2,900.00                                      | 2,856.74                    | 2,837.95                    | 2,837.31                    | 17.80               | 14.03            | 82.91                       | 754.75                 | -798.73        | 950.64                       | 918.90                        | 31.74                           | 29.953               |                    |           |
| 3,000.00                                      | 2,954.64                    | 2,941.27                    | 2,940.55                    | 18.48               | 14.59            | 84.19                       | 751.01                 | -796.99        | 944.24                       | 911.26                        | 32.98                           | 28.631               |                    |           |
| 3,100.00                                      | 3,052.54                    | 3,035.20                    | 3,034.40                    | 19.17               | 15.10            | 85.37                       | 747.63                 | -795.37        | 938.27                       | 904.09                        | 34.18                           | 27.449               |                    |           |
| 3,200.00                                      | 3,150.44                    | 3,130.43                    | 3,129.56                    | 19.86               | 15.40            | 86.59                       | 744.38                 | -793.72        | 932.93                       | 897.75                        | 35.18                           | 26.521               |                    |           |
| 3,300.00                                      | 3,248.34                    | 3,228.25                    | 3,227.32                    | 20.54               | 15.49            | 87.85                       | 741.24                 | -792.15        | 928.29                       | 892.33                        | 35.95                           | 25.820               |                    |           |
| 3,400.00                                      | 3,346.23                    | 3,327.40                    | 3,326.40                    | 21.23               | 15.52            | 89.13                       | 737.94                 | -790.48        | 923.98                       | 887.31                        | 36.67                           | 25.200               |                    |           |
| 3,500.00                                      | 3,444.13                    | 3,424.62                    | 3,423.55                    | 21.92               | 15.58            | 90.41                       | 734.65                 | -788.77        | 920.08                       | 882.67                        | 37.41                           | 24.595               |                    |           |
| 3,600.00                                      | 3,542.03                    | 3,521.43                    | 3,520.30                    | 22.61               | 15.65            | 91.70                       | 731.47                 | -787.06        | 916.75                       | 878.60                        | 38.15                           | 24.028               |                    |           |
| 3,700.00                                      | 3,639.93                    | 3,619.62                    | 3,618.42                    | 23.30               | 15.75            | 93.01                       | 728.28                 | -785.30        | 913.95                       | 875.02                        | 38.93                           | 23.479               |                    |           |
| 3,800.00                                      | 3,737.83                    | 3,717.99                    | 3,716.71                    | 23.99               | 15.85            | 94.33                       | 725.01                 | -783.50        | 911.57                       | 871.87                        | 39.70                           | 22.963               |                    |           |
| 3,878.50                                      | 3,814.67                    | 3,778.16                    | 3,776.85                    | 24.53               | 15.92            | 95.15                       | 723.51                 | -782.35        | 910.68                       | 870.37                        | 40.31                           | 22.592 CC            |                    |           |
| 3,900.00                                      | 3,835.73                    | 3,794.37                    | 3,793.06                    | 24.67               | 15.95            | 95.38                       | 723.31                 | -782.03        | 910.74                       | 870.27                        | 40.48                           | 22.501 ES            |                    |           |
| 4,000.00                                      | 3,933.62                    | 3,869.59                    | 3,868.26                    | 25.36               | 16.04            | 96.43                       | 723.53                 | -780.46        | 912.83                       | 871.60                        | 41.22                           | 22.143               |                    |           |
| 4,100.00                                      | 4,031.52                    | 3,954.09                    | 3,952.71                    | 26.05               | 16.16            | 97.64                       | 725.72                 | -778.59        | 917.62                       | 875.64                        | 41.98                           | 21.857               |                    |           |
| 4,200.00                                      | 4,129.42                    | 4,050.36                    | 4,048.92                    | 26.74               | 16.30            | 98.99                       | 728.61                 | -776.55        | 923.42                       | 880.64                        | 42.78                           | 21.586               |                    |           |
| 4,300.00                                      | 4,227.32                    | 4,147.31                    | 4,145.80                    | 27.43               | 16.46            | 100.34                      | 731.60                 | -774.59        | 929.85                       | 886.26                        | 43.59                           | 21.333               |                    |           |
| 4,400.00                                      | 4,325.22                    | 4,244.95                    | 4,243.37                    | 28.12               | 16.63            | 101.67                      | 734.59                 | -772.60        | 936.79                       | 892.39                        | 44.41                           | 21.096               |                    |           |
| 4,500.00                                      | 4,423.11                    | 4,341.74                    | 4,340.10                    | 28.81               | 16.82            | 102.98                      | 737.54                 | -770.58        | 944.24                       | 899.01                        | 45.23                           | 20.875               |                    |           |
| 4,600.00                                      | 4,521.01                    | 4,437.82                    | 4,436.11                    | 29.50               | 17.02            | 104.26                      | 740.57                 | -768.61        | 952.30                       | 906.24                        | 46.06                           | 20.674               |                    |           |
| 4,702.88                                      | 4,621.73                    | 4,537.24                    | 4,535.45                    | 30.21               | 17.24            | 105.55                      | 743.81                 | -766.61        | 961.22                       | 914.30                        | 46.93                           | 20.483               |                    |           |

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



# Pro Directional Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 008H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      |         | Offset Site Error: 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|------------------------------|
| Survey Program: 408-MWD+HDGM, 3154-MWD+HDGM   |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      |         | Offset Well Error: 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                                  |                 | Between<br>Centras<br>(usft) | Between<br>Ellipses<br>(usft) | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                              |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) |                              |                               |                                 |                      |         |                              |
| 4,800.00                                      | 4,717.13                    | 4,631.84                    | 4,629.99                    | 30.86               | 17.46            | 106.83                      | 746.93                                    | -764.74         | 969.67                       | 921.93                        | 47.74                           | 20.312               |         |                              |
| 4,900.00                                      | 4,815.94                    | 4,739.24                    | 4,737.33                    | 31.48               | 17.72            | 108.00                      | 750.16                                    | -762.99         | 977.43                       | 928.83                        | 48.60                           | 20.111               |         |                              |
| 5,000.00                                      | 4,915.22                    | 4,853.22                    | 4,851.28                    | 32.07               | 18.01            | 108.87                      | 752.11                                    | -762.69         | 982.94                       | 933.48                        | 49.47                           | 19.871               |         |                              |
| 5,100.00                                      | 5,014.86                    | 4,953.86                    | 4,951.92                    | 32.61               | 18.29            | 109.38                      | 753.03                                    | -763.13         | 986.60                       | 936.33                        | 50.26                           | 19.629               |         |                              |
| 5,200.00                                      | 5,114.74                    | 5,054.24                    | 5,052.29                    | 33.11               | 18.57            | 109.68                      | 753.88                                    | -763.38         | 989.08                       | 938.04                        | 51.03                           | 19.382               |         |                              |
| 5,291.28                                      | 5,206.00                    | 5,146.03                    | 5,144.08                    | 33.52               | 18.84            | 4.20                        | 754.60                                    | -763.49         | 990.27                       | 938.55                        | 51.72                           | 19.147               |         |                              |
| 5,300.00                                      | 5,214.72                    | 5,154.80                    | 5,152.85                    | 33.55               | 18.87            | 4.19                        | 754.67                                    | -763.49         | 990.34                       | 938.56                        | 51.78                           | 19.124               |         |                              |
| 5,400.00                                      | 5,314.72                    | 5,255.46                    | 5,253.51                    | 33.98               | 19.18            | 4.19                        | 755.39                                    | -763.51         | 991.05                       | 938.53                        | 52.52                           | 18.869               |         |                              |
| 5,500.00                                      | 5,414.72                    | 5,356.48                    | 5,354.52                    | 34.41               | 19.50            | 4.19                        | 756.03                                    | -763.56         | 991.68                       | 938.40                        | 53.28                           | 18.611               |         |                              |
| 5,600.00                                      | 5,514.72                    | 5,457.36                    | 5,455.40                    | 34.84               | 19.82            | 4.17                        | 756.57                                    | -763.71         | 992.21                       | 938.16                        | 54.05                           | 18.357               |         |                              |
| 5,700.00                                      | 5,614.72                    | 5,557.97                    | 5,556.01                    | 35.27               | 20.16            | 4.15                        | 757.06                                    | -764.04         | 992.66                       | 937.83                        | 54.83                           | 18.105               |         |                              |
| 5,800.00                                      | 5,714.72                    | 5,658.58                    | 5,656.62                    | 35.70               | 20.50            | 4.12                        | 757.49                                    | -764.58         | 993.05                       | 937.44                        | 55.61                           | 17.856               |         |                              |
| 5,900.00                                      | 5,814.72                    | 5,759.20                    | 5,757.24                    | 36.14               | 20.84            | 4.07                        | 757.88                                    | -765.37         | 993.39                       | 936.97                        | 56.41                           | 17.610               |         |                              |
| 6,000.00                                      | 5,914.72                    | 5,860.18                    | 5,858.22                    | 36.59               | 21.20            | 4.02                        | 758.21                                    | -766.36         | 993.65                       | 936.42                        | 57.22                           | 17.365               |         |                              |
| 6,100.00                                      | 6,014.72                    | 5,961.45                    | 5,959.48                    | 37.03               | 21.56            | 3.97                        | 758.41                                    | -767.21         | 993.78                       | 935.75                        | 58.04                           | 17.123               |         |                              |
| 6,200.00                                      | 6,114.72                    | 6,061.83                    | 6,059.85                    | 37.48               | 21.93            | 3.92                        | 758.51                                    | -767.93         | 993.83                       | 934.96                        | 58.86                           | 16.884               |         |                              |
| 6,300.00                                      | 6,214.72                    | 6,161.79                    | 6,159.82                    | 37.92               | 22.30            | 3.88                        | 758.60                                    | -768.71         | 993.86                       | 934.17                        | 59.69                           | 16.650               |         |                              |
| 6,400.00                                      | 6,314.72                    | 6,262.56                    | 6,260.58                    | 38.38               | 22.68            | 3.83                        | 758.66                                    | -769.49         | 993.88                       | 933.34                        | 60.53                           | 16.419               |         |                              |
| 6,500.00                                      | 6,414.72                    | 6,363.54                    | 6,361.56                    | 38.83               | 23.06            | 3.80                        | 758.62                                    | -770.12         | 993.79                       | 932.41                        | 61.38                           | 16.190               |         |                              |
| 6,600.00                                      | 6,514.72                    | 6,465.62                    | 6,463.63                    | 39.28               | 23.46            | 3.77                        | 758.41                                    | -770.65         | 993.56                       | 931.31                        | 62.25                           | 15.962               |         |                              |
| 6,700.00                                      | 6,614.72                    | 6,567.80                    | 6,565.81                    | 39.74               | 23.86            | 3.74                        | 757.98                                    | -771.14         | 993.10                       | 929.99                        | 63.11                           | 15.736               |         |                              |
| 6,800.00                                      | 6,714.72                    | 6,667.84                    | 6,665.85                    | 40.20               | 24.26            | 3.71                        | 757.46                                    | -771.66         | 992.54                       | 928.57                        | 63.98                           | 15.514               |         |                              |
| 6,900.00                                      | 6,814.72                    | 6,768.25                    | 6,766.26                    | 40.66               | 24.67            | 3.68                        | 756.91                                    | -772.27         | 991.97                       | 927.12                        | 64.85                           | 15.296               |         |                              |
| 7,000.00                                      | 6,914.72                    | 6,869.88                    | 6,867.88                    | 41.13               | 25.08            | 3.64                        | 756.26                                    | -773.01         | 991.28                       | 925.54                        | 65.74                           | 15.079               |         |                              |
| 7,100.00                                      | 7,014.72                    | 6,973.66                    | 6,971.65                    | 41.59               | 25.51            | 3.59                        | 755.39                                    | -773.94         | 990.39                       | 923.75                        | 66.64                           | 14.862               |         |                              |
| 7,200.00                                      | 7,114.72                    | 7,082.19                    | 7,080.16                    | 42.06               | 25.96            | 3.51                        | 753.76                                    | -775.44         | 988.80                       | 921.23                        | 67.57                           | 14.633               |         |                              |
| 7,300.00                                      | 7,214.72                    | 7,187.80                    | 7,185.73                    | 42.53               | 26.41            | 3.41                        | 751.38                                    | -777.33         | 986.44                       | 917.94                        | 68.49                           | 14.402               |         |                              |
| 7,400.00                                      | 7,314.72                    | 7,291.22                    | 7,289.10                    | 43.00               | 26.85            | 3.33                        | 748.60                                    | -778.77         | 983.68                       | 914.27                        | 69.41                           | 14.172               |         |                              |
| 7,500.00                                      | 7,414.72                    | 7,402.56                    | 7,400.37                    | 43.47               | 27.33            | 3.28                        | 744.85                                    | -779.81         | 980.27                       | 909.91                        | 70.36                           | 13.933               |         |                              |
| 7,600.00                                      | 7,514.72                    | 7,516.70                    | 7,514.38                    | 43.94               | 27.83            | 3.26                        | 739.37                                    | -780.49         | 975.45                       | 904.14                        | 71.31                           | 13.679               |         |                              |
| 7,700.00                                      | 7,614.72                    | 7,595.23                    | 7,592.83                    | 44.42               | 28.18            | 3.23                        | 736.05                                    | -781.23         | 971.13                       | 898.97                        | 72.16                           | 13.458               |         |                              |
| 7,800.00                                      | 7,714.72                    | 7,676.37                    | 7,673.94                    | 44.89               | 28.54            | 3.15                        | 734.19                                    | -782.62         | 968.74                       | 895.75                        | 73.00                           | 13.271               |         |                              |
| 7,900.00                                      | 7,814.72                    | 7,781.96                    | 7,779.49                    | 45.37               | 29.01            | 3.02                        | 732.84                                    | -785.02         | 967.36                       | 893.41                        | 73.96                           | 13.080               |         |                              |
| 8,000.00                                      | 7,914.72                    | 7,895.82                    | 7,893.28                    | 45.85               | 29.52            | 2.88                        | 729.88                                    | -787.50         | 964.65                       | 889.70                        | 74.95                           | 12.871               |         |                              |
| 8,100.00                                      | 8,014.72                    | 7,996.74                    | 7,994.12                    | 46.33               | 29.98            | 2.73                        | 726.55                                    | -790.13         | 961.23                       | 885.34                        | 75.89                           | 12.666               |         |                              |
| 8,200.00                                      | 8,114.72                    | 8,096.58                    | 8,093.83                    | 46.81               | 30.43            | 2.54                        | 723.11                                    | -793.52         | 957.63                       | 880.80                        | 76.83                           | 12.464               |         |                              |
| 8,300.00                                      | 8,214.72                    | 8,171.86                    | 8,169.00                    | 47.29               | 30.78            | 2.34                        | 720.93                                    | -796.91         | 954.76                       | 877.08                        | 77.67                           | 12.292               |         |                              |
| 8,318.98                                      | 8,233.71                    | 8,182.08                    | 8,179.21                    | 47.38               | 30.82            | 2.31                        | 720.91                                    | -797.53         | 954.67                       | 876.86                        | 77.80                           | 12.270               |         |                              |
| 8,400.00                                      | 8,314.72                    | 8,226.00                    | 8,222.99                    | 47.78               | 31.02            | 2.10                        | 721.71                                    | -800.89         | 956.07                       | 877.75                        | 78.32                           | 12.207               |         |                              |
| 8,500.00                                      | 8,414.72                    | 8,278.96                    | 8,275.50                    | 48.26               | 31.26            | 1.74                        | 724.88                                    | -806.83         | 962.04                       | 883.20                        | 78.84                           | 12.202 SF            |         |                              |
| 8,600.00                                      | 8,514.72                    | 8,321.00                    | 8,316.81                    | 48.75               | 31.45            | 1.39                        | 730.08                                    | -812.58         | 973.97                       | 894.89                        | 79.09                           | 12.315               |         |                              |
| 8,700.00                                      | 8,614.72                    | 8,353.00                    | 8,347.92                    | 49.23               | 31.59            | 1.11                        | 735.99                                    | -817.21         | 992.14                       | 913.15                        | 78.99                           | 12.561               |         |                              |
| 8,800.00                                      | 8,714.72                    | 8,395.24                    | 8,388.45                    | 49.72               | 31.77            | 0.73                        | 746.07                                    | -823.49         | 1,016.16                     | 937.26                        | 78.90                           | 12.880               |         |                              |
| 8,900.00                                      | 8,814.72                    | 8,447.00                    | 8,437.45                    | 50.21               | 31.99            | 0.32                        | 761.18                                    | -830.46         | 1,045.27                     | 966.37                        | 78.90                           | 13.248               |         |                              |
| 9,000.00                                      | 8,914.72                    | 8,495.49                    | 8,483.07                    | 50.70               | 32.19            | 0.08                        | 777.07                                    | -834.59         | 1,078.17                     | 999.39                        | 78.78                           | 13.686               |         |                              |
| 9,100.00                                      | 9,014.72                    | 8,543.00                    | 8,527.07                    | 51.19               | 32.39            | -0.05                       | 794.83                                    | -836.75         | 1,115.36                     | 1,036.77                      | 78.60                           | 14.191               |         |                              |
| 9,200.00                                      | 9,114.72                    | 8,574.00                    | 8,555.11                    | 51.68               | 32.53            | -0.10                       | 808.01                                    | -837.79         | 1,157.07                     | 1,079.10                      | 77.97                           | 14.839               |         |                              |
| 9,300.00                                      | 9,214.72                    | 8,589.96                    | 8,569.17                    | 52.18               | 32.59            | -0.13                       | 815.54                                    | -838.26         | 1,203.65                     | 1,126.72                      | 76.92                           | 15.648               |         |                              |
| 9,400.00                                      | 9,314.72                    | 8,606.00                    | 8,582.96                    | 52.67               | 32.66            | -0.15                       | 823.71                                    | -838.77         | 1,255.11                     | 1,179.26                      | 75.85                           | 16.547               |         |                              |
| 9,500.00                                      | 9,414.72                    | 8,637.00                    | 8,608.73                    | 53.17               | 32.80            | -0.21                       | 840.90                                    | -839.82         | 1,310.73                     | 1,235.52                      | 75.21                           | 17.428               |         |                              |

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



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 008H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      |         | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|--------------------|-----------|
| Survey Program: 408-MWD+HDGM, 3154-MWD+HDGM   |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      |         | Offset Well Error: | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                    |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |         |                    |           |
| 9,600.00                                      | 9,514.72                    | 8,669.00                    | 8,634.37                    | 53.66               | 32.94            | -0.26                       | 860.02                       | -840.86                       | 1,369.94                        | 1,295.30             | 74.64   | 18.353             |           |
| 9,700.00                                      | 9,614.72                    | 8,687.59                    | 8,648.87                    | 54.16               | 33.02            | -0.28                       | 871.64                       | -841.35                       | 1,432.06                        | 1,358.29             | 73.77   | 19.412             |           |
| 9,800.00                                      | 9,714.72                    | 8,700.00                    | 8,658.37                    | 54.65               | 33.07            | -0.29                       | 879.63                       | -841.58                       | 1,497.22                        | 1,424.42             | 72.80   | 20.567             |           |
| 9,900.00                                      | 9,814.72                    | 8,732.00                    | 8,681.96                    | 55.15               | 33.22            | -0.30                       | 901.23                       | -841.88                       | 1,564.97                        | 1,492.55             | 72.42   | 21.609             |           |
| 10,000.00                                     | 9,914.72                    | 8,732.00                    | 8,681.96                    | 55.65               | 33.22            | -0.30                       | 901.23                       | -841.88                       | 1,635.47                        | 1,564.18             | 71.30   | 22.939             |           |
| 10,100.00                                     | 10,014.72                   | 8,763.00                    | 8,703.36                    | 56.15               | 33.36            | -0.28                       | 923.65                       | -841.61                       | 1,708.08                        | 1,637.04             | 71.04   | 24.043             |           |
| 10,200.00                                     | 10,114.72                   | 8,763.00                    | 8,703.36                    | 56.65               | 33.36            | -0.28                       | 923.65                       | -841.61                       | 1,782.95                        | 1,712.84             | 70.11   | 25.431             |           |
| 10,300.00                                     | 10,214.72                   | 8,779.74                    | 8,714.18                    | 57.15               | 33.43            | -0.26                       | 936.41                       | -841.17                       | 1,859.72                        | 1,790.05             | 69.66   | 26.696             |           |
| 10,400.00                                     | 10,314.72                   | 8,795.00                    | 8,723.52                    | 57.65               | 33.50            | -0.22                       | 948.47                       | -840.54                       | 1,938.38                        | 1,869.12             | 69.26   | 27.987             |           |
| 10,500.00                                     | 10,414.72                   | 8,795.00                    | 8,723.52                    | 58.15               | 33.50            | -0.22                       | 948.47                       | -840.54                       | 2,018.58                        | 1,949.98             | 68.60   | 29.423             |           |
| 10,562.32                                     | 10,477.04                   | 8,811.03                    | 8,732.90                    | 58.47               | 33.58            | -0.18                       | 961.44                       | -839.68                       | 2,069.20                        | 2,000.62             | 68.57   | 30.175             |           |
| 10,600.00                                     | 10,514.70                   | 8,826.00                    | 8,741.39                    | 58.65               | 33.65            | 0.43                        | 973.72                       | -838.72                       | 2,099.39                        | 2,030.74             | 68.65   | 30.580             |           |
| 10,650.00                                     | 10,564.38                   | 8,826.00                    | 8,741.39                    | 58.90               | 33.65            | 0.39                        | 973.72                       | -838.72                       | 2,137.19                        | 2,068.88             | 68.31   | 31.286             |           |
| 10,700.00                                     | 10,613.40                   | 8,840.05                    | 8,749.20                    | 59.13               | 33.72            | 0.40                        | 985.36                       | -837.72                       | 2,172.46                        | 2,104.24             | 68.22   | 31.847             |           |
| 10,750.00                                     | 10,661.38                   | 8,858.00                    | 8,759.01                    | 59.35               | 33.80            | 0.42                        | 1,000.33                     | -836.37                       | 2,204.88                        | 2,136.72             | 68.16   | 32.351             |           |
| 10,800.00                                     | 10,707.96                   | 8,868.84                    | 8,764.84                    | 59.56               | 33.86            | 0.42                        | 1,009.43                     | -835.52                       | 2,234.31                        | 2,166.38             | 67.92   | 32.895             |           |
| 10,850.00                                     | 10,752.79                   | 8,890.00                    | 8,775.91                    | 59.75               | 33.96            | 0.45                        | 1,027.38                     | -833.82                       | 2,260.71                        | 2,192.86             | 67.85   | 33.318             |           |
| 10,900.00                                     | 10,795.51                   | 8,890.00                    | 8,775.91                    | 59.92               | 33.96            | 0.43                        | 1,027.38                     | -833.82                       | 2,283.82                        | 2,216.47             | 67.36   | 33.906             |           |
| 10,950.00                                     | 10,835.81                   | 8,904.71                    | 8,783.34                    | 60.06               | 34.04            | 0.45                        | 1,040.02                     | -832.58                       | 2,303.70                        | 2,236.59             | 67.11   | 34.327             |           |
| 11,000.00                                     | 10,873.38                   | 8,921.00                    | 8,791.26                    | 60.19               | 34.13            | 0.48                        | 1,054.18                     | -831.14                       | 2,320.26                        | 2,253.40             | 66.87   | 34.700             |           |
| 11,050.00                                     | 10,907.93                   | 8,921.00                    | 8,791.26                    | 60.30               | 34.13            | 0.46                        | 1,054.18                     | -831.14                       | 2,333.40                        | 2,267.09             | 66.32   | 35.186             |           |
| 11,100.00                                     | 10,939.21                   | 8,942.19                    | 8,801.14                    | 60.39               | 34.24            | 0.51                        | 1,072.83                     | -829.19                       | 2,342.97                        | 2,276.85             | 66.12   | 35.434             |           |
| 11,150.00                                     | 10,966.96                   | 8,953.00                    | 8,806.00                    | 60.46               | 34.30            | 0.53                        | 1,082.42                     | -828.16                       | 2,349.03                        | 2,283.30             | 65.73   | 35.735             |           |
| 11,200.00                                     | 10,990.99                   | 8,970.54                    | 8,813.66                    | 60.51               | 34.40            | 0.57                        | 1,098.11                     | -826.47                       | 2,351.49                        | 2,286.04             | 65.45   | 35.927             |           |
| 11,250.00                                     | 11,011.11                   | 8,984.00                    | 8,819.35                    | 60.55               | 34.48            | 0.61                        | 1,110.24                     | -825.18                       | 2,350.35                        | 2,285.25             | 65.10   | 36.105             |           |
| 11,300.00                                     | 11,027.16                   | 8,998.62                    | 8,825.32                    | 60.59               | 34.56            | 0.65                        | 1,123.52                     | -823.80                       | 2,345.62                        | 2,280.86             | 64.76   | 36.219             |           |
| 11,350.00                                     | 11,039.02                   | 9,016.00                    | 8,832.14                    | 60.62               | 34.66            | 0.71                        | 1,139.42                     | -822.20                       | 2,337.34                        | 2,272.87             | 64.47   | 36.252             |           |
| 11,400.00                                     | 11,046.61                   | 9,016.00                    | 8,832.14                    | 60.65               | 34.66            | 0.72                        | 1,139.42                     | -822.20                       | 2,325.58                        | 2,261.66             | 63.92   | 36.382             |           |
| 11,450.00                                     | 11,049.87                   | 9,034.87                    | 8,839.14                    | 60.70               | 34.78            | 0.79                        | 1,156.86                     | -820.53                       | 2,310.28                        | 2,246.61             | 63.68   | 36.282             |           |
| 11,463.46                                     | 11,050.00                   | 9,047.00                    | 8,843.39                    | 60.71               | 34.85            | 0.83                        | 1,168.18                     | -819.49                       | 2,305.68                        | 2,241.96             | 63.72   | 36.183             |           |
| 11,500.00                                     | 11,049.92                   | 9,047.00                    | 8,843.39                    | 60.76               | 34.85            | 0.83                        | 1,168.18                     | -819.49                       | 2,292.76                        | 2,229.42             | 63.34   | 36.198             |           |
| 11,600.00                                     | 11,049.72                   | 9,067.15                    | 8,850.00                    | 60.97               | 34.98            | 0.89                        | 1,187.13                     | -817.78                       | 2,259.67                        | 2,197.01             | 62.66   | 36.064             |           |
| 11,700.00                                     | 11,049.53                   | 9,079.00                    | 8,853.62                    | 61.29               | 35.06            | 0.92                        | 1,198.37                     | -816.76                       | 2,229.74                        | 2,167.78             | 61.97   | 35.982             |           |
| 11,800.00                                     | 11,049.33                   | 9,110.00                    | 8,861.98                    | 61.73               | 35.26            | 1.00                        | 1,228.09                     | -814.02                       | 2,202.97                        | 2,141.32             | 61.65   | 35.735             |           |
| 11,900.00                                     | 11,049.13                   | 9,125.84                    | 8,865.60                    | 62.27               | 35.37            | 1.05                        | 1,243.45                     | -812.57                       | 2,179.67                        | 2,118.40             | 61.27   | 35.574             |           |
| 12,000.00                                     | 11,048.93                   | 9,142.00                    | 8,868.83                    | 62.89               | 35.48            | 1.10                        | 1,259.21                     | -811.04                       | 2,159.90                        | 2,098.84             | 61.06   | 35.372             |           |
| 12,100.00                                     | 11,048.73                   | 9,167.20                    | 8,872.98                    | 63.59               | 35.65            | 1.17                        | 1,283.95                     | -808.77                       | 2,143.64                        | 2,082.54             | 61.09   | 35.087             |           |
| 12,200.00                                     | 11,048.53                   | 9,189.00                    | 8,875.72                    | 64.37               | 35.80            | 1.22                        | 1,305.51                     | -807.03                       | 2,130.96                        | 2,069.70             | 61.26   | 34.785             |           |
| 12,300.00                                     | 11,048.33                   | 9,232.98                    | 8,879.93                    | 65.21               | 36.13            | 1.29                        | 1,349.24                     | -805.11                       | 2,121.35                        | 2,059.64             | 61.71   | 34.377             |           |
| 12,400.00                                     | 11,048.13                   | 9,316.37                    | 8,885.84                    | 66.11               | 36.79            | 1.31                        | 1,432.42                     | -805.45                       | 2,113.98                        | 2,051.52             | 62.47   | 33.842             |           |
| 12,500.00                                     | 11,047.93                   | 9,363.23                    | 8,888.65                    | 67.07               | 37.21            | 1.31                        | 1,479.19                     | -806.00                       | 2,107.75                        | 2,044.63             | 63.13   | 33.390             |           |
| 12,600.00                                     | 11,047.73                   | 9,412.46                    | 8,890.39                    | 68.09               | 37.65            | 1.30                        | 1,528.38                     | -806.66                       | 2,103.99                        | 2,040.11             | 63.89   | 32.933             |           |
| 12,700.00                                     | 11,047.53                   | 9,524.59                    | 8,893.38                    | 69.16               | 38.76            | 1.34                        | 1,640.47                     | -806.80                       | 2,101.15                        | 2,036.18             | 64.97   | 32.341             |           |
| 12,800.00                                     | 11,047.33                   | 9,629.37                    | 8,896.88                    | 70.28               | 39.90            | 1.38                        | 1,745.19                     | -806.38                       | 2,097.63                        | 2,031.53             | 66.10   | 31.736             |           |
| 12,900.00                                     | 11,047.13                   | 9,694.00                    | 8,898.69                    | 71.45               | 40.65            | 1.38                        | 1,809.79                     | -807.22                       | 2,094.79                        | 2,027.68             | 67.11   | 31.215             |           |
| 12,992.85                                     | 11,046.95                   | 9,750.96                    | 8,899.30                    | 72.58               | 41.34            | 1.36                        | 1,866.73                     | -808.49                       | 2,093.74                        | 2,025.63             | 68.11   | 30.743             |           |
| 13,000.00                                     | 11,046.93                   | 9,754.62                    | 8,899.29                    | 72.67               | 41.39            | 1.36                        | 1,870.39                     | -808.57                       | 2,093.75                        | 2,025.57             | 68.18   | 30.709             |           |
| 13,100.00                                     | 11,046.74                   | 9,826.77                    | 8,898.20                    | 73.92               | 42.30            | 1.33                        | 1,942.51                     | -810.32                       | 2,094.91                        | 2,025.55             | 69.35   | 30.206             |           |
| 13,200.00                                     | 11,046.54                   | 9,947.49                    | 8,896.59                    | 75.22               | 43.90            | 1.27                        | 2,063.17                     | -813.72                       | 2,096.02                        | 2,025.25             | 70.77   | 29.617             |           |
| 13,300.00                                     | 11,046.34                   | 10,067.43                   | 8,896.33                    | 76.56               | 45.58            | 1.23                        | 2,183.07                     | -816.40                       | 2,095.99                        | 2,023.74             | 72.26   | 29.008             |           |
| 13,400.00                                     | 11,046.14                   | 10,168.38                   | 8,896.56                    | 77.94               | 47.06            | 1.16                        | 2,283.97                     | -819.98                       | 2,095.52                        | 2,021.80             | 73.72   | 28.426             |           |

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



# Pro Directional Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 008H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      |         |        | Offset Site Error: 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|--------|------------------------------|
| Survey Program: 408-MWD+HDGM, 3154-MWD+HDGM   |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      |         |        | Offset Well Error: 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |        |                              |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |         |        |                              |
| 13,500.00                                     | 11,045.94                   | 10,273.53                   | 8,896.90                    | 79.34               | 48.67            | 1.07                        | 2,389.01                     | -824.68                       | 2,094.93                        | 2,019.67             | 75.26   | 27.836 |                              |
| 13,600.00                                     | 11,045.74                   | 10,378.79                   | 8,897.70                    | 80.79               | 50.33            | 0.97                        | 2,494.16                     | -829.25                       | 2,093.91                        | 2,017.06             | 76.85   | 27.247 |                              |
| 13,700.00                                     | 11,045.54                   | 10,459.98                   | 8,897.93                    | 82.26               | 51.64            | 0.95                        | 2,575.34                     | -830.74                       | 2,093.40                        | 2,015.07             | 78.33   | 26.724 |                              |
| 13,717.79                                     | 11,045.50                   | 10,476.12                   | 8,897.90                    | 82.53               | 51.90            | 0.96                        | 2,591.47                     | -830.86                       | 2,093.40                        | 2,014.78             | 78.61   | 26.629 |                              |
| 13,800.00                                     | 11,045.34                   | 10,551.80                   | 8,897.62                    | 83.77               | 53.14            | 0.96                        | 2,667.15                     | -831.57                       | 2,093.54                        | 2,013.64             | 79.91   | 26.199 |                              |
| 13,900.00                                     | 11,045.14                   | 10,662.39                   | 8,897.35                    | 85.30               | 55.00            | 0.96                        | 2,777.74                     | -832.75                       | 2,093.58                        | 2,011.95             | 81.63   | 25.646 |                              |
| 14,000.00                                     | 11,044.94                   | 10,765.67                   | 8,897.50                    | 86.86               | 56.77            | 0.99                        | 2,881.01                     | -832.73                       | 2,093.26                        | 2,009.91             | 83.35   | 25.115 |                              |
| 14,082.81                                     | 11,044.78                   | 10,840.47                   | 8,897.57                    | 88.17               | 58.07            | 1.02                        | 2,955.82                     | -832.49                       | 2,093.05                        | 2,008.32             | 84.72   | 24.705 |                              |
| 14,100.00                                     | 11,044.74                   | 10,851.88                   | 8,897.53                    | 88.44               | 58.27            | 1.02                        | 2,967.22                     | -832.46                       | 2,093.08                        | 2,008.09             | 84.99   | 24.629 |                              |
| 14,200.00                                     | 11,044.54                   | 10,924.00                   | 8,896.55                    | 90.05               | 59.54            | 1.05                        | 3,039.33                     | -832.33                       | 2,094.20                        | 2,007.63             | 86.57   | 24.192 |                              |
| 14,300.00                                     | 11,044.34                   | 11,000.05                   | 8,894.57                    | 91.68               | 60.90            | 1.07                        | 3,115.36                     | -832.24                       | 2,096.57                        | 2,008.37             | 88.20   | 23.771 |                              |
| 14,400.00                                     | 11,044.15                   | 11,068.97                   | 8,892.10                    | 93.34               | 62.15            | 1.09                        | 3,184.23                     | -832.30                       | 2,100.01                        | 2,010.21             | 89.81   | 23.384 |                              |
| 14,500.00                                     | 11,043.95                   | 11,210.75                   | 8,885.95                    | 95.01               | 64.74            | 1.11                        | 3,325.87                     | -832.84                       | 2,104.53                        | 2,012.64             | 91.89   | 22.903 |                              |
| 14,600.00                                     | 11,043.75                   | 11,324.49                   | 8,883.51                    | 96.70               | 66.85            | 1.13                        | 3,439.59                     | -833.21                       | 2,106.49                        | 2,012.66             | 93.83   | 22.449 |                              |
| 14,700.00                                     | 11,043.55                   | 11,424.51                   | 8,881.87                    | 98.41               | 68.72            | 1.14                        | 3,539.59                     | -833.97                       | 2,107.94                        | 2,012.23             | 95.72   | 22.023 |                              |
| 14,800.00                                     | 11,043.35                   | 11,593.90                   | 8,879.73                    | 100.14              | 71.93            | 1.10                        | 3,708.92                     | -837.11                       | 2,109.73                        | 2,011.64             | 98.10   | 21.507 |                              |
| 14,900.00                                     | 11,043.15                   | 11,675.01                   | 8,880.40                    | 101.89              | 73.50            | 1.10                        | 3,790.02                     | -838.01                       | 2,108.68                        | 2,008.77             | 99.90   | 21.107 |                              |
| 15,000.00                                     | 11,042.95                   | 11,763.01                   | 8,880.65                    | 103.65              | 75.19            | 1.10                        | 3,878.02                     | -838.98                       | 2,108.18                        | 2,006.42             | 101.76  | 20.716 |                              |
| 15,033.33                                     | 11,042.88                   | 11,791.96                   | 8,880.63                    | 104.24              | 75.75            | 1.10                        | 3,906.97                     | -839.32                       | 2,108.15                        | 2,005.76             | 102.39  | 20.590 |                              |
| 15,100.00                                     | 11,042.75                   | 11,849.34                   | 8,880.37                    | 105.42              | 76.86            | 1.08                        | 3,964.33                     | -840.51                       | 2,108.29                        | 2,004.66             | 103.63  | 20.344 |                              |
| 15,200.00                                     | 11,042.55                   | 11,927.91                   | 8,879.49                    | 107.21              | 78.39            | 1.04                        | 4,042.86                     | -842.82                       | 2,109.20                        | 2,003.74             | 105.47  | 19.999 |                              |
| 15,300.00                                     | 11,042.35                   | 12,040.13                   | 8,877.50                    | 109.02              | 80.60            | 0.98                        | 4,155.02                     | -846.09                       | 2,110.78                        | 2,003.23             | 107.55  | 19.626 |                              |
| 15,400.00                                     | 11,042.15                   | 12,178.62                   | 8,877.43                    | 110.83              | 83.33            | 0.93                        | 4,293.45                     | -849.48                       | 2,110.56                        | 2,000.72             | 109.84  | 19.214 |                              |
| 15,500.00                                     | 11,041.95                   | 12,345.00                   | 8,879.69                    | 112.66              | 86.86            | 0.90                        | 4,431.36                     | -852.16                       | 2,103.71                        | 1,963.71             | 144.99  | 14.543 |                              |
| 15,600.00                                     | 11,041.75                   | 12,456.28                   | 8,885.33                    | 114.50              | 88.86            | 0.88                        | 4,570.93                     | -854.36                       | 2,104.24                        | 1,989.79             | 114.46  | 18.385 |                              |
| 15,700.00                                     | 11,041.55                   | 12,546.18                   | 8,889.09                    | 116.35              | 90.86            | 0.87                        | 4,660.74                     | -855.84                       | 2,099.85                        | 1,983.41             | 116.44  | 18.033 |                              |
| 15,800.00                                     | 11,041.36                   | 12,637.77                   | 8,892.52                    | 118.22              | 92.50            | 0.85                        | 4,752.25                     | -857.63                       | 2,095.89                        | 1,977.43             | 118.46  | 17.694 |                              |
| 15,900.00                                     | 11,041.16                   | 12,727.17                   | 8,895.43                    | 120.09              | 94.31            | 0.82                        | 4,841.57                     | -859.58                       | 2,092.42                        | 1,971.96             | 120.46  | 17.370 |                              |
| 16,000.00                                     | 11,040.96                   | 12,854.87                   | 8,900.15                    | 121.97              | 96.90            | 0.77                        | 4,969.14                     | -862.99                       | 2,088.50                        | 1,965.76             | 122.74  | 17.016 |                              |
| 16,100.00                                     | 11,040.76                   | 12,952.61                   | 8,904.49                    | 123.86              | 98.89            | 0.71                        | 5,066.74                     | -866.05                       | 2,083.83                        | 1,959.00             | 124.83  | 16.694 |                              |
| 16,200.00                                     | 11,040.56                   | 13,054.89                   | 8,908.78                    | 125.76              | 100.98           | 0.67                        | 5,168.90                     | -868.70                       | 2,079.42                        | 1,952.47             | 126.95  | 16.380 |                              |
| 16,300.00                                     | 11,040.36                   | 13,073.00                   | 8,909.58                    | 127.67              | 101.35           | 0.67                        | 5,186.98                     | -869.06                       | 2,076.45                        | 1,947.95             | 128.50  | 16.159 |                              |
| 16,313.53                                     | 11,040.33                   | 13,073.00                   | 8,909.58                    | 127.93              | 101.35           | 0.67                        | 5,186.98                     | -869.06                       | 2,076.40                        | 1,947.72             | 128.69  | 16.136 |                              |
| 16,400.00                                     | 11,040.16                   | 13,073.00                   | 8,909.58                    | 129.59              | 101.35           | 0.67                        | 5,186.98                     | -869.06                       | 2,078.20                        | 1,948.38             | 129.82  | 16.008 |                              |
| 16,479.98                                     | 11,040.00                   | 13,073.00                   | 8,909.58                    | 131.12              | 101.35           | 0.67                        | 5,186.98                     | -869.06                       | 2,083.06                        | 1,952.27             | 130.79  | 15.927 |                              |



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 009H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      | Offset Site Error: | 0.00 usft  |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------|-------------------------------|---------------------------------|----------------------|--------------------|------------|
| Survey Program: 489-MWD+HDGM                  |                             |                             |                             |                     |                  |                             |                              |                               |                                 |                      | Offset Well Error: | 0.00 usft  |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning            |            |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |                    |            |
| 0.00                                          | 0.00                        | 5.07                        | 5.07                        | 0.00                | 0.01             | 6.01                        | 504.89                       | 53.16                         | 507.68                          |                      |                    |            |
| 100.00                                        | 100.00                      | 106.54                      | 106.54                      | 0.20                | 0.27             | 6.01                        | 504.73                       | 53.15                         | 507.52                          | 507.05               | 0.47               | 1,079.378  |
| 200.00                                        | 200.00                      | 208.01                      | 208.01                      | 0.74                | 0.53             | 6.01                        | 504.27                       | 53.12                         | 507.07                          | 505.80               | 1.27               | 400.170    |
| 300.00                                        | 300.00                      | 309.48                      | 309.47                      | 1.27                | 0.79             | 6.02                        | 503.52                       | 53.07                         | 506.33                          | 504.27               | 2.06               | 245.308    |
| 400.00                                        | 400.00                      | 410.93                      | 410.93                      | 1.81                | 1.05             | 6.02                        | 502.48                       | 52.99                         | 505.31                          | 502.44               | 2.86               | 176.621    |
| 450.00                                        | 450.00                      | 461.66                      | 461.65                      | 2.08                | 1.18             | 6.02                        | 501.85                       | 52.95                         | 504.68                          | 501.42               | 3.26               | 154.840    |
| 500.00                                        | 500.00                      | 512.63                      | 512.61                      | 2.34                | 1.38             | 111.66                      | 501.14                       | 52.90                         | 504.14                          | 500.43               | 3.72               | 135.634    |
| 600.00                                        | 599.93                      | 615.09                      | 615.06                      | 2.86                | 1.93             | 112.06                      | 499.33                       | 52.83                         | 503.68                          | 498.90               | 4.78               | 105.331    |
| 605.18                                        | 605.10                      | 620.39                      | 620.36                      | 2.88                | 1.96             | 112.09                      | 499.23                       | 52.82                         | 503.68                          | 498.84               | 4.84               | 104.116 CC |
| 700.00                                        | 699.68                      | 715.63                      | 715.57                      | 3.38                | 2.48             | 112.81                      | 497.14                       | 52.75                         | 504.17                          | 498.32               | 5.85               | 86.189 ES  |
| 800.00                                        | 799.13                      | 814.18                      | 814.11                      | 3.93                | 3.01             | 113.84                      | 495.13                       | 52.49                         | 506.26                          | 499.34               | 6.92               | 73.144     |
| 900.00                                        | 898.15                      | 912.29                      | 912.19                      | 4.49                | 3.54             | 115.15                      | 493.34                       | 52.02                         | 510.19                          | 502.18               | 8.01               | 63.712     |
| 1,000.00                                      | 996.63                      | 1,009.85                    | 1,009.74                    | 5.08                | 4.06             | 116.72                      | 491.79                       | 51.44                         | 516.20                          | 507.08               | 9.11               | 56.655     |
| 1,038.40                                      | 1,034.27                    | 1,047.85                    | 1,047.73                    | 5.32                | 4.27             | 117.39                      | 491.24                       | 51.19                         | 519.09                          | 509.55               | 9.54               | 54.390     |
| 1,100.00                                      | 1,094.58                    | 1,110.23                    | 1,110.10                    | 5.70                | 4.60             | 118.60                      | 490.20                       | 50.65                         | 523.95                          | 513.70               | 10.25              | 51.128     |
| 1,200.00                                      | 1,192.48                    | 1,211.65                    | 1,211.49                    | 6.34                | 5.15             | 120.49                      | 488.08                       | 49.44                         | 531.82                          | 520.42               | 11.40              | 46.663     |
| 1,300.00                                      | 1,290.37                    | 1,311.98                    | 1,311.78                    | 6.98                | 5.69             | 122.34                      | 485.37                       | 48.48                         | 539.73                          | 527.18               | 12.54              | 43.026     |
| 1,400.00                                      | 1,388.27                    | 1,411.82                    | 1,411.56                    | 7.64                | 6.23             | 124.27                      | 481.95                       | 48.67                         | 547.86                          | 534.17               | 13.69              | 40.021     |
| 1,500.00                                      | 1,486.17                    | 1,511.92                    | 1,511.58                    | 8.30                | 6.77             | 126.21                      | 477.97                       | 49.36                         | 556.26                          | 541.43               | 14.84              | 37.496     |
| 1,600.00                                      | 1,584.07                    | 1,612.07                    | 1,611.63                    | 8.96                | 7.32             | 128.10                      | 473.60                       | 49.94                         | 564.89                          | 548.91               | 15.98              | 35.350     |
| 1,700.00                                      | 1,681.97                    | 1,709.54                    | 1,709.00                    | 9.63                | 7.85             | 129.91                      | 469.14                       | 50.69                         | 573.97                          | 556.87               | 17.11              | 33.551     |
| 1,800.00                                      | 1,779.86                    | 1,806.25                    | 1,805.59                    | 10.30               | 8.37             | 131.68                      | 464.61                       | 51.73                         | 583.68                          | 565.46               | 18.23              | 32.024     |
| 1,900.00                                      | 1,877.76                    | 1,899.22                    | 1,898.48                    | 10.98               | 8.88             | 133.32                      | 460.80                       | 52.85                         | 594.51                          | 575.19               | 19.32              | 30.774     |
| 2,000.00                                      | 1,975.66                    | 1,992.37                    | 1,991.57                    | 11.66               | 9.38             | 134.86                      | 457.83                       | 53.99                         | 606.65                          | 586.24               | 20.41              | 29.730     |
| 2,100.00                                      | 2,073.56                    | 2,086.48                    | 2,085.65                    | 12.33               | 9.89             | 136.33                      | 455.49                       | 55.23                         | 619.90                          | 598.41               | 21.49              | 28.846     |
| 2,200.00                                      | 2,171.46                    | 2,180.83                    | 2,179.97                    | 13.01               | 10.39            | 137.74                      | 453.70                       | 56.62                         | 634.15                          | 611.58               | 22.57              | 28.095     |
| 2,300.00                                      | 2,269.36                    | 2,276.81                    | 2,275.93                    | 13.69               | 10.90            | 139.10                      | 452.24                       | 58.14                         | 649.15                          | 625.49               | 23.66              | 27.440     |
| 2,400.00                                      | 2,367.25                    | 2,375.90                    | 2,375.00                    | 14.38               | 11.42            | 140.43                      | 450.94                       | 59.78                         | 664.72                          | 639.96               | 24.76              | 26.844     |
| 2,500.00                                      | 2,465.15                    | 2,488.57                    | 2,487.63                    | 15.06               | 12.03            | 141.87                      | 448.21                       | 60.68                         | 679.25                          | 653.29               | 25.96              | 26.163     |
| 2,600.00                                      | 2,563.05                    | 2,587.36                    | 2,586.34                    | 15.74               | 12.56            | 143.10                      | 444.39                       | 60.61                         | 692.46                          | 665.39               | 27.06              | 25.585     |
| 2,700.00                                      | 2,660.95                    | 2,672.18                    | 2,671.09                    | 16.43               | 13.02            | 144.20                      | 441.34                       | 62.14                         | 707.32                          | 679.26               | 28.07              | 25.203     |
| 2,800.00                                      | 2,758.85                    | 2,762.37                    | 2,761.17                    | 17.11               | 13.50            | 145.43                      | 438.51                       | 65.75                         | 724.23                          | 695.13               | 29.09              | 24.893     |
| 2,900.00                                      | 2,856.74                    | 2,867.83                    | 2,866.43                    | 17.80               | 14.07            | 146.87                      | 434.28                       | 70.37                         | 741.14                          | 710.91               | 30.23              | 24.513     |
| 3,000.00                                      | 2,954.64                    | 2,967.82                    | 2,966.21                    | 18.48               | 14.61            | 148.23                      | 429.16                       | 74.58                         | 757.53                          | 726.20               | 31.33              | 24.176     |
| 3,100.00                                      | 3,052.54                    | 3,062.15                    | 3,060.34                    | 19.17               | 15.13            | 149.44                      | 424.56                       | 78.56                         | 774.47                          | 742.08               | 32.39              | 23.910     |
| 3,200.00                                      | 3,150.44                    | 3,155.99                    | 3,154.01                    | 19.86               | 15.64            | 150.57                      | 420.48                       | 82.51                         | 792.13                          | 758.68               | 33.44              | 23.686     |
| 3,300.00                                      | 3,248.34                    | 3,249.38                    | 3,247.26                    | 20.54               | 16.14            | 151.59                      | 417.25                       | 86.22                         | 810.53                          | 776.04               | 34.49              | 23.502     |
| 3,400.00                                      | 3,346.23                    | 3,323.55                    | 3,321.34                    | 21.23               | 16.53            | 152.32                      | 416.08                       | 89.66                         | 830.86                          | 795.51               | 35.35              | 23.505     |
| 3,500.00                                      | 3,444.13                    | 3,406.35                    | 3,404.04                    | 21.92               | 16.95            | 152.98                      | 417.45                       | 93.65                         | 853.62                          | 817.36               | 36.26              | 23.539     |
| 3,600.00                                      | 3,542.03                    | 3,497.67                    | 3,495.20                    | 22.61               | 17.40            | 153.48                      | 421.55                       | 96.69                         | 877.29                          | 840.04               | 37.25              | 23.551     |
| 3,700.00                                      | 3,639.93                    | 3,581.27                    | 3,578.56                    | 23.30               | 17.81            | 153.78                      | 427.53                       | 98.84                         | 902.16                          | 864.00               | 38.16              | 23.644     |
| 3,800.00                                      | 3,737.83                    | 3,666.43                    | 3,663.31                    | 23.99               | 18.22            | 153.96                      | 435.66                       | 100.79                        | 928.36                          | 889.29               | 39.07              | 23.760     |
| 3,900.00                                      | 3,835.73                    | 3,762.20                    | 3,758.52                    | 24.67               | 18.68            | 154.10                      | 445.85                       | 102.86                        | 955.18                          | 915.07               | 40.11              | 23.815     |
| 4,000.00                                      | 3,933.62                    | 3,859.04                    | 3,854.78                    | 25.36               | 19.16            | 154.24                      | 456.13                       | 104.99                        | 982.01                          | 940.85               | 41.16              | 23.858     |
| 4,100.00                                      | 4,031.52                    | 3,955.91                    | 3,951.09                    | 26.05               | 19.64            | 154.36                      | 466.36                       | 106.98                        | 1,008.71                        | 966.49               | 42.22              | 23.894     |
| 4,200.00                                      | 4,129.42                    | 4,039.32                    | 4,033.93                    | 26.74               | 20.05            | 154.44                      | 475.94                       | 108.77                        | 1,036.06                        | 992.93               | 43.12              | 24.025     |
| 4,300.00                                      | 4,227.32                    | 4,136.02                    | 4,129.89                    | 27.43               | 20.54            | 154.49                      | 487.72                       | 111.04                        | 1,063.99                        | 1,019.81             | 44.19              | 24.080     |
| 4,400.00                                      | 4,325.22                    | 4,237.02                    | 4,230.13                    | 28.12               | 21.05            | 154.55                      | 499.82                       | 113.22                        | 1,091.66                        | 1,046.36             | 45.30              | 24.099     |
| 4,500.00                                      | 4,423.11                    | 4,329.27                    | 4,321.70                    | 28.81               | 21.52            | 154.60                      | 510.82                       | 115.24                        | 1,119.33                        | 1,073.01             | 46.32              | 24.166     |
| 4,600.00                                      | 4,521.01                    | 4,425.49                    | 4,417.21                    | 29.50               | 22.02            | 154.66                      | 522.30                       | 117.50                        | 1,147.11                        | 1,099.73             | 47.38              | 24.209     |
| 4,702.88                                      | 4,621.73                    | 4,512.66                    | 4,503.72                    | 30.21               | 22.47            | 154.74                      | 532.63                       | 120.21                        | 1,176.21                        | 1,127.86             | 48.35              | 24.329     |

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



Pro Directional  
Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 009H (O) - OH - OH |                       |                       |                       |                  |               |                       |                                    |             |                        |                         |                           |                   |  | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|------------------------------------|-------------|------------------------|-------------------------|---------------------------|-------------------|--|--------------------|-----------|
| Survey Program: 489-MWD+HDGM                  |                       |                       |                       |                  |               |                       |                                    |             |                        |                         |                           |                   |  | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                           |             |                        |                         |                           |                   |  |                    | Warning   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N-S (usft) | +E-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |  |                    |           |
| 4,800.00                                      | 4,717.13              | 4,595.53              | 4,585.94              | 30.86            | 22.91         | 155.05                | 542.31                             | 123.87      | 1,203.09               | 1,153.84                | 49.25                     | 24.429            |  |                    |           |
| 4,900.00                                      | 4,815.94              | 4,692.98              | 4,682.64              | 31.48            | 23.42         | 155.34                | 553.12                             | 129.26      | 1,228.22               | 1,177.91                | 50.31                     | 24.414            |  |                    |           |
| 5,000.00                                      | 4,915.22              | 4,793.07              | 4,782.04              | 32.07            | 23.95         | 155.59                | 562.95                             | 135.61      | 1,250.08               | 1,198.70                | 51.38                     | 24.331            |  |                    |           |
| 5,100.00                                      | 5,014.86              | 4,916.57              | 4,904.89              | 32.61            | 24.60         | 155.85                | 572.39                             | 143.96      | 1,267.78               | 1,215.08                | 52.70                     | 24.056            |  |                    |           |
| 5,200.00                                      | 5,114.74              | 5,052.33              | 5,040.23              | 33.11            | 25.32         | 156.11                | 578.48                             | 152.66      | 1,280.12               | 1,226.01                | 54.11                     | 23.658            |  |                    |           |
| 5,291.28                                      | 5,206.00              | 5,189.04              | 5,176.79              | 33.52            | 26.04         | 50.69                 | 581.16                             | 158.31      | 1,285.50               | 1,230.05                | 55.46                     | 23.180            |  |                    |           |
| 5,300.00                                      | 5,214.72              | 5,202.13              | 5,189.88              | 33.55            | 26.11         | 50.69                 | 581.24                             | 158.66      | 1,285.72               | 1,230.14                | 55.58                     | 23.132            |  |                    |           |
| 5,400.00                                      | 5,314.72              | 5,326.11              | 5,313.83              | 33.98            | 26.76         | 50.75                 | 581.55                             | 160.87      | 1,287.29               | 1,230.52                | 56.78                     | 22.673            |  |                    |           |
| 5,500.00                                      | 5,414.72              | 5,435.96              | 5,423.68              | 34.41            | 27.34         | 50.78                 | 580.87                             | 161.27      | 1,287.16               | 1,229.31                | 57.85                     | 22.248            |  |                    |           |
| 5,600.00                                      | 5,514.72              | 5,538.18              | 5,525.89              | 34.84            | 27.88         | 50.81                 | 580.04                             | 161.42      | 1,286.77               | 1,227.89                | 58.87                     | 21.857            |  |                    |           |
| 5,700.00                                      | 5,614.72              | 5,638.48              | 5,626.19              | 35.27            | 28.41         | 50.85                 | 579.16                             | 161.49      | 1,286.26               | 1,226.39                | 59.88                     | 21.482            |  |                    |           |
| 5,800.00                                      | 5,714.72              | 5,737.87              | 5,725.58              | 35.70            | 28.94         | 50.87                 | 578.40                             | 161.50      | 1,285.78               | 1,224.91                | 60.88                     | 21.121            |  |                    |           |
| 5,900.00                                      | 5,814.72              | 5,845.52              | 5,833.22              | 36.14            | 29.50         | 50.89                 | 577.55                             | 161.16      | 1,285.04               | 1,223.11                | 61.94                     | 20.748            |  |                    |           |
| 6,000.00                                      | 5,914.72              | 5,953.51              | 5,941.21              | 36.59            | 30.06         | 50.91                 | 576.27                             | 160.30      | 1,283.68               | 1,220.68                | 63.00                     | 20.376            |  |                    |           |
| 6,100.00                                      | 6,014.72              | 6,040.09              | 6,027.78              | 37.03            | 30.51         | 50.92                 | 575.65                             | 159.74      | 1,282.70               | 1,218.80                | 63.90                     | 20.074            |  |                    |           |
| 6,200.00                                      | 6,114.72              | 6,131.68              | 6,119.37              | 37.48            | 30.98         | 50.91                 | 575.65                             | 159.45      | 1,282.45               | 1,217.61                | 64.83                     | 19.780            |  |                    |           |
| 6,233.19                                      | 6,147.91              | 6,166.27              | 6,153.96              | 37.62            | 31.16         | 50.91                 | 575.71                             | 159.38      | 1,282.44               | 1,217.26                | 65.18                     | 19.676            |  |                    |           |
| 6,300.00                                      | 6,214.72              | 6,235.89              | 6,223.58              | 37.92            | 31.51         | 50.90                 | 575.72                             | 159.21      | 1,282.31               | 1,216.44                | 65.87                     | 19.468            |  |                    |           |
| 6,400.00                                      | 6,314.72              | 6,339.35              | 6,327.03              | 38.38            | 32.05         | 50.90                 | 575.40                             | 158.86      | 1,281.86               | 1,214.96                | 66.90                     | 19.161            |  |                    |           |
| 6,500.00                                      | 6,414.72              | 6,440.96              | 6,428.65              | 38.83            | 32.58         | 50.91                 | 574.90                             | 158.44      | 1,281.22               | 1,213.30                | 67.92                     | 18.863            |  |                    |           |
| 6,600.00                                      | 6,514.72              | 6,541.65              | 6,529.33              | 39.28            | 33.11         | 50.92                 | 574.28                             | 157.97      | 1,280.48               | 1,211.54                | 68.94                     | 18.573            |  |                    |           |
| 6,700.00                                      | 6,614.72              | 6,641.10              | 6,628.78              | 39.74            | 33.63         | 50.93                 | 573.50                             | 157.67      | 1,279.75               | 1,209.79                | 69.95                     | 18.294            |  |                    |           |
| 6,800.00                                      | 6,714.72              | 6,739.90              | 6,727.58              | 40.20            | 34.15         | 50.96                 | 572.59                             | 157.55      | 1,279.08               | 1,208.11                | 70.97                     | 18.024            |  |                    |           |
| 6,900.00                                      | 6,814.72              | 6,838.12              | 6,825.79              | 40.66            | 34.67         | 50.98                 | 571.88                             | 157.44      | 1,278.53               | 1,206.56                | 71.97                     | 17.764            |  |                    |           |
| 7,000.00                                      | 6,914.72              | 6,939.23              | 6,926.90              | 41.13            | 35.21         | 51.00                 | 571.34                             | 157.26      | 1,278.06               | 1,205.05                | 73.01                     | 17.506            |  |                    |           |
| 7,100.00                                      | 7,014.72              | 7,042.22              | 7,029.89              | 41.59            | 35.75         | 51.01                 | 570.75                             | 156.85      | 1,277.38               | 1,203.33                | 74.05                     | 17.250            |  |                    |           |
| 7,200.00                                      | 7,114.72              | 7,145.01              | 7,132.68              | 42.06            | 36.29         | 51.02                 | 570.02                             | 156.24      | 1,276.47               | 1,201.38                | 75.09                     | 16.998            |  |                    |           |
| 7,300.00                                      | 7,214.72              | 7,247.74              | 7,235.40              | 42.53            | 36.83         | 51.03                 | 568.98                             | 155.59      | 1,275.35               | 1,199.21                | 76.14                     | 16.750            |  |                    |           |
| 7,400.00                                      | 7,314.72              | 7,354.26              | 7,341.90              | 43.00            | 37.39         | 51.04                 | 567.90                             | 154.44      | 1,273.88               | 1,196.67                | 77.21                     | 16.500            |  |                    |           |
| 7,500.00                                      | 7,414.72              | 7,461.03              | 7,448.64              | 43.47            | 37.94         | 51.00                 | 567.23                             | 152.23      | 1,271.87               | 1,193.59                | 78.28                     | 16.248            |  |                    |           |
| 7,600.00                                      | 7,514.72              | 7,562.67              | 7,550.26              | 43.94            | 38.48         | 50.98                 | 566.00                             | 150.21      | 1,269.56               | 1,190.25                | 79.31                     | 16.007            |  |                    |           |
| 7,700.00                                      | 7,614.72              | 7,660.08              | 7,647.63              | 44.42            | 38.99         | 51.02                 | 563.95                             | 148.81      | 1,267.12               | 1,186.80                | 80.32                     | 15.776            |  |                    |           |
| 7,800.00                                      | 7,714.72              | 7,748.60              | 7,736.14              | 44.89            | 39.45         | 51.04                 | 562.58                             | 148.00      | 1,265.43               | 1,184.16                | 81.27                     | 15.570            |  |                    |           |
| 7,900.00                                      | 7,814.72              | 7,842.19              | 7,829.73              | 45.37            | 39.94         | 51.03                 | 562.13                             | 147.05      | 1,264.34               | 1,182.09                | 82.25                     | 15.372            |  |                    |           |
| 8,000.00                                      | 7,914.72              | 7,932.96              | 7,920.48              | 45.85            | 40.41         | 50.98                 | 562.77                             | 146.12      | 1,263.99               | 1,180.78                | 83.20                     | 15.191            |  |                    |           |
| 8,100.00                                      | 8,014.72              | 8,034.39              | 8,021.90              | 46.33            | 40.93         | 50.90                 | 564.11                             | 144.88      | 1,263.86               | 1,179.63                | 84.24                     | 15.004            |  |                    |           |
| 8,200.00                                      | 8,114.72              | 8,135.84              | 8,123.33              | 46.81            | 41.45         | 50.82                 | 565.35                             | 143.59      | 1,263.66               | 1,178.39                | 85.27                     | 14.819            |  |                    |           |
| 8,300.00                                      | 8,214.72              | 8,240.14              | 8,227.62              | 47.29            | 41.98         | 50.76                 | 566.01                             | 142.37      | 1,263.15               | 1,176.82                | 86.33                     | 14.632            |  |                    |           |
| 8,327.20                                      | 8,241.92              | 8,260.00              | 8,247.48              | 47.42            | 42.09         | 50.75                 | 566.16                             | 142.16      | 1,263.06               | 1,176.50                | 86.55                     | 14.593            |  |                    |           |
| 8,400.00                                      | 8,314.72              | 8,292.00              | 8,279.46              | 47.78            | 42.25         | 50.71                 | 567.19                             | 141.96      | 1,264.19               | 1,177.24                | 86.95                     | 14.539            |  |                    |           |
| 8,500.00                                      | 8,414.72              | 8,323.00              | 8,310.36              | 48.26            | 42.41         | 50.63                 | 569.69                             | 142.28      | 1,270.09               | 1,182.85                | 87.24                     | 14.558            |  |                    |           |
| 8,600.00                                      | 8,514.72              | 8,354.00              | 8,341.07              | 48.75            | 42.57         | 50.52                 | 573.75                             | 143.41      | 1,281.35               | 1,194.00                | 87.35                     | 14.670            |  |                    |           |
| 8,700.00                                      | 8,614.72              | 8,417.00              | 8,402.79              | 49.23            | 42.91         | 50.16                 | 586.07                             | 145.57      | 1,296.63               | 1,208.81                | 87.82                     | 14.765            |  |                    |           |
| 8,800.00                                      | 8,714.72              | 8,449.00              | 8,433.67              | 49.72            | 43.08         | 49.90                 | 594.39                             | 146.60      | 1,315.96               | 1,228.27                | 87.69                     | 15.006            |  |                    |           |
| 8,900.00                                      | 8,814.72              | 8,480.00              | 8,463.10              | 50.21            | 43.24         | 49.61                 | 604.02                             | 147.80      | 1,339.96               | 1,252.55                | 87.41                     | 15.329            |  |                    |           |
| 9,000.00                                      | 8,914.72              | 8,535.02              | 8,514.22              | 50.70            | 43.54         | 49.00                 | 624.23                             | 150.05      | 1,368.00               | 1,280.46                | 87.54                     | 15.628            |  |                    |           |
| 9,100.00                                      | 9,014.72              | 8,582.97              | 8,557.86              | 51.19            | 43.80         | 48.40                 | 644.00                             | 151.80      | 1,399.30               | 1,311.83                | 87.47                     | 15.998            |  |                    |           |
| 9,200.00                                      | 9,114.72              | 8,638.00              | 8,606.59              | 51.68            | 44.10         | 47.61                 | 669.54                             | 152.81      | 1,433.69               | 1,346.17                | 87.52                     | 16.382            |  |                    |           |
| 9,300.00                                      | 9,214.72              | 8,681.27              | 8,643.83              | 52.18            | 44.34         | 46.91                 | 691.56                             | 152.57      | 1,470.91               | 1,383.65                | 87.26                     | 16.857            |  |                    |           |
| 9,400.00                                      | 9,314.72              | 8,711.94              | 8,669.40              | 52.67            | 44.51         | 46.39                 | 708.49                             | 152.40      | 1,511.99               | 1,425.33                | 86.66                     | 17.447            |  |                    |           |

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



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 009H (O) - OH - OH |                             |                             |                             |                 |        |                             |                                           |                 |                                 |                      |         |                              | Offset Site Error:            | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------|--------|-----------------------------|-------------------------------------------|-----------------|---------------------------------|----------------------|---------|------------------------------|-------------------------------|-----------|
| Survey Program: 489-MWD+HDGM                  |                             |                             |                             |                 |        |                             |                                           |                 |                                 |                      |         |                              | Offset Well Error:            | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis |        | Highside<br>Toolface<br>(°) | Distance                                  |                 | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                              |                               |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference       | Offset |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) |                                 |                      |         | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |           |
| 9,500.00                                      | 9,414.72                    | 8,743.07                    | 8,694.64                    | 53.17           | 44.68  | 45.85                       | 726.70                                    | 152.55          | 1,556.87                        | 1,470.82             |         | 86.05                        | 18.093                        |           |
| 9,600.00                                      | 9,514.72                    | 8,796.00                    | 8,736.13                    | 53.66           | 44.99  | 44.86                       | 759.55                                    | 151.90          | 1,604.67                        | 1,518.70             |         | 85.97                        | 18.665                        |           |
| 9,700.00                                      | 9,614.72                    | 8,828.00                    | 8,760.45                    | 54.16           | 45.17  | 44.25                       | 780.33                                    | 151.07          | 1,655.10                        | 1,569.72             |         | 85.37                        | 19.386                        |           |
| 9,800.00                                      | 9,714.72                    | 8,848.77                    | 8,775.77                    | 54.65           | 45.29  | 43.84                       | 794.35                                    | 150.70          | 1,708.77                        | 1,624.27             |         | 84.51                        | 20.221                        |           |
| 9,900.00                                      | 9,814.72                    | 8,871.49                    | 8,792.17                    | 55.15           | 45.43  | 43.40                       | 810.08                                    | 150.55          | 1,765.50                        | 1,681.79             |         | 83.71                        | 21.090                        |           |
| 10,000.00                                     | 9,914.72                    | 8,891.00                    | 8,805.82                    | 55.65           | 45.55  | 43.02                       | 824.01                                    | 150.49          | 1,825.12                        | 1,742.24             |         | 82.87                        | 22.023                        |           |
| 10,100.00                                     | 10,014.72                   | 8,909.63                    | 8,818.47                    | 56.15           | 45.66  | 42.66                       | 837.69                                    | 150.54          | 1,887.45                        | 1,805.39             |         | 82.06                        | 23.002                        |           |
| 10,200.00                                     | 10,114.72                   | 8,922.00                    | 8,826.65                    | 56.65           | 45.73  | 42.41                       | 846.97                                    | 150.66          | 1,952.35                        | 1,871.22             |         | 81.14                        | 24.062                        |           |
| 10,300.00                                     | 10,214.72                   | 8,942.28                    | 8,839.67                    | 57.15           | 45.86  | 42.01                       | 862.51                                    | 150.97          | 2,019.56                        | 1,939.09             |         | 80.48                        | 25.095                        |           |
| 10,400.00                                     | 10,314.72                   | 8,954.00                    | 8,846.97                    | 57.65           | 45.93  | 41.78                       | 871.68                                    | 151.21          | 2,088.96                        | 2,009.29             |         | 79.67                        | 26.221                        |           |
| 10,500.00                                     | 10,414.72                   | 8,965.00                    | 8,855.73                    | 58.15           | 46.13  | 41.18                       | 896.34                                    | 151.96          | 2,160.14                        | 2,080.76             |         | 79.38                        | 27.211                        |           |
| 10,562.32                                     | 10,477.04                   | 8,996.92                    | 8,872.79                    | 58.47           | 46.21  | 40.95                       | 905.94                                    | 152.29          | 2,205.32                        | 2,126.26             |         | 79.06                        | 27.894                        |           |
| 10,600.00                                     | 10,514.70                   | 9,006.36                    | 8,878.33                    | 58.65           | 46.27  | 38.90                       | 913.58                                    | 152.58          | 2,232.27                        | 2,153.36             |         | 78.91                        | 28.288                        |           |
| 10,650.00                                     | 10,564.38                   | 9,016.00                    | 8,883.94                    | 58.90           | 46.33  | 35.94                       | 921.41                                    | 152.88          | 2,266.24                        | 2,187.62             |         | 78.62                        | 28.826                        |           |
| 10,700.00                                     | 10,613.40                   | 9,016.00                    | 8,883.94                    | 59.13           | 46.33  | 33.58                       | 921.41                                    | 152.88          | 2,298.12                        | 2,220.05             |         | 78.07                        | 29.436                        |           |
| 10,750.00                                     | 10,661.38                   | 9,033.56                    | 8,893.88                    | 59.35           | 46.44  | 31.44                       | 935.88                                    | 153.45          | 2,327.49                        | 2,249.60             |         | 77.90                        | 29.879                        |           |
| 10,800.00                                     | 10,707.96                   | 9,048.00                    | 8,901.70                    | 59.56           | 46.54  | 29.71                       | 948.00                                    | 153.91          | 2,354.53                        | 2,276.90             |         | 77.62                        | 30.332                        |           |
| 10,850.00                                     | 10,752.79                   | 9,048.00                    | 8,901.70                    | 59.75           | 46.54  | 28.35                       | 948.00                                    | 153.91          | 2,378.87                        | 2,301.86             |         | 77.01                        | 30.890                        |           |
| 10,900.00                                     | 10,795.51                   | 9,062.82                    | 8,909.46                    | 59.92           | 46.64  | 27.17                       | 960.62                                    | 154.44          | 2,400.46                        | 2,323.76             |         | 76.70                        | 31.296                        |           |
| 10,950.00                                     | 10,835.81                   | 9,080.00                    | 8,918.21                    | 60.06           | 46.75  | 26.21                       | 975.39                                    | 155.20          | 2,419.18                        | 2,342.75             |         | 76.43                        | 31.653                        |           |
| 11,000.00                                     | 10,873.38                   | 9,080.00                    | 8,918.21                    | 60.19           | 46.75  | 25.49                       | 975.39                                    | 155.20          | 2,434.90                        | 2,359.13             |         | 75.78                        | 32.133                        |           |
| 11,050.00                                     | 10,907.93                   | 9,080.00                    | 8,918.21                    | 60.30           | 46.75  | 24.92                       | 975.39                                    | 155.20          | 2,447.79                        | 2,372.67             |         | 75.12                        | 32.583                        |           |
| 11,100.00                                     | 10,939.21                   | 9,111.00                    | 8,932.82                    | 60.39           | 46.96  | 24.50                       | 1,002.65                                  | 157.17          | 2,457.55                        | 2,382.43             |         | 75.12                        | 32.717                        |           |
| 11,150.00                                     | 10,966.96                   | 9,111.00                    | 8,932.82                    | 60.46           | 46.96  | 24.23                       | 1,002.65                                  | 157.17          | 2,464.01                        | 2,389.54             |         | 74.47                        | 33.088                        |           |
| 11,200.00                                     | 10,990.99                   | 9,111.00                    | 8,932.82                    | 60.51           | 46.96  | 24.08                       | 1,002.65                                  | 157.17          | 2,467.51                        | 2,393.68             |         | 73.84                        | 33.418                        |           |
| 11,250.00                                     | 11,011.11                   | 9,111.00                    | 8,932.82                    | 60.55           | 46.96  | 24.06                       | 1,002.65                                  | 157.17          | 2,468.05                        | 2,394.82             |         | 73.23                        | 33.703                        |           |
| 11,300.00                                     | 11,027.16                   | 9,143.00                    | 8,946.12                    | 60.59           | 47.18  | 24.27                       | 1,031.60                                  | 160.07          | 2,465.33                        | 2,392.06             |         | 73.28                        | 33.645                        |           |
| 11,350.00                                     | 11,039.02                   | 9,143.00                    | 8,946.12                    | 60.62           | 47.18  | 24.53                       | 1,031.60                                  | 160.07          | 2,459.30                        | 2,386.58             |         | 72.72                        | 33.819                        |           |
| 11,400.00                                     | 11,046.61                   | 9,143.00                    | 8,946.12                    | 60.65           | 47.18  | 24.91                       | 1,031.60                                  | 160.07          | 2,450.35                        | 2,378.14             |         | 72.21                        | 33.936                        |           |
| 11,450.00                                     | 11,049.87                   | 9,174.00                    | 8,957.92                    | 60.70           | 47.40  | 25.63                       | 1,060.05                                  | 163.62          | 2,438.16                        | 2,365.83             |         | 72.32                        | 33.712                        |           |
| 11,463.46                                     | 11,050.00                   | 9,174.00                    | 8,957.92                    | 60.71           | 47.40  | 25.80                       | 1,060.05                                  | 163.62          | 2,434.32                        | 2,362.11             |         | 72.21                        | 33.714                        |           |
| 11,500.00                                     | 11,049.92                   | 9,174.00                    | 8,957.92                    | 60.76           | 47.40  | 25.80                       | 1,060.05                                  | 163.62          | 2,423.88                        | 2,351.99             |         | 71.89                        | 33.716                        |           |
| 11,600.00                                     | 11,049.72                   | 9,206.00                    | 8,969.04                    | 60.97           | 47.63  | 26.02                       | 1,089.80                                  | 167.51          | 2,397.26                        | 2,325.57             |         | 71.69                        | 33.438                        |           |
| 11,700.00                                     | 11,049.53                   | 9,237.00                    | 8,978.43                    | 61.29           | 47.85  | 26.20                       | 1,119.16                                  | 170.76          | 2,373.65                        | 2,302.08             |         | 71.57                        | 33.167                        |           |
| 11,800.00                                     | 11,049.33                   | 9,251.18                    | 8,982.23                    | 61.73           | 47.96  | 26.27                       | 1,132.76                                  | 172.03          | 2,352.92                        | 2,281.65             |         | 71.27                        | 33.013                        |           |
| 11,900.00                                     | 11,049.13                   | 9,269.00                    | 8,986.43                    | 62.27           | 48.09  | 26.35                       | 1,150.02                                  | 173.46          | 2,335.52                        | 2,264.34             |         | 71.17                        | 32.814                        |           |
| 12,000.00                                     | 11,048.93                   | 9,300.00                    | 8,992.45                    | 62.89           | 48.32  | 26.48                       | 1,180.35                                  | 175.60          | 2,321.30                        | 2,249.92             |         | 71.38                        | 32.519                        |           |
| 12,100.00                                     | 11,048.73                   | 9,316.55                    | 8,995.01                    | 63.59           | 48.44  | 26.53                       | 1,196.66                                  | 176.66          | 2,310.36                        | 2,238.82             |         | 71.54                        | 32.296                        |           |
| 12,200.00                                     | 11,048.53                   | 9,332.00                    | 8,996.90                    | 64.37           | 48.55  | 26.58                       | 1,211.96                                  | 177.71          | 2,302.94                        | 2,231.10             |         | 71.84                        | 32.058                        |           |
| 12,300.00                                     | 11,048.33                   | 9,363.00                    | 8,999.40                    | 65.21           | 48.78  | 26.66                       | 1,242.78                                  | 179.83          | 2,298.95                        | 2,226.53             |         | 72.41                        | 31.748                        |           |
| 12,388.30                                     | 11,048.15                   | 9,393.00                    | 9,000.63                    | 66.00           | 49.01  | 26.72                       | 1,272.70                                  | 181.60          | 2,297.99                        | 2,224.96             |         | 73.03                        | 31.468                        |           |
| 12,400.00                                     | 11,048.13                   | 9,401.72                    | 9,000.87                    | 66.11           | 49.08  | 26.74                       | 1,281.41                                  | 182.04          | 2,298.00                        | 2,224.86             |         | 73.14                        | 31.417                        |           |
| 12,500.00                                     | 11,047.93                   | 9,478.13                    | 9,002.46                    | 67.07           | 49.69  | 26.85                       | 1,357.72                                  | 185.46          | 2,298.51                        | 2,224.30             |         | 74.21                        | 30.974                        |           |
| 12,600.00                                     | 11,047.73                   | 9,541.39                    | 9,002.51                    | 68.09           | 50.22  | 26.92                       | 1,420.94                                  | 187.91          | 2,300.49                        | 2,225.24             |         | 75.24                        | 30.574                        |           |
| 12,700.00                                     | 11,047.53                   | 9,604.45                    | 9,001.35                    | 69.16           | 50.79  | 26.98                       | 1,483.95                                  | 190.11          | 2,304.02                        | 2,227.69             |         | 76.34                        | 30.183                        |           |
| 12,800.00                                     | 11,047.33                   | 9,674.61                    | 8,998.71                    | 70.28           | 51.47  | 27.02                       | 1,554.01                                  | 192.53          | 2,309.19                        | 2,231.65             |         | 77.53                        | 29.783                        |           |
| 12,900.00                                     | 11,047.13                   | 9,774.91                    | 8,994.54                    | 71.45           | 52.49  | 27.08                       | 1,654.15                                  | 196.39          | 2,314.94                        | 2,235.96             |         | 78.99                        | 29.309                        |           |
| 13,000.00                                     | 11,046.93                   | 9,867.13                    | 8,991.41                    | 72.67           | 53.49  | 27.17                       | 1,746.21                                  | 200.79          | 2,320.47                        | 2,239.98             |         | 80.49                        | 28.831                        |           |
| 13,100.00                                     | 11,046.74                   | 9,941.75                    | 8,987.58                    | 73.92           | 54.34  | 27.21                       | 1,820.68                                  | 203.79          | 2,327.13                        | 2,245.23             |         | 81.90                        | 28.415                        |           |
| 13,200.00                                     | 11,046.54                   | 10,173.58                   | 8,983.97                    | 75.22           | 57.17  | 27.45                       | 2,052.16                                  | 213.97          | 2,330.17                        | 2,245.38             |         | 84.78                        | 27.483                        |           |
| 13,300.00                                     | 11,046.34                   | 10,263.19                   | 8,984.46                    | 76.56           | 58.34  | 27.56                       | 2,141.67                                  | 217.98          | 2,332.03                        | 2,245.49             |         | 86.54                        | 26.947                        |           |

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



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Reference Site:** Cypress 34  
**Site Error:** 0.00 usft  
**Reference Well:** 233H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** WellPlanner1  
**Offset TVD Reference:** Offset Datum

| Offset Design Cypress 34 - 009H (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 489-MWD+HDGM                  |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   |                    | Warning   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 13,400.00                                     | 11,046.14             | 10,350.66             | 8,985.53              | 77.94            | 59.51         | 27.71                 | 2,229.00                            | 222.94       | 2,333.93               | 2,245.57                | 88.36                     | 26.414            |                    |           |
| 13,500.00                                     | 11,045.94             | 10,483.10             | 8,986.59              | 79.34            | 61.35         | 27.93                 | 2,361.19                            | 230.91       | 2,336.58               | 2,245.83                | 90.75                     | 25.748            |                    |           |
| 13,600.00                                     | 11,045.74             | 10,568.86             | 8,988.53              | 80.79            | 62.58         | 28.08                 | 2,446.78                            | 235.97       | 2,337.71               | 2,245.03                | 92.68                     | 25.222            |                    |           |
| 13,700.00                                     | 11,045.54             | 10,676.35             | 8,990.32              | 82.26            | 64.17         | 28.26                 | 2,554.07                            | 242.34       | 2,339.38               | 2,244.45                | 94.93                     | 24.643            |                    |           |
| 13,800.00                                     | 11,045.34             | 10,750.93             | 8,991.38              | 83.77            | 65.29         | 28.39                 | 2,628.51                            | 246.59       | 2,341.18               | 2,244.36                | 96.82                     | 24.181            |                    |           |
| 13,900.00                                     | 11,045.14             | 10,891.33             | 8,993.13              | 85.30            | 67.46         | 28.60                 | 2,768.70                            | 254.15       | 2,343.08               | 2,243.51                | 99.57                     | 23.532            |                    |           |
| 14,000.00                                     | 11,044.94             | 10,980.55             | 8,994.78              | 86.86            | 68.87         | 28.74                 | 2,857.80                            | 258.29       | 2,344.03               | 2,242.31                | 101.72                    | 23.043            |                    |           |
| 14,100.00                                     | 11,044.74             | 11,070.98             | 8,995.95              | 88.44            | 70.33         | 28.86                 | 2,948.14                            | 262.37       | 2,345.40               | 2,241.48                | 103.92                    | 22.569            |                    |           |
| 14,200.00                                     | 11,044.54             | 11,158.63             | 8,996.68              | 90.05            | 71.76         | 28.98                 | 3,035.69                            | 266.43       | 2,347.25               | 2,241.13                | 106.12                    | 22.119            |                    |           |
| 14,300.00                                     | 11,044.34             | 11,217.18             | 8,996.42              | 91.68            | 72.73         | 29.05                 | 3,094.17                            | 269.19       | 2,350.26               | 2,242.30                | 107.95                    | 21.771            |                    |           |
| 14,400.00                                     | 11,044.15             | 11,298.61             | 8,994.57              | 93.34            | 74.09         | 29.13                 | 3,175.48                            | 273.04       | 2,354.82               | 2,244.73                | 110.09                    | 21.389            |                    |           |
| 14,500.00                                     | 11,043.95             | 11,410.55             | 8,992.76              | 95.01            | 75.99         | 29.26                 | 3,287.25                            | 279.10       | 2,359.22               | 2,246.51                | 112.70                    | 20.933            |                    |           |
| 14,600.00                                     | 11,043.75             | 11,507.12             | 8,991.68              | 96.70            | 77.65         | 29.39                 | 3,383.65                            | 284.67       | 2,363.38               | 2,248.23                | 115.15                    | 20.524            |                    |           |
| 14,700.00                                     | 11,043.55             | 11,656.76             | 8,991.83              | 98.41            | 80.25         | 29.63                 | 3,532.99                            | 294.10       | 2,366.80               | 2,248.35                | 118.45                    | 19.982            |                    |           |
| 14,800.00                                     | 11,043.35             | 11,770.25             | 8,993.54              | 100.14           | 82.26         | 29.82                 | 3,646.27                            | 300.90       | 2,368.82               | 2,247.55                | 121.28                    | 19.532            |                    |           |
| 14,900.00                                     | 11,043.15             | 11,881.16             | 8,995.86              | 101.89           | 84.24         | 30.01                 | 3,756.97                            | 307.12       | 2,370.16               | 2,246.05                | 124.11                    | 19.098            |                    |           |
| 15,000.00                                     | 11,042.95             | 11,980.04             | 8,997.97              | 103.65           | 86.02         | 30.17                 | 3,855.69                            | 312.48       | 2,371.38               | 2,244.60                | 126.78                    | 18.704            |                    |           |
| 15,100.00                                     | 11,042.75             | 12,055.88             | 8,999.47              | 105.42           | 87.40         | 30.30                 | 3,931.38                            | 316.93       | 2,373.03               | 2,243.89                | 129.14                    | 18.376            |                    |           |
| 15,200.00                                     | 11,042.55             | 12,128.91             | 8,999.81              | 107.21           | 88.73         | 30.41                 | 4,004.28                            | 321.33       | 2,376.01               | 2,244.55                | 131.45                    | 18.075            |                    |           |
| 15,300.00                                     | 11,042.35             | 12,235.99             | 8,999.57              | 109.02           | 90.70         | 30.56                 | 4,111.17                            | 327.60       | 2,379.56               | 2,245.26                | 134.30                    | 17.718            |                    |           |
| 15,400.00                                     | 11,042.15             | 12,369.59             | 9,001.03              | 110.83           | 93.17         | 30.77                 | 4,244.55                            | 335.13       | 2,381.82               | 2,244.20                | 137.62                    | 17.307            |                    |           |
| 15,500.00                                     | 11,041.95             | 12,495.99             | 9,004.15              | 112.66           | 95.54         | 30.98                 | 4,370.72                            | 342.07       | 2,382.86               | 2,241.97                | 140.89                    | 16.913            |                    |           |
| 15,600.00                                     | 11,041.75             | 12,570.02             | 9,005.88              | 114.50           | 96.93         | 31.11                 | 4,444.61                            | 346.12       | 2,384.06               | 2,240.73                | 143.34                    | 16.633            |                    |           |
| 15,700.00                                     | 11,041.55             | 12,622.40             | 9,006.36              | 116.35           | 97.92         | 31.19                 | 4,496.90                            | 349.24       | 2,386.77               | 2,241.35                | 145.42                    | 16.413            |                    |           |
| 15,800.00                                     | 11,041.36             | 12,674.06             | 9,005.76              | 118.22           | 98.90         | 31.26                 | 4,548.44                            | 352.67       | 2,391.56               | 2,244.09                | 147.47                    | 16.217            |                    |           |
| 15,900.00                                     | 11,041.16             | 12,778.59             | 9,003.59              | 120.09           | 100.89        | 31.41                 | 4,652.70                            | 359.80       | 2,397.27               | 2,246.85                | 150.42                    | 15.937            |                    |           |
| 16,000.00                                     | 11,040.96             | 12,908.36             | 9,001.46              | 121.97           | 103.37        | 31.58                 | 4,782.20                            | 367.94       | 2,402.37               | 2,248.56                | 153.81                    | 15.619            |                    |           |
| 16,100.00                                     | 11,040.76             | 13,043.46             | 9,001.11              | 123.86           | 105.97        | 31.76                 | 4,917.09                            | 375.50       | 2,405.89               | 2,248.57                | 157.32                    | 15.293            |                    |           |
| 16,200.00                                     | 11,040.56             | 13,135.81             | 9,000.53              | 125.76           | 107.75        | 31.85                 | 5,009.36                            | 379.16       | 2,408.90               | 2,248.83                | 160.07                    | 15.049            |                    |           |
| 16,300.00                                     | 11,040.36             | 13,235.69             | 8,999.56              | 127.67           | 109.69        | 31.94                 | 5,109.17                            | 382.96       | 2,412.13               | 2,249.19                | 162.95                    | 14.803            |                    |           |
| 16,400.00                                     | 11,040.16             | 13,335.60             | 8,998.58              | 129.59           | 111.64        | 32.02                 | 5,209.00                            | 386.73       | 2,415.35               | 2,249.52                | 165.84                    | 14.565            |                    |           |
| 16,479.98                                     | 11,040.00             | 13,333.00             | 8,998.61              | 131.12           | 111.59        | 32.02                 | 5,206.40                            | 386.63       | 2,419.34               | 2,252.59                | 166.75                    | 14.509 SF         |                    |           |



# Pro Directional Anticollision Report



|                           |                          |                                     |                                                 |
|---------------------------|--------------------------|-------------------------------------|-------------------------------------------------|
| <b>Company:</b>           | Tap Rock Operating, LLC  | <b>Local Co-ordinate Reference:</b> | Well 233H                                       |
| <b>Project:</b>           | Eddy County, NM (NAD 83) | <b>TVD Reference:</b>               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Reference Site:</b>    | Cypress 34               | <b>MD Reference:</b>                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Site Error:</b>        | 0.00 usft                | <b>North Reference:</b>             | Grid                                            |
| <b>Reference Well:</b>    | 233H                     | <b>Survey Calculation Method:</b>   | Minimum Curvature                               |
| <b>Well Error:</b>        | 0.00 usft                | <b>Output errors are at</b>         | 3.00 sigma                                      |
| <b>Reference Wellbore</b> | OH                       | <b>Database:</b>                    | WellPlanner1                                    |
| <b>Reference Design:</b>  | Plan 1                   | <b>Offset TVD Reference:</b>        | Offset Datum                                    |

| Offset Design Cypress 34 - 012H (O) - OH - OH |                             |                             |                             |                 |        |                             |                                           |                              |                                 |                      | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------|--------|-----------------------------|-------------------------------------------|------------------------------|---------------------------------|----------------------|--------------------|-----------|
| Survey Program: 404-MWD+HDGM                  |                             |                             |                             |                 |        |                             |                                           |                              |                                 |                      | Offset Well Error: | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis |        | Highside<br>Toolface<br>(°) | Distance                                  |                              | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning            |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference       | Offset |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft)   |                      |                    |           |
| 0.00                                          | 0.00                        | 2.00                        | 2.00                        | 0.00            | 0.01   | -17.33                      | 100.39                                    | -31.33                       | 105.17                          |                      |                    |           |
| 100.00                                        | 100.00                      | 102.20                      | 102.20                      | 0.20            | 0.26   | -17.27                      | 100.33                                    | -31.19                       | 105.07                          | 104.61               | 0.45               | 231.116   |
| 200.00                                        | 200.00                      | 202.39                      | 202.39                      | 0.74            | 0.51   | -17.09                      | 100.16                                    | -30.79                       | 104.79                          | 103.54               | 1.24               | 84.225    |
| 300.00                                        | 300.00                      | 302.58                      | 302.58                      | 1.27            | 0.76   | -16.79                      | 99.87                                     | -30.13                       | 104.32                          | 102.29               | 2.03               | 51.298    |
| 400.00                                        | 400.00                      | 402.77                      | 402.76                      | 1.81            | 1.01   | -16.36                      | 99.47                                     | -29.21                       | 103.68                          | 100.85               | 2.82               | 36.724    |
| 450.00                                        | 450.00                      | 452.74                      | 452.73                      | 2.08            | 1.28   | -16.11                      | 99.26                                     | -28.66                       | 103.32                          | 99.96                | 3.36               | 30.775    |
| 500.00                                        | 500.00                      | 502.70                      | 502.68                      | 2.34            | 1.55   | 89.99                       | 99.07                                     | -28.09                       | 102.97                          | 99.09                | 3.89               | 26.495    |
| 600.00                                        | 599.93                      | 602.59                      | 602.57                      | 2.86            | 2.09   | 92.57                       | 98.75                                     | -26.86                       | 102.44                          | 97.50                | 4.94               | 20.745    |
| 678.64                                        | 678.39                      | 681.28                      | 681.24                      | 3.27            | 2.51   | 95.99                       | 98.37                                     | -25.84                       | 102.25                          | 96.47                | 5.78               | 17.703 CC |
| 700.00                                        | 699.68                      | 702.62                      | 702.59                      | 3.38            | 2.62   | 97.12                       | 98.22                                     | -25.57                       | 102.27                          | 96.27                | 6.00               | 17.035    |
| 800.00                                        | 799.13                      | 802.39                      | 802.34                      | 3.93            | 3.16   | 103.50                      | 97.33                                     | -24.27                       | 103.14                          | 96.06                | 7.08               | 14.563 ES |
| 900.00                                        | 898.15                      | 901.85                      | 901.79                      | 4.49            | 3.69   | 111.40                      | 95.94                                     | -23.02                       | 105.99                          | 97.81                | 8.18               | 12.964    |
| 1,000.00                                      | 996.63                      | 1,000.81                    | 1,000.71                    | 5.08            | 4.23   | 120.25                      | 93.99                                     | -21.80                       | 111.94                          | 102.66               | 9.28               | 12.064    |
| 1,038.40                                      | 1,034.27                    | 1,038.63                    | 1,038.53                    | 5.32            | 4.43   | 123.77                      | 93.09                                     | -21.31                       | 115.28                          | 105.57               | 9.70               | 11.878    |
| 1,100.00                                      | 1,094.58                    | 1,099.22                    | 1,099.09                    | 5.70            | 4.75   | 129.25                      | 91.46                                     | -20.49                       | 121.61                          | 111.22               | 10.38              | 11.712    |
| 1,200.00                                      | 1,192.48                    | 1,197.03                    | 1,196.84                    | 6.34            | 5.28   | 137.10                      | 88.39                                     | -18.92                       | 133.73                          | 122.26               | 11.47              | 11.656    |
| 1,300.00                                      | 1,290.37                    | 1,294.27                    | 1,294.00                    | 6.98            | 5.81   | 143.70                      | 85.25                                     | -16.91                       | 148.17                          | 135.62               | 12.55              | 11.806    |
| 1,400.00                                      | 1,388.27                    | 1,391.59                    | 1,391.29                    | 7.64            | 6.32   | 148.60                      | 83.24                                     | -15.80                       | 164.43                          | 150.82               | 13.61              | 12.083    |
| 1,500.00                                      | 1,486.17                    | 1,489.24                    | 1,488.94                    | 8.30            | 6.81   | 151.85                      | 83.04                                     | -16.33                       | 181.71                          | 167.06               | 14.65              | 12.402    |
| 1,600.00                                      | 1,584.07                    | 1,586.93                    | 1,586.63                    | 8.96            | 7.30   | 154.51                      | 83.04                                     | -16.77                       | 199.65                          | 183.96               | 15.69              | 12.725    |
| 1,700.00                                      | 1,681.97                    | 1,684.74                    | 1,684.44                    | 9.63            | 7.78   | 156.69                      | 83.21                                     | -17.22                       | 218.05                          | 201.32               | 16.73              | 13.032    |
| 1,800.00                                      | 1,779.86                    | 1,782.60                    | 1,782.30                    | 10.30           | 8.28   | 158.54                      | 83.40                                     | -17.62                       | 236.77                          | 218.99               | 17.78              | 13.318    |
| 1,900.00                                      | 1,877.76                    | 1,880.18                    | 1,879.88                    | 10.98           | 8.77   | 160.15                      | 83.52                                     | -17.87                       | 255.77                          | 236.95               | 18.83              | 13.585    |
| 2,000.00                                      | 1,975.66                    | 1,976.96                    | 1,976.66                    | 11.66           | 9.27   | 161.49                      | 83.91                                     | -17.93                       | 275.25                          | 255.38               | 19.87              | 13.851    |
| 2,100.00                                      | 2,073.56                    | 2,074.15                    | 2,073.84                    | 12.33           | 9.77   | 162.63                      | 84.63                                     | -17.86                       | 295.16                          | 274.23               | 20.93              | 14.105    |
| 2,200.00                                      | 2,171.46                    | 2,171.27                    | 2,170.96                    | 13.01           | 10.27  | 163.60                      | 85.57                                     | -17.65                       | 315.38                          | 293.40               | 21.98              | 14.347    |
| 2,300.00                                      | 2,269.36                    | 2,269.15                    | 2,268.83                    | 13.69           | 10.78  | 164.46                      | 86.56                                     | -17.37                       | 335.78                          | 312.73               | 23.05              | 14.567    |
| 2,400.00                                      | 2,367.25                    | 2,366.59                    | 2,366.27                    | 14.38           | 11.29  | 165.24                      | 87.50                                     | -17.02                       | 356.27                          | 332.16               | 24.12              | 14.774    |
| 2,500.00                                      | 2,465.15                    | 2,462.24                    | 2,461.91                    | 15.06           | 11.79  | 165.97                      | 88.22                                     | -16.20                       | 377.16                          | 351.99               | 25.17              | 14.986    |
| 2,600.00                                      | 2,563.05                    | 2,556.27                    | 2,555.91                    | 15.74           | 12.29  | 166.80                      | 88.30                                     | -14.14                       | 398.91                          | 372.71               | 26.20              | 15.224    |
| 2,700.00                                      | 2,660.95                    | 2,658.40                    | 2,658.02                    | 16.43           | 12.83  | 167.71                      | 87.63                                     | -11.69                       | 420.60                          | 393.28               | 27.32              | 15.393    |
| 2,800.00                                      | 2,758.85                    | 2,764.13                    | 2,763.73                    | 17.11           | 13.39  | 168.50                      | 86.44                                     | -10.97                       | 440.66                          | 412.18               | 28.48              | 15.475    |
| 2,900.00                                      | 2,856.74                    | 2,865.15                    | 2,864.72                    | 17.80           | 13.92  | 169.35                      | 83.70                                     | -10.64                       | 459.78                          | 430.21               | 29.58              | 15.545    |
| 3,000.00                                      | 2,954.64                    | 2,965.69                    | 2,965.19                    | 18.48           | 14.45  | 170.22                      | 79.93                                     | -10.73                       | 478.20                          | 447.53               | 30.67              | 15.590    |
| 3,100.00                                      | 3,052.54                    | 3,063.07                    | 3,062.55                    | 19.17           | 14.96  | 170.75                      | 78.19                                     | -11.72                       | 496.67                          | 464.93               | 31.74              | 15.646    |
| 3,200.00                                      | 3,150.44                    | 3,160.91                    | 3,160.37                    | 19.86           | 15.47  | 171.18                      | 77.00                                     | -12.87                       | 515.29                          | 482.47               | 32.82              | 15.702    |
| 3,300.00                                      | 3,248.34                    | 3,254.20                    | 3,253.66                    | 20.54           | 15.96  | 171.54                      | 76.28                                     | -13.64                       | 534.41                          | 500.56               | 33.85              | 15.787    |
| 3,400.00                                      | 3,346.23                    | 3,348.93                    | 3,348.38                    | 21.23           | 16.45  | 171.85                      | 76.03                                     | -13.76                       | 554.38                          | 519.48               | 34.90              | 15.885    |
| 3,500.00                                      | 3,444.13                    | 3,446.46                    | 3,445.91                    | 21.92           | 16.96  | 172.14                      | 76.09                                     | -13.77                       | 574.60                          | 538.63               | 35.97              | 15.975    |
| 3,600.00                                      | 3,542.03                    | 3,544.39                    | 3,543.85                    | 22.61           | 17.47  | 172.40                      | 76.17                                     | -13.76                       | 594.85                          | 557.81               | 37.04              | 16.059    |
| 3,700.00                                      | 3,639.93                    | 3,642.14                    | 3,641.59                    | 23.30           | 17.98  | 172.65                      | 76.20                                     | -13.74                       | 615.12                          | 577.00               | 38.12              | 16.137    |
| 3,800.00                                      | 3,737.83                    | 3,739.73                    | 3,739.18                    | 23.99           | 18.49  | 172.88                      | 76.24                                     | -13.67                       | 635.43                          | 596.24               | 39.19              | 16.213    |
| 3,900.00                                      | 3,835.73                    | 3,838.03                    | 3,837.48                    | 24.67           | 19.00  | 173.10                      | 76.29                                     | -13.59                       | 655.78                          | 615.50               | 40.27              | 16.283    |
| 4,000.00                                      | 3,933.62                    | 3,936.41                    | 3,935.86                    | 25.36           | 19.51  | 173.30                      | 76.33                                     | -13.63                       | 676.02                          | 634.67               | 41.35              | 16.347    |
| 4,100.00                                      | 4,031.52                    | 4,034.18                    | 4,033.63                    | 26.05           | 20.02  | 173.50                      | 76.38                                     | -13.68                       | 696.25                          | 653.83               | 42.43              | 16.411    |
| 4,200.00                                      | 4,129.42                    | 4,131.88                    | 4,131.33                    | 26.74           | 20.53  | 173.68                      | 76.41                                     | -13.69                       | 716.52                          | 673.02               | 43.50              | 16.472    |
| 4,300.00                                      | 4,227.32                    | 4,229.54                    | 4,228.99                    | 27.43           | 21.04  | 173.85                      | 76.37                                     | -13.65                       | 736.83                          | 692.25               | 44.58              | 16.528    |
| 4,400.00                                      | 4,325.22                    | 4,327.27                    | 4,326.72                    | 28.12           | 21.56  | 174.02                      | 76.36                                     | -13.58                       | 757.17                          | 711.51               | 45.66              | 16.582    |
| 4,500.00                                      | 4,423.11                    | 4,425.34                    | 4,424.79                    | 28.81           | 22.08  | 174.18                      | 76.41                                     | -13.54                       | 777.52                          | 730.78               | 46.74              | 16.633    |
| 4,600.00                                      | 4,521.01                    | 4,523.47                    | 4,522.93                    | 29.50           | 22.59  | 174.32                      | 76.50                                     | -13.55                       | 797.84                          | 750.02               | 47.83              | 16.682    |
| 4,702.88                                      | 4,621.73                    | 4,624.44                    | 4,623.89                    | 30.21           | 23.12  | 174.47                      | 76.49                                     | -13.55                       | 818.72                          | 769.79               | 48.94              | 16.729    |

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



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Reference Site:** Cypress 34  
**Site Error:** 0.00 usft  
**Reference Well:** 233H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** WellPlanner1  
**Offset TVD Reference:** Offset Datum

| Offset Design Cypress 34 - 012H (O) - OH - OH |                       |                       |                       |                  |               |                       |                                    |             |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|------------------------------------|-------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 404-MWD+HDGM                  |                       |                       |                       |                  |               |                       |                                    |             |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                           |             |                        |                         |                           |                   | Warning            |           |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N-S (usft) | +E-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 4,800.00                                      | 4,717.13              | 4,719.56              | 4,719.02              | 30.86            | 23.62         | 174.62                | 76.43                              | -13.53      | 836.83                 | 786.85                  | 49.98                     | 16.742            |                    |           |
| 4,900.00                                      | 4,815.94              | 4,818.13              | 4,817.58              | 31.48            | 24.14         | 174.75                | 76.39                              | -13.48      | 852.14                 | 801.08                  | 51.06                     | 16.691            |                    |           |
| 5,000.00                                      | 4,915.22              | 4,917.19              | 4,916.64              | 32.07            | 24.66         | 174.85                | 76.38                              | -13.42      | 864.03                 | 811.91                  | 52.12                     | 16.578            |                    |           |
| 5,100.00                                      | 5,014.86              | 5,017.63              | 5,017.08              | 32.61            | 25.19         | 174.92                | 76.36                              | -13.39      | 872.43                 | 819.25                  | 53.18                     | 16.405            |                    |           |
| 5,200.00                                      | 5,114.74              | 5,118.31              | 5,117.76              | 33.11            | 25.71         | 174.96                | 76.29                              | -13.44      | 877.27                 | 823.03                  | 54.23                     | 16.176            |                    |           |
| 5,291.28                                      | 5,206.00              | 5,208.73              | 5,208.18              | 33.52            | 26.18         | 69.39                 | 76.29                              | -13.49      | 878.67                 | 823.52                  | 55.15                     | 15.933            |                    |           |
| 5,300.00                                      | 5,214.72              | 5,217.54              | 5,216.99              | 33.55            | 26.23         | 69.39                 | 76.29                              | -13.49      | 878.67                 | 823.43                  | 55.24                     | 15.907            |                    |           |
| 5,400.00                                      | 5,314.72              | 5,318.29              | 5,317.74              | 33.98            | 26.75         | 69.39                 | 76.31                              | -13.59      | 878.59                 | 822.35                  | 56.24                     | 15.622            |                    |           |
| 5,500.00                                      | 5,414.72              | 5,418.23              | 5,417.69              | 34.41            | 27.27         | 69.39                 | 76.29                              | -13.70      | 878.47                 | 821.24                  | 57.24                     | 15.348            |                    |           |
| 5,600.00                                      | 5,514.72              | 5,517.91              | 5,517.36              | 34.84            | 27.79         | 69.39                 | 76.25                              | -13.79      | 878.38                 | 820.15                  | 58.23                     | 15.083            |                    |           |
| 5,700.00                                      | 5,614.72              | 5,617.46              | 5,616.91              | 35.27            | 28.31         | 69.39                 | 76.20                              | -13.82      | 878.33                 | 819.09                  | 59.23                     | 14.828            |                    |           |
| 5,730.82                                      | 5,645.54              | 5,648.09              | 5,647.54              | 35.40            | 28.47         | 69.39                 | 76.21                              | -13.83      | 878.33                 | 818.78                  | 59.54                     | 14.751            |                    |           |
| 5,800.00                                      | 5,714.72              | 5,716.97              | 5,716.42              | 35.70            | 28.83         | 69.39                 | 76.25                              | -13.83      | 878.34                 | 818.10                  | 60.24                     | 14.582            |                    |           |
| 5,900.00                                      | 5,814.72              | 5,816.13              | 5,815.58              | 36.14            | 29.35         | 69.38                 | 76.36                              | -13.80      | 878.41                 | 817.17                  | 61.24                     | 14.345            |                    |           |
| 6,000.00                                      | 5,914.72              | 5,908.37              | 5,907.82              | 36.59            | 29.83         | 69.33                 | 77.25                              | -13.75      | 878.81                 | 816.65                  | 62.17                     | 14.137            |                    |           |
| 6,100.00                                      | 6,014.72              | 5,995.38              | 5,994.71              | 37.03            | 30.28         | 69.07                 | 81.43                              | -13.70      | 880.57                 | 817.54                  | 63.04                     | 13.969            |                    |           |
| 6,200.00                                      | 6,114.72              | 6,091.13              | 6,090.07              | 37.48            | 30.78         | 68.55                 | 90.02                              | -13.88      | 883.64                 | 819.64                  | 64.00                     | 13.807            |                    |           |
| 6,300.00                                      | 6,214.72              | 6,200.55              | 6,198.50              | 37.92            | 31.35         | 67.62                 | 104.39                             | -16.73      | 886.14                 | 821.02                  | 65.13                     | 13.607            |                    |           |
| 6,400.00                                      | 6,314.72              | 6,317.91              | 6,313.94              | 38.38            | 31.96         | 66.26                 | 124.29                             | -23.52      | 887.50                 | 821.17                  | 66.33                     | 13.380            |                    |           |
| 6,500.00                                      | 6,414.72              | 6,441.63              | 6,435.35              | 38.83            | 32.60         | 64.72                 | 145.52                             | -34.31      | 886.69                 | 819.10                  | 67.59                     | 13.119            |                    |           |
| 6,600.00                                      | 6,514.72              | 6,579.43              | 6,569.88              | 39.28            | 33.33         | 62.83                 | 169.36                             | -52.11      | 882.66                 | 813.73                  | 68.92                     | 12.806            |                    |           |
| 6,700.00                                      | 6,614.72              | 6,750.93              | 6,734.57              | 39.74            | 34.26         | 59.88                 | 201.32                             | -87.32      | 873.46                 | 803.16                  | 70.30                     | 12.425            |                    |           |
| 6,800.00                                      | 6,714.72              | 6,936.16              | 6,908.88              | 40.20            | 35.28         | 56.27                 | 229.74                             | -142.79     | 855.27                 | 783.95                  | 71.33                     | 11.991            |                    |           |
| 6,900.00                                      | 6,814.72              | 7,058.93              | 7,024.96              | 40.66            | 35.96         | 54.38                 | 235.34                             | -182.25     | 830.66                 | 758.38                  | 72.28                     | 11.493            |                    |           |
| 7,000.00                                      | 6,914.72              | 7,134.87              | 7,097.67              | 41.13            | 36.38         | 53.51                 | 234.39                             | -204.10     | 806.47                 | 732.99                  | 73.48                     | 10.976            |                    |           |
| 7,100.00                                      | 7,014.72              | 7,204.11              | 7,164.79              | 41.59            | 36.76         | 52.81                 | 233.60                             | -221.03     | 785.96                 | 711.28                  | 74.68                     | 10.525            |                    |           |
| 7,200.00                                      | 7,114.72              | 7,278.00              | 7,237.10              | 42.06            | 37.17         | 52.21                 | 232.04                             | -236.15     | 768.43                 | 692.63                  | 75.80                     | 10.137            |                    |           |
| 7,300.00                                      | 7,214.72              | 7,343.07              | 7,301.20              | 42.53            | 37.53         | 51.71                 | 231.76                             | -247.29     | 754.74                 | 677.88                  | 76.86                     | 9.819             |                    |           |
| 7,400.00                                      | 7,314.72              | 7,419.27              | 7,376.50              | 43.00            | 37.95         | 50.98                 | 234.87                             | -258.50     | 745.58                 | 667.71                  | 77.87                     | 9.574             |                    |           |
| 7,500.00                                      | 7,414.72              | 7,494.85              | 7,451.18              | 43.47            | 38.38         | 50.18                 | 239.56                             | -269.15     | 738.74                 | 659.90                  | 78.83                     | 9.371             |                    |           |
| 7,600.00                                      | 7,514.72              | 7,562.00              | 7,517.51              | 43.94            | 38.75         | 49.38                 | 246.78                             | -276.58     | 736.92                 | 657.28                  | 79.64                     | 9.253             |                    |           |
| 7,600.79                                      | 7,515.51              | 7,562.00              | 7,517.51              | 43.94            | 38.75         | 49.38                 | 246.78                             | -276.58     | 736.92                 | 657.28                  | 79.64                     | 9.253             |                    |           |
| 7,700.00                                      | 7,614.72              | 7,641.51              | 7,595.97              | 44.42            | 39.20         | 48.39                 | 257.54                             | -283.66     | 738.95                 | 658.44                  | 80.51                     | 9.178             |                    |           |
| 7,800.00                                      | 7,714.72              | 7,811.26              | 7,763.76              | 44.89            | 40.16         | 46.45                 | 273.80                             | -302.78     | 737.09                 | 654.77                  | 82.31                     | 8.955             |                    |           |
| 7,900.00                                      | 7,814.72              | 7,915.05              | 7,866.50              | 45.37            | 40.74         | 45.46                 | 277.77                             | -316.97     | 729.84                 | 646.40                  | 83.45                     | 8.746             |                    |           |
| 8,000.00                                      | 7,914.72              | 8,007.20              | 7,957.82              | 45.85            | 41.26         | 44.59                 | 281.45                             | -328.72     | 723.60                 | 639.09                  | 84.51                     | 8.562             |                    |           |
| 8,100.00                                      | 8,014.72              | 8,113.72              | 8,063.29              | 46.33            | 41.86         | 43.51                 | 286.52                             | -342.80     | 717.80                 | 632.13                  | 85.67                     | 8.379             |                    |           |
| 8,200.00                                      | 8,114.72              | 8,219.82              | 8,168.37              | 46.81            | 42.46         | 42.49                 | 289.81                             | -357.02     | 710.88                 | 624.06                  | 86.82                     | 8.188             |                    |           |
| 8,300.00                                      | 8,214.72              | 8,321.28              | 8,269.06              | 47.29            | 43.03         | 41.68                 | 291.04                             | -369.45     | 703.53                 | 615.60                  | 87.92                     | 8.002             |                    |           |
| 8,400.00                                      | 8,314.72              | 8,420.95              | 8,368.11              | 47.78            | 43.58         | 40.98                 | 291.22                             | -380.56     | 696.27                 | 607.26                  | 89.01                     | 7.822             |                    |           |
| 8,500.00                                      | 8,414.72              | 8,543.12              | 8,489.07              | 48.26            | 44.27         | 39.91                 | 291.08                             | -397.61     | 687.03                 | 596.86                  | 90.16                     | 7.620             |                    |           |
| 8,600.00                                      | 8,514.72              | 8,640.89              | 8,585.58              | 48.75            | 44.82         | 38.92                 | 290.34                             | -413.28     | 676.20                 | 584.92                  | 91.28                     | 7.408             |                    |           |
| 8,700.00                                      | 8,614.72              | 8,730.78              | 8,674.73              | 49.23            | 45.32         | 38.25                 | 288.83                             | -424.54     | 667.01                 | 574.65                  | 92.36                     | 7.222             |                    |           |
| 8,800.00                                      | 8,714.72              | 8,820.43              | 8,763.88              | 49.72            | 45.81         | 37.75                 | 286.48                             | -433.75     | 658.65                 | 565.24                  | 93.41                     | 7.051             |                    |           |
| 8,900.00                                      | 8,814.72              | 8,895.98              | 8,839.13              | 50.21            | 46.22         | 37.27                 | 286.61                             | -440.49     | 653.34                 | 558.97                  | 94.37                     | 6.923             |                    |           |
| 8,987.98                                      | 8,902.70              | 8,961.71              | 8,904.70              | 50.64            | 46.58         | 36.89                 | 288.32                             | -444.62     | 651.83                 | 556.71                  | 95.13                     | 6.852             |                    |           |
| 9,000.00                                      | 8,914.72              | 8,970.71              | 8,913.68              | 50.70            | 46.63         | 36.85                 | 288.64                             | -445.01     | 651.86                 | 556.64                  | 95.22                     | 6.845             |                    |           |
| 9,100.00                                      | 9,014.72              | 9,047.34              | 8,990.20              | 51.19            | 47.03         | 36.53                 | 292.22                             | -446.89     | 654.14                 | 558.15                  | 95.99                     | 6.815             |                    |           |
| 9,200.00                                      | 9,114.72              | 9,132.40              | 9,075.09              | 51.68            | 47.48         | 36.28                 | 297.66                             | -446.48     | 659.54                 | 562.73                  | 96.80                     | 6.813             |                    |           |
| 9,300.00                                      | 9,214.72              | 9,237.37              | 9,179.75              | 52.18            | 48.03         | 35.91                 | 305.56                             | -445.96     | 665.94                 | 567.99                  | 97.95                     | 6.799             |                    |           |

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



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 012H (O) - OH - OH |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|--------------------|-----------|
| Survey Program: 404-MWD+HDGM                  |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      | Offset Well Error: | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                                  |                 | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning            |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) |                              |                               |                                 |                      |                    |           |
| 9,400.00                                      | 9,314.72                    | 9,337.99                    | 9,279.69                    | 52.67               | 48.58            | 35.03                       | 315.78                                    | -451.20         | 671.23                       | 572.15                        | 99.07                           | 6.775                |                    |           |
| 9,500.00                                      | 9,414.72                    | 9,446.70                    | 9,386.96                    | 53.17               | 49.20            | 33.61                       | 329.76                                    | -461.92         | 676.36                       | 575.99                        | 100.37                          | 6.739                |                    |           |
| 9,600.00                                      | 9,514.72                    | 9,537.04                    | 9,475.79                    | 53.66               | 49.73            | 32.28                       | 342.17                                    | -472.67         | 681.50                       | 580.11                        | 101.38                          | 6.722                |                    |           |
| 9,700.00                                      | 9,614.72                    | 9,631.65                    | 9,568.62                    | 54.16               | 50.28            | 30.84                       | 356.51                                    | -483.99         | 688.24                       | 585.78                        | 102.46                          | 6.717                |                    |           |
| 9,800.00                                      | 9,714.72                    | 9,729.00                    | 9,664.39                    | 54.65               | 50.85            | 29.50                       | 370.39                                    | -494.51         | 695.25                       | 591.67                        | 103.58                          | 6.712                |                    |           |
| 9,900.00                                      | 9,814.72                    | 9,805.30                    | 9,739.16                    | 55.15               | 51.30            | 28.37                       | 382.68                                    | -503.45         | 703.99                       | 599.71                        | 104.28                          | 6.751                |                    |           |
| 10,000.00                                     | 9,914.72                    | 9,875.00                    | 9,806.02                    | 55.65               | 51.73            | 27.00                       | 399.36                                    | -513.74         | 718.28                       | 613.53                        | 104.75                          | 6.857                |                    |           |
| 10,100.00                                     | 10,014.72                   | 9,904.60                    | 9,833.68                    | 56.15               | 51.91            | 26.31                       | 408.70                                    | -518.63         | 738.88                       | 635.05                        | 103.83                          | 7.116                |                    |           |
| 10,200.00                                     | 10,114.72                   | 9,941.56                    | 9,867.27                    | 56.65               | 52.14            | 25.38                       | 422.81                                    | -524.75         | 767.56                       | 664.83                        | 102.72                          | 7.472                |                    |           |
| 10,300.00                                     | 10,214.72                   | 9,971.00                    | 9,893.15                    | 57.15               | 52.33            | 24.60                       | 435.96                                    | -529.61         | 803.76                       | 702.72                        | 101.03                          | 7.955                |                    |           |
| 10,400.00                                     | 10,314.72                   | 9,971.00                    | 9,893.15                    | 57.65               | 52.33            | 24.60                       | 435.96                                    | -529.61         | 848.96                       | 751.22                        | 97.74                           | 8.686                |                    |           |
| 10,500.00                                     | 10,414.72                   | 10,043.75                   | 9,953.43                    | 58.15               | 52.78            | 22.56                       | 474.69                                    | -541.88         | 895.50                       | 797.52                        | 97.97                           | 9.140                |                    |           |
| 10,562.32                                     | 10,477.04                   | 10,062.44                   | 9,967.99                    | 58.47               | 52.90            | 22.02                       | 485.95                                    | -545.11         | 928.77                       | 831.92                        | 96.86                           | 9.589                |                    |           |
| 10,600.00                                     | 10,514.70                   | 10,073.53                   | 9,976.44                    | 58.65               | 52.97            | 21.43                       | 492.87                                    | -547.04         | 948.91                       | 852.75                        | 96.16                           | 9.868                |                    |           |
| 10,650.00                                     | 10,564.38                   | 10,088.53                   | 9,987.62                    | 58.90               | 53.06            | 20.05                       | 502.52                                    | -549.66         | 973.71                       | 878.54                        | 95.18                           | 10.231               |                    |           |
| 10,700.00                                     | 10,613.40                   | 10,103.82                   | 9,998.73                    | 59.13               | 53.16            | 18.88                       | 512.67                                    | -552.34         | 996.26                       | 902.12                        | 94.14                           | 10.583               |                    |           |
| 10,750.00                                     | 10,661.38                   | 10,160.00                   | 10,036.90                   | 59.35               | 53.53            | 17.15                       | 552.65                                    | -562.26         | 1,018.75                     | 923.73                        | 95.02                           | 10.722               |                    |           |
| 10,800.00                                     | 10,707.96                   | 10,160.00                   | 10,036.90                   | 59.56               | 53.53            | 16.65                       | 552.65                                    | -562.26         | 1,035.10                     | 941.98                        | 93.12                           | 11.115               |                    |           |
| 10,850.00                                     | 10,752.79                   | 10,160.00                   | 10,036.90                   | 59.75               | 53.53            | 16.21                       | 552.65                                    | -562.26         | 1,049.66                     | 958.51                        | 91.16                           | 11.515               |                    |           |
| 10,900.00                                     | 10,795.51                   | 10,160.00                   | 10,036.90                   | 59.92               | 53.53            | 15.85                       | 552.65                                    | -562.26         | 1,062.40                     | 973.27                        | 89.13                           | 11.920               |                    |           |
| 10,950.00                                     | 10,835.81                   | 10,189.01                   | 10,055.16                   | 60.06               | 53.72            | 15.23                       | 574.68                                    | -567.04         | 1,072.35                     | 983.86                        | 88.49                           | 12.119               |                    |           |
| 11,000.00                                     | 10,873.38                   | 10,209.52                   | 10,067.68                   | 60.19               | 53.85            | 14.84                       | 590.65                                    | -570.00         | 1,079.58                     | 992.18                        | 87.40                           | 12.353               |                    |           |
| 11,050.00                                     | 10,907.93                   | 10,230.26                   | 10,079.99                   | 60.30               | 53.99            | 14.57                       | 607.12                                    | -572.62         | 1,083.97                     | 997.68                        | 86.29                           | 12.561               |                    |           |
| 11,100.00                                     | 10,939.21                   | 10,254.00                   | 10,093.66                   | 60.39               | 54.15            | 14.39                       | 626.37                                    | -575.17         | 1,085.51                     | 1,000.18                      | 85.33                           | 12.721               |                    |           |
| 11,150.00                                     | 10,966.96                   | 10,279.77                   | 10,108.15                   | 60.46               | 54.31            | 14.34                       | 647.57                                    | -577.34         | 1,083.99                     | 999.53                        | 84.46                           | 12.835               |                    |           |
| 11,200.00                                     | 10,990.99                   | 10,309.60                   | 10,124.70                   | 60.51               | 54.50            | 14.42                       | 672.33                                    | -578.99         | 1,079.19                     | 995.39                        | 83.80                           | 12.878               |                    |           |
| 11,250.00                                     | 11,011.11                   | 10,348.00                   | 10,145.62                   | 60.55               | 54.75            | 14.69                       | 704.52                                    | -579.75         | 1,071.18                     | 987.56                        | 83.61                           | 12.811               |                    |           |
| 11,300.00                                     | 11,027.16                   | 10,366.52                   | 10,155.48                   | 60.59               | 54.87            | 15.07                       | 720.19                                    | -579.75         | 1,059.83                     | 977.39                        | 82.44                           | 12.856               |                    |           |
| 11,350.00                                     | 11,039.02                   | 10,392.60                   | 10,168.97                   | 60.62               | 55.04            | 15.59                       | 742.52                                    | -579.71         | 1,045.48                     | 963.79                        | 81.69                           | 12.799               |                    |           |
| 11,400.00                                     | 11,046.61                   | 10,418.27                   | 10,181.79                   | 60.65               | 55.21            | 16.27                       | 764.75                                    | -579.65         | 1,028.12                     | 947.15                        | 80.97                           | 12.698               |                    |           |
| 11,450.00                                     | 11,049.87                   | 10,443.00                   | 10,193.71                   | 60.70               | 55.37            | 17.11                       | 786.42                                    | -579.56         | 1,007.84                     | 927.57                        | 80.27                           | 12.556               |                    |           |
| 11,463.46                                     | 11,050.00                   | 10,443.00                   | 10,193.71                   | 60.71               | 55.37            | 17.31                       | 786.42                                    | -579.56         | 1,001.93                     | 922.18                        | 79.75                           | 12.564               |                    |           |
| 11,500.00                                     | 11,049.92                   | 10,443.00                   | 10,193.71                   | 60.76               | 55.37            | 17.31                       | 786.42                                    | -579.56         | 986.27                       | 907.93                        | 78.34                           | 12.590               |                    |           |
| 11,600.00                                     | 11,049.72                   | 10,487.47                   | 10,212.89                   | 60.97               | 55.67            | 17.74                       | 826.52                                    | -579.05         | 946.19                       | 869.43                        | 76.77                           | 12.325               |                    |           |
| 11,700.00                                     | 11,049.53                   | 10,537.00                   | 10,229.75                   | 61.29               | 56.01            | 18.19                       | 873.05                                    | -577.73         | 913.11                       | 837.60                        | 75.51                           | 12.092               |                    |           |
| 11,800.00                                     | 11,049.33                   | 10,559.79                   | 10,236.12                   | 61.73               | 56.17            | 18.39                       | 894.92                                    | -576.96         | 885.40                       | 812.20                        | 73.20                           | 12.096               |                    |           |
| 11,900.00                                     | 11,049.13                   | 10,611.38                   | 10,248.53                   | 62.27               | 56.54            | 18.79                       | 944.96                                    | -575.38         | 863.57                       | 791.13                        | 72.44                           | 11.922               |                    |           |
| 12,000.00                                     | 11,048.93                   | 10,669.82                   | 10,259.18                   | 62.89               | 56.98            | 19.12                       | 1,002.40                                  | -574.57         | 846.78                       | 774.66                        | 72.12                           | 11.741               |                    |           |
| 12,100.00                                     | 11,048.73                   | 10,726.00                   | 10,265.93                   | 63.59               | 57.42            | 19.15                       | 1,058.10                                  | -577.12         | 834.37                       | 762.51                        | 71.86                           | 11.612               |                    |           |
| 12,200.00                                     | 11,048.53                   | 10,787.38                   | 10,269.17                   | 64.37               | 57.96            | 18.90                       | 1,119.12                                  | -582.76         | 826.77                       | 754.94                        | 71.83                           | 11.510               |                    |           |
| 12,300.00                                     | 11,048.33                   | 10,865.44                   | 10,268.15                   | 65.21               | 58.67            | 18.32                       | 1,196.60                                  | -592.10         | 824.09                       | 751.99                        | 72.10                           | 11.430               |                    |           |
| 12,400.00                                     | 11,048.13                   | 10,977.03                   | 10,267.51                   | 66.11               | 59.74            | 17.53                       | 1,307.43                                  | -605.07         | 821.16                       | 748.35                        | 72.81                           | 11.278               |                    |           |
| 12,500.00                                     | 11,047.93                   | 11,074.05                   | 10,268.54                   | 67.07               | 60.73            | 17.02                       | 1,404.02                                  | -614.11         | 817.51                       | 743.96                        | 73.55                           | 11.115               |                    |           |
| 12,600.00                                     | 11,047.73                   | 11,158.52                   | 10,269.17                   | 68.09               | 61.62            | 16.80                       | 1,488.37                                  | -618.53         | 815.38                       | 741.04                        | 74.33                           | 10.969               |                    |           |
| 12,673.42                                     | 11,047.59                   | 11,222.07                   | 10,269.16                   | 68.88               | 62.31            | 16.73                       | 1,551.90                                  | -620.15         | 814.93                       | 739.90                        | 75.04                           | 10.860               |                    |           |
| 12,700.00                                     | 11,047.53                   | 11,247.48                   | 10,269.07                   | 69.16               | 62.59            | 16.73                       | 1,577.30                                  | -620.47         | 814.96                       | 739.62                        | 75.34                           | 10.817               |                    |           |
| 12,800.00                                     | 11,047.33                   | 11,347.66                   | 10,268.93                   | 70.28               | 63.71            | 16.79                       | 1,677.48                                  | -620.63         | 815.17                       | 738.55                        | 76.62                           | 10.639               |                    |           |
| 12,900.00                                     | 11,047.13                   | 11,450.09                   | 10,269.46                   | 71.45               | 64.90            | 16.94                       | 1,779.90                                  | -619.73         | 815.04                       | 737.00                        | 78.04                           | 10.444               |                    |           |
| 12,950.57                                     | 11,047.03                   | 11,499.27                   | 10,269.81                   | 72.06               | 65.48            | 17.04                       | 1,829.07                                  | -618.92         | 814.99                       | 736.23                        | 78.76                           | 10.347               |                    |           |
| 13,000.00                                     | 11,046.93                   | 11,548.02                   | 10,270.16                   | 72.67               | 66.08            | 17.15                       | 1,877.81                                  | -617.91         | 815.02                       | 735.51                        | 79.50                           | 10.251               |                    |           |
| 13,100.00                                     | 11,046.74                   | 11,647.85                   | 10,270.84                   | 73.92               | 67.33            | 17.39                       | 1,977.62                                  | -615.72         | 815.14                       | 734.07                        | 81.08                           | 10.054               |                    |           |

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



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Reference Site:** Cypress 34  
**Site Error:** 0.00 usft  
**Reference Well:** 233H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** WellPlanner1  
**Offset TVD Reference:** Offset Datum

| Offset Design                |                       |                       |                       |                  |               |                       |                                     |              |                        | Cypress 34 - 012H (O) - OH - OH |                           | Offset Site Error: |  | 0.00 usft |  |
|------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|---------------------------------|---------------------------|--------------------|--|-----------|--|
| Survey Program: 404-MWD+HDGM |                       |                       |                       |                  |               |                       |                                     |              |                        |                                 |                           | Offset Well Error: |  | 0.00 usft |  |
| Reference                    |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                                 |                           |                    |  | Warning   |  |
| Measured Depth (usft)        | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft)         | Minimum Separation (usft) | Separation Factor  |  |           |  |
| 13,200.00                    | 11,046.54             | 11,747.35             | 10,271.52             | 75.22            | 68.61         | 17.61                 | 2,077.10                            | -613.64      | 815.25                 | 732.54                          | 82.70                     | 9.857              |  |           |  |
| 13,300.00                    | 11,046.34             | 11,845.34             | 10,272.04             | 76.56            | 69.92         | 17.85                 | 2,175.06                            | -611.44      | 815.56                 | 731.18                          | 84.37                     | 9.666              |  |           |  |
| 13,400.00                    | 11,046.14             | 11,941.97             | 10,272.40             | 77.94            | 71.24         | 18.10                 | 2,271.65                            | -608.86      | 816.16                 | 730.07                          | 86.09                     | 9.480              |  |           |  |
| 13,500.00                    | 11,045.94             | 12,041.42             | 10,272.95             | 79.34            | 72.65         | 18.48                 | 2,371.00                            | -604.47      | 817.17                 | 729.16                          | 88.01                     | 9.285              |  |           |  |
| 13,600.00                    | 11,045.74             | 12,144.31             | 10,273.06             | 80.79            | 74.13         | 18.71                 | 2,473.86                            | -602.13      | 817.94                 | 728.02                          | 89.93                     | 9.096              |  |           |  |
| 13,700.00                    | 11,045.54             | 12,265.36             | 10,272.61             | 82.26            | 75.96         | 18.56                 | 2,594.81                            | -605.68      | 817.56                 | 725.63                          | 91.92                     | 8.894              |  |           |  |
| 13,800.00                    | 11,045.34             | 12,352.09             | 10,272.14             | 83.77            | 77.32         | 18.27                 | 2,681.37                            | -610.79      | 816.36                 | 723.08                          | 93.28                     | 8.752              |  |           |  |
| 13,900.00                    | 11,045.14             | 12,456.30             | 10,271.81             | 85.30            | 78.96         | 18.14                 | 2,785.54                            | -613.84      | 815.90                 | 720.81                          | 95.09                     | 8.581              |  |           |  |
| 14,000.00                    | 11,044.94             | 12,573.70             | 10,273.29             | 86.86            | 80.86         | 17.95                 | 2,902.83                            | -618.51      | 813.54                 | 716.41                          | 97.13                     | 8.376              |  |           |  |
| 14,100.00                    | 11,044.74             | 12,663.50             | 10,274.38             | 88.44            | 82.34         | 17.79                 | 2,992.55                            | -622.22      | 811.24                 | 712.52                          | 98.72                     | 8.218              |  |           |  |
| 14,200.00                    | 11,044.54             | 12,756.03             | 10,274.96             | 90.05            | 83.87         | 17.68                 | 3,085.03                            | -624.99      | 809.88                 | 709.44                          | 100.43                    | 8.064              |  |           |  |
| 14,241.63                    | 11,044.46             | 12,791.09             | 10,275.11             | 90.73            | 84.45         | 17.71                 | 3,120.09                            | -625.11      | 809.71                 | 708.56                          | 101.14                    | 8.005              |  |           |  |
| 14,300.00                    | 11,044.34             | 12,842.21             | 10,275.27             | 91.68            | 85.30         | 17.83                 | 3,171.20                            | -623.86      | 810.04                 | 707.78                          | 102.26                    | 7.921              |  |           |  |
| 14,400.00                    | 11,044.15             | 12,951.27             | 10,275.29             | 93.34            | 87.13         | 17.94                 | 3,280.24                            | -623.47      | 810.26                 | 705.76                          | 104.50                    | 7.754              |  |           |  |
| 14,481.06                    | 11,043.98             | 13,031.99             | 10,275.16             | 94.69            | 88.50         | 17.92                 | 3,360.95                            | -624.71      | 810.11                 | 704.01                          | 106.10                    | 7.635              |  |           |  |
| 14,500.00                    | 11,043.95             | 13,048.24             | 10,275.09             | 95.01            | 88.79         | 17.91                 | 3,377.20                            | -624.95      | 810.12                 | 703.69                          | 106.43                    | 7.612              |  |           |  |
| 14,600.00                    | 11,043.75             | 13,140.93             | 10,274.12             | 96.70            | 90.39         | 17.88                 | 3,469.88                            | -626.14      | 810.85                 | 702.54                          | 108.31                    | 7.486              |  |           |  |
| 14,700.00                    | 11,043.55             | 13,246.52             | 10,272.63             | 98.41            | 92.24         | 17.80                 | 3,575.44                            | -628.09      | 811.78                 | 701.38                          | 110.40                    | 7.353              |  |           |  |
| 14,792.13                    | 11,043.36             | 13,341.73             | 10,272.26             | 100.01           | 93.93         | 17.71                 | 3,670.62                            | -630.35      | 811.56                 | 699.27                          | 112.29                    | 7.227              |  |           |  |
| 14,800.00                    | 11,043.35             | 13,348.51             | 10,272.22             | 100.14           | 94.05         | 17.70                 | 3,677.40                            | -630.49      | 811.57                 | 699.14                          | 112.43                    | 7.219              |  |           |  |
| 14,900.00                    | 11,043.15             | 13,440.56             | 10,270.97             | 101.89           | 95.70         | 17.63                 | 3,769.43                            | -632.17      | 812.41                 | 698.09                          | 114.32                    | 7.107              |  |           |  |
| 15,000.00                    | 11,042.95             | 13,543.29             | 10,269.42             | 103.65           | 97.55         | 17.55                 | 3,872.13                            | -634.12      | 813.41                 | 697.00                          | 116.41                    | 6.988              |  |           |  |
| 15,100.00                    | 11,042.75             | 13,645.71             | 10,268.29             | 105.42           | 99.41         | 17.46                 | 3,974.52                            | -636.20      | 813.98                 | 695.48                          | 118.50                    | 6.869              |  |           |  |
| 15,200.00                    | 11,042.55             | 13,742.46             | 10,267.30             | 107.21           | 101.18        | 17.40                 | 4,071.25                            | -637.86      | 814.57                 | 694.03                          | 120.54                    | 6.758              |  |           |  |
| 15,300.00                    | 11,042.35             | 13,841.08             | 10,265.93             | 109.02           | 103.00        | 17.36                 | 4,169.85                            | -639.11      | 815.64                 | 693.00                          | 122.64                    | 6.651              |  |           |  |
| 15,400.00                    | 11,042.15             | 13,939.06             | 10,264.55             | 110.83           | 104.81        | 17.32                 | 4,267.82                            | -640.33      | 816.74                 | 691.99                          | 124.75                    | 6.547              |  |           |  |
| 15,500.00                    | 11,041.95             | 14,040.24             | 10,263.11             | 112.66           | 106.69        | 17.33                 | 4,368.98                            | -640.87      | 818.06                 | 691.08                          | 126.98                    | 6.442              |  |           |  |
| 15,600.00                    | 11,041.75             | 14,136.44             | 10,261.91             | 114.50           | 108.49        | 17.37                 | 4,465.17                            | -641.02      | 819.34                 | 690.18                          | 129.16                    | 6.344              |  |           |  |
| 15,700.00                    | 11,041.55             | 14,237.46             | 10,260.42             | 116.35           | 110.39        | 17.44                 | 4,566.18                            | -640.60      | 821.00                 | 689.51                          | 131.49                    | 6.244              |  |           |  |
| 15,800.00                    | 11,041.36             | 14,340.75             | 10,259.34             | 118.22           | 112.34        | 17.53                 | 4,669.46                            | -640.04      | 822.29                 | 688.39                          | 133.89                    | 6.141              |  |           |  |
| 15,900.00                    | 11,041.16             | 14,447.45             | 10,258.65             | 120.09           | 114.36        | 17.59                 | 4,776.16                            | -640.20      | 822.99                 | 686.64                          | 136.34                    | 6.036              |  |           |  |
| 16,000.00                    | 11,040.96             | 14,547.52             | 10,258.23             | 121.97           | 116.28        | 17.60                 | 4,876.23                            | -640.99      | 823.27                 | 684.64                          | 138.63                    | 5.938              |  |           |  |
| 16,100.00                    | 11,040.76             | 14,647.87             | 10,257.94             | 123.86           | 118.20        | 17.63                 | 4,976.57                            | -641.53      | 823.52                 | 682.56                          | 140.96                    | 5.842              |  |           |  |
| 16,200.00                    | 11,040.56             | 14,735.05             | 10,257.08             | 125.76           | 119.87        | 17.71                 | 5,063.75                            | -641.06      | 824.72                 | 681.62                          | 143.10                    | 5.763              |  |           |  |
| 16,300.00                    | 11,040.36             | 14,841.83             | 10,256.00             | 127.67           | 121.94        | 17.83                 | 5,170.52                            | -640.11      | 826.09                 | 680.40                          | 145.69                    | 5.670              |  |           |  |
| 16,400.00                    | 11,040.16             | 14,947.29             | 10,255.69             | 129.59           | 123.97        | 17.94                 | 5,275.98                            | -639.56      | 826.67                 | 678.41                          | 148.26                    | 5.576              |  |           |  |
| 16,479.98                    | 11,040.00             | 15,029.08             | 10,255.77             | 131.12           | 125.56        | 18.03                 | 5,357.76                            | -639.18      | 826.82                 | 676.55                          | 150.27                    | 5.502 SF           |  |           |  |



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 015H (O) - OH - OH |                       |                       |                       |                  |               |                       |                        |                         |                           |                   |         |                   | Offset Site Error: | 0.00 usft         |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|------------------------|-------------------------|---------------------------|-------------------|---------|-------------------|--------------------|-------------------|
| Survey Program: 76-MWD+HDGM                   |                       |                       |                       |                  |               |                       |                        |                         |                           |                   |         |                   | Offset Well Error: | 0.00 usft         |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               | Highside Toolface (°) | Distance               |                         | Minimum Separation (usft) | Separation Factor | Warning |                   |                    |                   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) |                       | Between Centres (usft) | Between Ellipses (usft) |                           |                   |         | Offset TVD (usft) | Offset TVD (usft)  | Offset TVD (usft) |
| 0.00                                          | 0.00                  | 0.00                  | 0.00                  | 0.00             | 0.00          | 74.93                 | 63.00                  | 234.00                  | 243.67                    |                   |         |                   |                    |                   |
| 100.00                                        | 100.00                | 74.78                 | 74.78                 | 0.20             | 0.20          | 74.95                 | 62.90                  | 233.98                  | 242.29                    | 241.89            | 0.40    | 607.619           |                    |                   |
| 200.00                                        | 200.00                | 174.82                | 174.82                | 0.74             | 0.74          | 75.03                 | 62.54                  | 233.96                  | 242.17                    | 240.70            | 1.47    | 164.469           |                    |                   |
| 300.00                                        | 300.00                | 275.30                | 275.30                | 1.27             | 1.28          | 75.17                 | 61.92                  | 233.88                  | 241.94                    | 239.39            | 2.55    | 94.861            |                    |                   |
| 400.00                                        | 400.00                | 375.47                | 375.47                | 1.81             | 1.81          | 75.27                 | 61.41                  | 233.60                  | 241.54                    | 237.92            | 3.62    | 66.640            |                    |                   |
| 434.03                                        | 434.03                | 408.53                | 408.53                | 1.99             | 1.99          | 75.28                 | 61.35                  | 233.52                  | 241.44                    | 237.46            | 3.98    | 60.651 CC         |                    |                   |
| 450.00                                        | 450.00                | 423.60                | 423.60                | 2.08             | 2.06          | 75.27                 | 61.39                  | 233.54                  | 241.47                    | 237.33            | 4.14    | 58.269 ES         |                    |                   |
| 500.00                                        | 500.00                | 470.77                | 470.76                | 2.34             | 2.31          | -179.23               | 61.81                  | 233.89                  | 242.39                    | 237.74            | 4.65    | 52.149            |                    |                   |
| 600.00                                        | 599.93                | 568.33                | 568.29                | 2.86             | 2.80          | -179.53               | 63.56                  | 235.64                  | 248.07                    | 242.41            | 5.66    | 43.831            |                    |                   |
| 700.00                                        | 699.68                | 669.09                | 669.02                | 3.38             | 3.32          | -179.77               | 65.16                  | 237.63                  | 257.36                    | 250.65            | 6.70    | 38.388            |                    |                   |
| 800.00                                        | 799.13                | 760.23                | 760.10                | 3.93             | 3.79          | -179.94               | 66.69                  | 240.32                  | 271.09                    | 263.37            | 7.72    | 35.129            |                    |                   |
| 900.00                                        | 898.15                | 842.71                | 842.34                | 4.49             | 4.24          | 179.94                | 68.91                  | 246.15                  | 292.46                    | 283.77            | 8.69    | 33.672            |                    |                   |
| 1,000.00                                      | 996.63                | 938.81                | 937.84                | 5.08             | 4.75          | 179.86                | 72.20                  | 256.28                  | 320.62                    | 310.89            | 9.73    | 32.952            |                    |                   |
| 1,038.40                                      | 1,034.27              | 976.24                | 975.07                | 5.32             | 4.96          | 179.88                | 73.16                  | 259.96                  | 331.99                    | 321.84            | 10.14   | 32.727            |                    |                   |
| 1,100.00                                      | 1,094.58              | 1,034.54              | 1,033.07              | 5.70             | 5.28          | 179.94                | 74.45                  | 265.78                  | 350.64                    | 339.87            | 10.78   | 32.536            |                    |                   |
| 1,200.00                                      | 1,192.48              | 1,137.88              | 1,135.96              | 6.34             | 5.85          | -179.94               | 76.34                  | 275.29                  | 380.12                    | 368.25            | 11.87   | 32.033            |                    |                   |
| 1,300.00                                      | 1,290.37              | 1,242.43              | 1,240.24              | 6.98             | 6.42          | -179.92               | 78.19                  | 282.48                  | 407.41                    | 394.44            | 12.97   | 31.405            |                    |                   |
| 1,400.00                                      | 1,388.27              | 1,336.50              | 1,334.11              | 7.64             | 6.93          | -179.93               | 79.84                  | 288.25                  | 434.01                    | 420.00            | 14.01   | 30.973            |                    |                   |
| 1,500.00                                      | 1,486.17              | 1,431.54              | 1,428.93              | 8.30             | 7.45          | -179.92               | 81.42                  | 294.55                  | 461.04                    | 445.98            | 15.06   | 30.609            |                    |                   |
| 1,600.00                                      | 1,584.07              | 1,544.23              | 1,541.47              | 8.96             | 8.07          | 179.99                | 83.62                  | 299.75                  | 486.24                    | 470.00            | 16.24   | 29.939            |                    |                   |
| 1,700.00                                      | 1,681.97              | 1,643.73              | 1,640.90              | 9.63             | 8.60          | 179.75                | 86.48                  | 302.14                  | 509.65                    | 492.33            | 17.32   | 29.417            |                    |                   |
| 1,800.00                                      | 1,779.86              | 1,735.04              | 1,732.13              | 10.30            | 9.09          | 179.53                | 89.34                  | 304.65                  | 533.48                    | 515.12            | 18.35   | 29.068            |                    |                   |
| 1,900.00                                      | 1,877.76              | 1,822.86              | 1,819.83              | 10.98            | 9.56          | 179.40                | 91.90                  | 308.55                  | 558.80                    | 539.45            | 19.35   | 28.872            |                    |                   |
| 2,000.00                                      | 1,975.66              | 1,915.58              | 1,912.37              | 11.66            | 10.07         | 179.37                | 93.94                  | 313.91                  | 585.19                    | 564.80            | 20.39   | 28.694            |                    |                   |
| 2,100.00                                      | 2,073.56              | 2,010.81              | 2,007.39              | 12.33            | 10.59         | 179.38                | 95.80                  | 319.85                  | 611.94                    | 590.49            | 21.46   | 28.520            |                    |                   |
| 2,200.00                                      | 2,171.46              | 2,105.59              | 2,101.95              | 13.01            | 11.12         | 179.40                | 97.61                  | 326.07                  | 638.97                    | 616.46            | 22.52   | 28.379            |                    |                   |
| 2,300.00                                      | 2,269.36              | 2,205.66              | 2,201.81              | 13.69            | 11.67         | 179.43                | 99.25                  | 332.44                  | 665.75                    | 642.13            | 23.62   | 28.184            |                    |                   |
| 2,400.00                                      | 2,367.25              | 2,303.89              | 2,299.84              | 14.38            | 12.21         | 179.48                | 100.60                 | 338.38                  | 692.17                    | 667.46            | 24.71   | 28.009            |                    |                   |
| 2,500.00                                      | 2,465.15              | 2,400.64              | 2,396.43              | 15.06            | 12.74         | 179.52                | 101.88                 | 343.98                  | 718.33                    | 692.54            | 25.79   | 27.851            |                    |                   |
| 2,600.00                                      | 2,563.05              | 2,491.78              | 2,487.38              | 15.74            | 13.24         | 179.51                | 103.82                 | 349.49                  | 744.95                    | 718.13            | 26.82   | 27.775            |                    |                   |
| 2,700.00                                      | 2,660.95              | 2,585.07              | 2,580.44              | 16.43            | 13.75         | 179.51                | 105.77                 | 355.70                  | 772.12                    | 744.25            | 27.87   | 27.704            |                    |                   |
| 2,800.00                                      | 2,758.85              | 2,681.85              | 2,676.98              | 17.11            | 14.29         | 179.49                | 108.07                 | 362.20                  | 799.42                    | 770.47            | 28.95   | 27.612            |                    |                   |
| 2,900.00                                      | 2,856.74              | 2,780.56              | 2,775.45              | 17.80            | 14.83         | 179.48                | 110.21                 | 368.70                  | 826.56                    | 796.50            | 30.05   | 27.505            |                    |                   |
| 3,000.00                                      | 2,954.64              | 2,880.63              | 2,875.30              | 18.48            | 15.39         | 179.58                | 110.81                 | 375.29                  | 853.26                    | 822.10            | 31.16   | 27.380            |                    |                   |
| 3,100.00                                      | 3,052.54              | 2,975.57              | 2,970.03              | 19.17            | 15.91         | 179.72                | 110.60                 | 381.54                  | 879.76                    | 847.53            | 32.23   | 27.297            |                    |                   |
| 3,200.00                                      | 3,150.44              | 3,068.92              | 3,063.17              | 19.86            | 16.42         | 179.75                | 111.98                 | 387.74                  | 906.75                    | 873.47            | 33.28   | 27.246            |                    |                   |
| 3,300.00                                      | 3,248.34              | 3,169.99              | 3,164.02              | 20.54            | 16.98         | 179.72                | 114.40                 | 393.92                  | 933.50                    | 899.10            | 34.40   | 27.134            |                    |                   |
| 3,400.00                                      | 3,346.23              | 3,247.59              | 3,241.40              | 21.23            | 17.41         | 179.68                | 116.64                 | 399.16                  | 960.97                    | 925.67            | 35.30   | 27.220            |                    |                   |
| 3,500.00                                      | 3,444.13              | 3,325.22              | 3,318.69              | 21.92            | 17.85         | 179.62                | 119.66                 | 405.74                  | 990.30                    | 954.11            | 36.19   | 27.361            |                    |                   |
| 3,600.00                                      | 3,542.03              | 3,409.82              | 3,402.80              | 22.61            | 18.33         | 179.55                | 123.34                 | 414.03                  | 1,020.97                  | 983.82            | 37.15   | 27.481            |                    |                   |
| 3,700.00                                      | 3,639.93              | 3,473.93              | 3,466.39              | 23.30            | 18.70         | 179.47                | 126.90                 | 421.38                  | 1,053.52                  | 1,015.64          | 37.87   | 27.816            |                    |                   |
| 3,800.00                                      | 3,737.83              | 3,546.75              | 3,538.30              | 23.99            | 19.12         | 179.33                | 132.53                 | 431.38                  | 1,088.63                  | 1,049.95          | 38.68   | 28.143            |                    |                   |
| 3,900.00                                      | 3,835.73              | 3,623.69              | 3,614.13              | 24.67            | 19.58         | 179.18                | 138.93                 | 442.70                  | 1,124.91                  | 1,085.37          | 39.53   | 28.454            |                    |                   |
| 4,000.00                                      | 3,933.62              | 3,686.74              | 3,676.02              | 25.36            | 19.96         | 179.05                | 144.68                 | 453.28                  | 1,163.24                  | 1,123.04          | 40.20   | 28.936            |                    |                   |
| 4,100.00                                      | 4,031.52              | 3,778.73              | 3,766.05              | 26.05            | 20.52         | 178.87                | 153.52                 | 469.97                  | 1,202.93                  | 1,161.68          | 41.25   | 29.164            |                    |                   |
| 4,200.00                                      | 4,129.42              | 3,869.77              | 3,855.20              | 26.74            | 21.09         | 178.71                | 162.16                 | 486.32                  | 1,242.45                  | 1,200.16          | 42.28   | 29.383            |                    |                   |
| 4,300.00                                      | 4,227.32              | 3,974.19              | 3,957.50              | 27.43            | 21.73         | 178.53                | 172.05                 | 504.72                  | 1,281.66                  | 1,238.16          | 43.50   | 29.465            |                    |                   |
| 4,400.00                                      | 4,325.22              | 4,082.51              | 4,063.87              | 28.12            | 22.40         | 178.36                | 181.95                 | 522.59                  | 1,319.78                  | 1,275.02          | 44.75   | 29.490            |                    |                   |
| 4,500.00                                      | 4,423.11              | 4,185.73              | 4,165.42              | 28.81            | 23.03         | 178.21                | 191.12                 | 538.66                  | 1,356.99                  | 1,311.05          | 45.94   | 29.537            |                    |                   |
| 4,600.00                                      | 4,521.01              | 4,290.10              | 4,268.25              | 29.50            | 23.67         | 178.06                | 200.17                 | 554.09                  | 1,393.45                  | 1,346.31          | 47.14   | 29.559            |                    |                   |
| 4,702.88                                      | 4,621.73              | 4,365.44              | 4,342.40              | 30.21            | 24.14         | 177.96                | 206.75                 | 565.74                  | 1,431.53                  | 1,383.54          | 47.99   | 29.830            |                    |                   |

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



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Reference Site:** Cypress 34  
**Site Error:** 0.00 usft  
**Reference Well:** 233H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** WellPlanner1  
**Offset TVD Reference:** Offset Datum

| Offset Design Cypress 34 - 015H (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   |  | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--|--------------------|-----------|
| Survey Program: 76-MWD+HDGM                   |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   |  | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   |  |                    | Warning   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |  |                    |           |
| 4,800.00                                      | 4,717.13              | 4,442.56              | 4,418.18              | 30.86            | 24.61         | 177.89                | 213.58                              | 578.28       | 1,466.76               | 1,417.91                | 48.85                     | 30.025            |  |                    |           |
| 4,900.00                                      | 4,815.94              | 4,550.99              | 4,524.72              | 31.48            | 25.29         | 177.80                | 223.06                              | 596.06       | 1,499.92               | 1,449.83                | 50.08                     | 29.949            |  |                    |           |
| 5,000.00                                      | 4,915.22              | 4,665.82              | 4,637.80              | 32.07            | 26.00         | 177.69                | 232.58                              | 613.61       | 1,528.60               | 1,477.22                | 51.37                     | 29.754            |  |                    |           |
| 5,100.00                                      | 5,014.86              | 4,751.72              | 4,722.43              | 32.61            | 26.53         | 177.67                | 238.38                              | 627.13       | 1,553.84               | 1,501.54                | 52.30                     | 29.708            |  |                    |           |
| 5,200.00                                      | 5,114.74              | 4,843.22              | 4,812.54              | 33.11            | 27.10         | 177.71                | 242.93                              | 642.36       | 1,576.04               | 1,522.75                | 53.29                     | 29.577            |  |                    |           |
| 5,291.28                                      | 5,206.00              | 4,908.42              | 4,876.62              | 33.52            | 27.52         | 72.17                 | 246.30                              | 653.88       | 1,594.24               | 1,540.30                | 53.93                     | 29.559            |  |                    |           |
| 5,300.00                                      | 5,214.72              | 4,914.84              | 4,882.93              | 33.55            | 27.56         | 72.17                 | 246.68                              | 655.05       | 1,595.91               | 1,541.91                | 53.99                     | 29.557            |  |                    |           |
| 5,400.00                                      | 5,314.72              | 4,988.25              | 4,954.86              | 33.98            | 28.03         | 72.15                 | 251.64                              | 668.83       | 1,615.85               | 1,561.15                | 54.70                     | 29.538            |  |                    |           |
| 5,500.00                                      | 5,414.72              | 5,078.30              | 5,042.85              | 34.41            | 28.61         | 72.09                 | 258.94                              | 686.52       | 1,637.02               | 1,581.39                | 55.63                     | 29.427            |  |                    |           |
| 5,600.00                                      | 5,514.72              | 5,183.95              | 5,146.15              | 34.84            | 29.30         | 72.03                 | 267.53                              | 706.98       | 1,657.95               | 1,601.18                | 56.76                     | 29.209            |  |                    |           |
| 5,700.00                                      | 5,614.72              | 5,316.32              | 5,275.86              | 35.27            | 30.15         | 71.95                 | 277.70                              | 731.29       | 1,677.84               | 1,619.62                | 58.22                     | 28.818            |  |                    |           |
| 5,800.00                                      | 5,714.72              | 5,445.18              | 5,402.70              | 35.70            | 30.97         | 71.89                 | 286.32                              | 752.32       | 1,695.38               | 1,635.76                | 59.62                     | 28.436            |  |                    |           |
| 5,900.00                                      | 5,814.72              | 5,553.79              | 5,509.77              | 36.14            | 31.65         | 71.81                 | 294.33                              | 768.68       | 1,712.00               | 1,651.22                | 60.77                     | 28.171            |  |                    |           |
| 6,000.00                                      | 5,914.72              | 5,683.01              | 5,636.92              | 36.59            | 33.50         | 71.37                 | 316.50                              | 794.21       | 1,721.06               | 1,657.15                | 63.91                     | 26.929            |  |                    |           |
| 6,100.00                                      | 6,014.72              | 6,035.42              | 5,989.25              | 37.03            | 34.26         | 71.22                 | 321.31                              | 794.50       | 1,722.08               | 1,656.83                | 65.24                     | 26.395            |  |                    |           |
| 6,200.00                                      | 6,114.72              | 6,160.50              | 6,114.31              | 37.48            | 34.85         | 71.17                 | 322.67                              | 793.07       | 1,721.35               | 1,654.98                | 66.37                     | 25.936            |  |                    |           |
| 6,300.00                                      | 6,214.72              | 6,259.27              | 6,213.07              | 37.92            | 35.30         | 71.15                 | 322.77                              | 791.67       | 1,720.03               | 1,652.70                | 67.33                     | 25.546            |  |                    |           |
| 6,400.00                                      | 6,314.72              | 6,360.82              | 6,314.61              | 38.38            | 35.76         | 71.15                 | 322.35                              | 790.26       | 1,718.59               | 1,650.28                | 68.31                     | 25.158            |  |                    |           |
| 6,500.00                                      | 6,414.72              | 6,461.45              | 6,415.23              | 38.83            | 36.22         | 71.16                 | 321.53                              | 788.95       | 1,717.10               | 1,647.80                | 69.29                     | 24.781            |  |                    |           |
| 6,600.00                                      | 6,514.72              | 6,560.00              | 6,513.76              | 39.28            | 36.68         | 71.18                 | 320.42                              | 787.77       | 1,715.59               | 1,645.33                | 70.26                     | 24.417            |  |                    |           |
| 6,700.00                                      | 6,614.72              | 6,656.26              | 6,610.01              | 39.74            | 37.12         | 71.21                 | 319.20                              | 786.84       | 1,714.27               | 1,643.05                | 71.22                     | 24.069            |  |                    |           |
| 6,800.00                                      | 6,714.72              | 6,753.38              | 6,707.13              | 40.20            | 37.57         | 71.24                 | 317.88                              | 786.14       | 1,713.15               | 1,640.96                | 72.20                     | 23.729            |  |                    |           |
| 6,900.00                                      | 6,814.72              | 6,851.22              | 6,804.95              | 40.66            | 38.03         | 71.28                 | 316.48                              | 785.60       | 1,712.17               | 1,639.00                | 73.17                     | 23.398            |  |                    |           |
| 7,000.00                                      | 6,914.72              | 6,948.47              | 6,902.19              | 41.13            | 38.49         | 71.32                 | 315.05                              | 785.22       | 1,711.33               | 1,637.17                | 74.16                     | 23.078            |  |                    |           |
| 7,100.00                                      | 7,014.72              | 7,045.36              | 6,999.07              | 41.59            | 38.95         | 71.37                 | 313.58                              | 785.03       | 1,710.66               | 1,635.52                | 75.14                     | 22.767            |  |                    |           |
| 7,200.00                                      | 7,114.72              | 7,138.52              | 7,092.21              | 42.06            | 39.40         | 71.41                 | 312.09                              | 785.13       | 1,710.25               | 1,634.14                | 76.10                     | 22.472            |  |                    |           |
| 7,235.14                                      | 7,149.87              | 7,170.67              | 7,124.37              | 42.22            | 39.56         | 71.43                 | 311.52                              | 785.29       | 1,710.22               | 1,633.78                | 76.44                     | 22.373            |  |                    |           |
| 7,300.00                                      | 7,214.72              | 7,230.01              | 7,183.69              | 42.53            | 39.84         | 71.48                 | 310.37                              | 785.78       | 1,710.32               | 1,633.26                | 77.07                     | 22.193            |  |                    |           |
| 7,400.00                                      | 7,314.72              | 7,334.64              | 7,288.30              | 43.00            | 40.35         | 71.55                 | 308.41                              | 786.79       | 1,710.65               | 1,632.55                | 78.10                     | 21.903            |  |                    |           |
| 7,500.00                                      | 7,414.72              | 7,446.73              | 7,400.37              | 43.47            | 40.90         | 71.58                 | 307.40                              | 786.77       | 1,710.35               | 1,631.17                | 79.18                     | 21.601            |  |                    |           |
| 7,600.00                                      | 7,514.72              | 7,544.33              | 7,497.98              | 43.94            | 41.37         | 71.59                 | 306.94                              | 786.30       | 1,709.75               | 1,629.57                | 80.17                     | 21.326            |  |                    |           |
| 7,700.00                                      | 7,614.72              | 7,641.08              | 7,594.72              | 44.42            | 41.83         | 71.61                 | 306.15                              | 786.14       | 1,709.33               | 1,628.17                | 81.16                     | 21.061            |  |                    |           |
| 7,800.00                                      | 7,714.72              | 7,747.41              | 7,701.05              | 44.89            | 42.35         | 71.64                 | 305.35                              | 785.83       | 1,708.82               | 1,626.62                | 82.21                     | 20.787            |  |                    |           |
| 7,900.00                                      | 7,814.72              | 7,854.51              | 7,808.14              | 45.37            | 42.87         | 71.64                 | 305.05                              | 784.94       | 1,707.94               | 1,624.69                | 83.25                     | 20.515            |  |                    |           |
| 8,000.00                                      | 7,914.72              | 7,964.10              | 7,917.73              | 45.85            | 43.39         | 71.64                 | 304.51                              | 783.51       | 1,706.55               | 1,622.24                | 84.31                     | 20.242            |  |                    |           |
| 8,100.00                                      | 8,014.72              | 8,056.70              | 8,010.31              | 46.33            | 43.84         | 71.65                 | 303.68                              | 782.11       | 1,704.85               | 1,619.57                | 85.28                     | 19.991            |  |                    |           |
| 8,186.30                                      | 8,101.02              | 8,121.91              | 8,075.52              | 46.74            | 44.17         | 71.67                 | 303.06                              | 781.89       | 1,704.31               | 1,618.27                | 86.04                     | 19.808            |  |                    |           |
| 8,200.00                                      | 8,114.72              | 8,132.27              | 8,085.87              | 46.81            | 44.22         | 71.67                 | 302.96                              | 781.93       | 1,704.33               | 1,618.16                | 86.16                     | 19.780            |  |                    |           |
| 8,300.00                                      | 8,214.72              | 8,209.00              | 8,162.60              | 47.29            | 44.60         | 71.70                 | 302.27                              | 782.91       | 1,705.24               | 1,618.20                | 87.04                     | 19.591            |  |                    |           |
| 8,400.00                                      | 8,314.72              | 8,299.55              | 8,253.13              | 47.78            | 45.07         | 71.74                 | 301.72                              | 784.89       | 1,707.12               | 1,619.10                | 88.02                     | 19.395            |  |                    |           |
| 8,500.00                                      | 8,414.72              | 8,391.53              | 8,345.07              | 48.26            | 45.55         | 71.77                 | 301.66                              | 787.18       | 1,709.47               | 1,620.47                | 89.00                     | 19.207            |  |                    |           |
| 8,600.00                                      | 8,514.72              | 8,570.63              | 8,524.15              | 48.75            | 46.45         | 71.77                 | 301.94                              | 787.82       | 1,709.95               | 1,619.44                | 90.51                     | 18.893            |  |                    |           |
| 8,700.00                                      | 8,614.72              | 8,659.86              | 8,613.36              | 49.23            | 46.90         | 71.73                 | 302.34                              | 785.76       | 1,707.94               | 1,616.47                | 91.47                     | 18.672            |  |                    |           |
| 8,800.00                                      | 8,714.72              | 8,738.47              | 8,691.94              | 49.72            | 47.29         | 71.68                 | 303.63                              | 784.69       | 1,707.15               | 1,614.78                | 92.37                     | 18.481            |  |                    |           |
| 8,812.70                                      | 8,727.43              | 8,748.45              | 8,701.93              | 49.78            | 47.33         | 71.67                 | 303.85                              | 784.60       | 1,707.14               | 1,614.65                | 92.49                     | 18.458            |  |                    |           |
| 8,900.00                                      | 8,814.72              | 8,823.66              | 8,777.11              | 50.21            | 47.71         | 71.61                 | 305.72                              | 784.35       | 1,707.53               | 1,614.21                | 93.31                     | 18.299            |  |                    |           |
| 9,000.00                                      | 8,914.72              | 8,916.29              | 8,869.73              | 50.70            | 48.19         | 71.58                 | 306.78                              | 784.90       | 1,708.45               | 1,614.15                | 94.31                     | 18.116            |  |                    |           |
| 9,100.00                                      | 9,014.72              | 9,019.83              | 8,973.26              | 51.19            | 48.72         | 71.61                 | 306.30                              | 786.38       | 1,709.67               | 1,614.31                | 95.36                     | 17.928            |  |                    |           |
| 9,200.00                                      | 9,114.72              | 9,137.80              | 9,091.22              | 51.68            | 49.31         | 71.65                 | 305.38                              | 787.19       | 1,710.08               | 1,613.57                | 96.51                     | 17.719            |  |                    |           |
| 9,300.00                                      | 9,214.72              | 9,267.17              | 9,220.57              | 52.18            | 49.95         | 71.71                 | 303.40                              | 786.58       | 1,709.16               | 1,611.47                | 97.70                     | 17.495            |  |                    |           |

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



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 015H (O) - OH - OH |                             |                             |                             |                     |                  |                            |                              |                               |                                 |                      |         |                      | Offset Site Error:   | 0.00 usft            |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|----------------------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|----------------------|----------------------|----------------------|
| Survey Program: 76-MWD+HDGM                   |                             |                             |                             |                     |                  |                            |                              |                               |                                 |                      |         |                      | Offset Well Error:   | 0.00 usft            |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Tooface<br>(°) | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                      |                      |                      |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                            | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |         | Offset TVD<br>(usft) | Offset TVD<br>(usft) | Offset TVD<br>(usft) |
| 9,400.00                                      | 9,314.72                    | 9,377.26                    | 9,330.59                    | 52.67               | 50.49            | 71.80                      | 299.93                       | 784.86                        | 1,706.66                        | 1,607.89             | 98.77   | 17.279               |                      |                      |
| 9,500.00                                      | 9,414.72                    | 9,457.26                    | 9,410.57                    | 53.17               | 50.88            | 71.84                      | 298.22                       | 783.93                        | 1,704.87                        | 1,605.18             | 99.69   | 17.102               |                      |                      |
| 9,600.00                                      | 9,514.72                    | 9,559.54                    | 9,512.84                    | 53.66               | 51.39            | 71.86                      | 297.19                       | 782.56                        | 1,703.28                        | 1,602.55             | 100.72  | 16.910               |                      |                      |
| 9,670.83                                      | 9,585.55                    | 9,606.76                    | 9,560.05                    | 54.01               | 51.63            | 71.85                      | 297.32                       | 782.17                        | 1,702.79                        | 1,601.47             | 101.32  | 16.806               |                      |                      |
| 9,700.00                                      | 9,614.72                    | 9,635.00                    | 9,588.29                    | 54.16               | 51.77            | 71.84                      | 297.68                       | 782.18                        | 1,702.91                        | 1,601.29             | 101.62  | 16.758               |                      |                      |
| 9,800.00                                      | 9,714.72                    | 9,728.91                    | 9,682.18                    | 54.65               | 52.25            | 71.79                      | 299.48                       | 782.20                        | 1,703.50                        | 1,600.89             | 102.62  | 16.600               |                      |                      |
| 9,900.00                                      | 9,814.72                    | 9,866.85                    | 9,819.62                    | 55.15               | 52.94            | 71.44                      | 308.83                       | 777.96                        | 1,702.69                        | 1,598.82             | 103.87  | 16.393               |                      |                      |
| 10,000.00                                     | 9,914.72                    | 9,985.25                    | 9,933.29                    | 55.65               | 53.51            | 70.35                      | 338.86                       | 765.87                        | 1,701.39                        | 1,596.40             | 104.99  | 16.205               |                      |                      |
| 10,097.44                                     | 10,012.16                   | 10,043.50                   | 9,986.66                    | 56.14               | 53.77            | 69.57                      | 360.41                       | 757.02                        | 1,699.89                        | 1,594.10             | 105.78  | 16.069               |                      |                      |
| 10,100.00                                     | 10,014.72                   | 10,044.65                   | 9,987.70                    | 56.15               | 53.78            | 69.55                      | 360.87                       | 756.85                        | 1,699.89                        | 1,594.09             | 105.80  | 16.067               |                      |                      |
| 10,200.00                                     | 10,114.72                   | 10,091.88                   | 10,029.86                   | 56.65               | 53.99            | 68.84                      | 381.03                       | 750.05                        | 1,701.73                        | 1,595.25             | 106.48  | 15.982               |                      |                      |
| 10,300.00                                     | 10,214.72                   | 10,175.14                   | 10,099.13                   | 57.15               | 54.34            | 67.29                      | 424.70                       | 735.59                        | 1,705.98                        | 1,598.63             | 107.35  | 15.892               |                      |                      |
| 10,400.00                                     | 10,314.72                   | 10,225.18                   | 10,136.32                   | 57.65               | 54.52            | 66.17                      | 456.33                       | 724.73                        | 1,712.95                        | 1,605.05             | 107.89  | 15.876               |                      |                      |
| 10,500.00                                     | 10,414.72                   | 10,258.28                   | 10,158.51                   | 58.15               | 54.63            | 65.35                      | 479.60                       | 716.94                        | 1,724.07                        | 1,615.91             | 108.16  | 15.940               |                      |                      |
| 10,562.32                                     | 10,477.04                   | 10,268.00                   | 10,164.62                   | 58.47               | 54.67            | 65.10                      | 486.79                       | 714.58                        | 1,733.35                        | 1,625.21             | 108.14  | 16.029               |                      |                      |
| 10,600.00                                     | 10,514.70                   | 10,283.23                   | 10,173.84                   | 58.65               | 54.72            | 64.76                      | 498.33                       | 710.89                        | 1,739.29                        | 1,631.10             | 108.19  | 16.076               |                      |                      |
| 10,650.00                                     | 10,564.38                   | 10,300.00                   | 10,183.59                   | 58.90               | 54.77            | 63.68                      | 511.37                       | 706.87                        | 1,746.67                        | 1,638.48             | 108.18  | 16.146               |                      |                      |
| 10,700.00                                     | 10,613.40                   | 10,300.00                   | 10,183.59                   | 59.13               | 54.77            | 63.08                      | 511.37                       | 706.87                        | 1,753.31                        | 1,645.36             | 107.95  | 16.242               |                      |                      |
| 10,750.00                                     | 10,661.38                   | 10,313.98                   | 10,191.37                   | 59.35               | 54.82            | 62.25                      | 522.53                       | 703.65                        | 1,759.15                        | 1,651.33             | 107.82  | 16.315               |                      |                      |
| 10,800.00                                     | 10,707.96                   | 10,331.00                   | 10,200.37                   | 59.56               | 54.88            | 61.48                      | 536.50                       | 699.99                        | 1,764.29                        | 1,656.59             | 107.70  | 16.381               |                      |                      |
| 10,850.00                                     | 10,752.79                   | 10,331.00                   | 10,200.37                   | 59.75               | 54.88            | 61.11                      | 536.50                       | 699.99                        | 1,768.41                        | 1,661.06             | 107.35  | 16.474               |                      |                      |
| 10,900.00                                     | 10,795.51                   | 10,331.00                   | 10,200.37                   | 59.92               | 54.88            | 60.81                      | 536.50                       | 699.99                        | 1,771.83                        | 1,664.87             | 106.96  | 16.566               |                      |                      |
| 10,950.00                                     | 10,835.81                   | 10,350.01                   | 10,209.85                   | 60.06               | 54.94            | 60.34                      | 552.57                       | 696.32                        | 1,774.02                        | 1,667.22             | 106.79  | 16.612               |                      |                      |
| 11,000.00                                     | 10,873.38                   | 10,362.00                   | 10,215.52                   | 60.19               | 54.99            | 60.08                      | 562.93                       | 694.27                        | 1,775.38                        | 1,668.84             | 106.54  | 16.664               |                      |                      |
| 11,050.00                                     | 10,907.93                   | 10,362.00                   | 10,215.52                   | 60.30               | 54.99            | 60.04                      | 562.93                       | 694.27                        | 1,775.77                        | 1,669.64             | 106.12  | 16.733               |                      |                      |
| 11,100.00                                     | 10,939.21                   | 10,379.07                   | 10,223.31                   | 60.39               | 55.06            | 59.97                      | 577.92                       | 691.77                        | 1,774.99                        | 1,669.04             | 105.95  | 16.752               |                      |                      |
| 11,150.00                                     | 10,966.96                   | 10,394.00                   | 10,229.91                   | 60.46               | 55.12            | 60.05                      | 591.18                       | 690.03                        | 1,773.25                        | 1,667.47             | 105.78  | 16.763               |                      |                      |
| 11,200.00                                     | 10,990.99                   | 10,394.00                   | 10,229.91                   | 60.51               | 55.12            | 60.29                      | 591.18                       | 690.03                        | 1,770.44                        | 1,665.00             | 105.44  | 16.791               |                      |                      |
| 11,250.00                                     | 11,011.11                   | 10,409.47                   | 10,236.47                   | 60.55               | 55.19            | 60.61                      | 605.12                       | 688.63                        | 1,766.55                        | 1,661.19             | 105.36  | 16.767               |                      |                      |
| 11,300.00                                     | 11,027.16                   | 10,426.00                   | 10,243.06                   | 60.59               | 55.27            | 61.07                      | 620.25                       | 687.53                        | 1,761.74                        | 1,656.39             | 105.35  | 16.723               |                      |                      |
| 11,350.00                                     | 11,039.02                   | 10,426.00                   | 10,243.06                   | 60.62               | 55.27            | 61.59                      | 620.25                       | 687.53                        | 1,755.86                        | 1,650.69             | 105.16  | 16.696               |                      |                      |
| 11,400.00                                     | 11,046.61                   | 10,426.00                   | 10,243.06                   | 60.65               | 55.27            | 62.17                      | 620.25                       | 687.53                        | 1,749.31                        | 1,644.26             | 105.05  | 16.652               |                      |                      |
| 11,450.00                                     | 11,049.87                   | 10,457.42                   | 10,254.14                   | 60.70               | 55.43            | 63.11                      | 649.60                       | 686.10                        | 1,741.14                        | 1,635.70             | 105.44  | 16.512               |                      |                      |
| 11,463.46                                     | 11,050.00                   | 10,461.00                   | 10,255.28                   | 60.71               | 55.45            | 63.34                      | 653.00                       | 685.97                        | 1,738.87                        | 1,633.38             | 105.50  | 16.483               |                      |                      |
| 11,500.00                                     | 11,049.92                   | 10,489.00                   | 10,263.25                   | 60.76               | 55.60            | 63.58                      | 679.82                       | 685.16                        | 1,733.24                        | 1,627.37             | 105.87  | 16.372               |                      |                      |
| 11,600.00                                     | 11,049.72                   | 10,489.00                   | 10,263.25                   | 60.97               | 55.60            | 63.58                      | 679.82                       | 685.16                        | 1,719.48                        | 1,613.48             | 106.01  | 16.221               |                      |                      |
| 11,700.00                                     | 11,049.53                   | 10,521.00                   | 10,270.32                   | 61.29               | 55.78            | 63.80                      | 711.02                       | 685.23                        | 1,710.54                        | 1,603.94             | 106.60  | 16.046               |                      |                      |
| 11,800.00                                     | 11,049.33                   | 10,553.00                   | 10,275.83                   | 61.73               | 55.97            | 63.99                      | 742.52                       | 686.46                        | 1,706.10                        | 1,598.84             | 107.26  | 15.906               |                      |                      |
| 11,871.86                                     | 11,049.18                   | 10,574.81                   | 10,279.13                   | 62.11               | 56.11            | 64.11                      | 764.04                       | 687.67                        | 1,705.20                        | 1,597.42             | 107.77  | 15.822               |                      |                      |
| 11,900.00                                     | 11,049.13                   | 10,585.00                   | 10,280.57                   | 62.27               | 56.17            | 64.17                      | 774.11                       | 688.32                        | 1,705.33                        | 1,597.34             | 107.99  | 15.791               |                      |                      |
| 12,000.00                                     | 11,048.93                   | 10,616.00                   | 10,283.76                   | 62.89               | 56.36            | 64.30                      | 804.84                       | 690.72                        | 1,708.53                        | 1,599.76             | 108.76  | 15.708               |                      |                      |
| 12,100.00                                     | 11,048.73                   | 10,750.85                   | 10,294.29                   | 63.59               | 57.30            | 64.80                      | 938.89                       | 700.95                        | 1,712.99                        | 1,602.39             | 110.60  | 15.488               |                      |                      |
| 12,200.00                                     | 11,048.53                   | 10,847.86                   | 10,301.56                   | 64.37               | 58.04            | 65.12                      | 1,035.46                     | 706.62                        | 1,716.02                        | 1,603.83             | 112.19  | 15.296               |                      |                      |
| 12,300.00                                     | 11,048.33                   | 10,903.89                   | 10,305.04                   | 65.21               | 58.50            | 65.29                      | 1,091.26                     | 710.30                        | 1,720.42                        | 1,606.98             | 113.43  | 15.167               |                      |                      |
| 12,400.00                                     | 11,048.13                   | 10,963.00                   | 10,307.00                   | 66.11               | 59.00            | 65.43                      | 1,150.08                     | 715.72                        | 1,727.96                        | 1,613.21             | 114.75  | 15.059               |                      |                      |
| 12,500.00                                     | 11,047.93                   | 11,013.56                   | 10,307.61                   | 67.07               | 59.44            | 65.54                      | 1,200.32                     | 721.31                        | 1,738.02                        | 1,622.00             | 116.02  | 14.980               |                      |                      |
| 12,600.00                                     | 11,047.73                   | 11,085.37                   | 10,307.55                   | 68.09               | 60.10            | 65.67                      | 1,271.61                     | 729.98                        | 1,749.92                        | 1,632.35             | 117.58  | 14.883               |                      |                      |
| 12,700.00                                     | 11,047.53                   | 11,172.90                   | 10,305.50                   | 69.16               | 60.94            | 65.78                      | 1,358.41                     | 740.97                        | 1,763.18                        | 1,643.82             | 119.36  | 14.772               |                      |                      |
| 12,800.00                                     | 11,047.33                   | 11,297.13                   | 10,301.95                   | 70.28               | 62.22            | 65.88                      | 1,481.83                     | 754.73                        | 1,775.23                        | 1,653.54             | 121.68  | 14.589               |                      |                      |
| 12,900.00                                     | 11,047.13                   | 11,401.68                   | 10,297.70                   | 71.45               | 63.37            | 65.92                      | 1,585.73                     | 765.52                        | 1,787.19                        | 1,663.34             | 123.85  | 14.431               |                      |                      |
| 13,000.00                                     | 11,046.93                   | 11,597.65                   | 10,294.52                   | 72.67               | 65.65            | 66.08                      | 1,780.92                     | 782.28                        | 1,796.96                        | 1,669.58             | 127.39  | 14.106               |                      |                      |

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



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Reference Site:** Cypress 34  
**Site Error:** 0.00 usft  
**Reference Well:** 233H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** WellPlanner1  
**Offset TVD Reference:** Offset Datum

| Offset Design Cypress 34 - 015H (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 76-MWD+HDGM                   |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   |                    | Warning   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 13,100.00                                     | 11,046.74             | 11,841.74             | 10,299.43             | 73.92            | 68.70         | 66.32                 | 2,024.84                            | 785.85       | 1,797.16               | 1,665.39                | 131.77                    | 13.639            |                    |           |
| 13,200.00                                     | 11,046.54             | 11,920.07             | 10,299.78             | 75.22            | 69.73         | 66.32                 | 2,103.15                            | 784.25       | 1,796.00               | 1,662.03                | 133.97                    | 13.406            |                    |           |
| 13,237.57                                     | 11,046.46             | 11,947.96             | 10,299.49             | 75.72            | 70.11         | 66.31                 | 2,131.04                            | 783.77       | 1,795.90               | 1,661.11                | 134.79                    | 13.324            |                    |           |
| 13,300.00                                     | 11,046.34             | 11,994.30             | 10,298.57             | 76.56            | 70.73         | 66.29                 | 2,177.36                            | 783.14       | 1,796.18               | 1,660.03                | 136.14                    | 13.193            |                    |           |
| 13,400.00                                     | 11,046.14             | 12,152.86             | 10,298.24             | 77.94            | 72.95         | 66.27                 | 2,335.87                            | 779.95       | 1,795.22               | 1,655.66                | 139.56                    | 12.863            |                    |           |
| 13,500.00                                     | 11,045.94             | 12,247.40             | 10,299.02             | 79.34            | 74.30         | 66.27                 | 2,430.36                            | 776.83       | 1,792.77               | 1,650.58                | 142.19                    | 12.608            |                    |           |
| 13,600.00                                     | 11,045.74             | 12,330.60             | 10,298.29             | 80.79            | 75.53         | 66.23                 | 2,513.51                            | 774.28       | 1,791.20               | 1,646.51                | 144.69                    | 12.379            |                    |           |
| 13,700.00                                     | 11,045.54             | 12,429.12             | 10,295.48             | 82.26            | 77.01         | 66.13                 | 2,611.94                            | 771.18       | 1,790.36               | 1,642.94                | 147.42                    | 12.145            |                    |           |
| 13,800.00                                     | 11,045.34             | 12,529.27             | 10,292.07             | 83.77            | 78.55         | 66.00                 | 2,711.96                            | 767.30       | 1,789.08               | 1,638.88                | 150.20                    | 11.911            |                    |           |
| 13,900.00                                     | 11,045.14             | 12,685.75             | 10,291.10             | 85.30            | 81.01         | 65.93                 | 2,868.26                            | 761.70       | 1,787.22               | 1,633.30                | 153.92                    | 11.611            |                    |           |
| 14,000.00                                     | 11,044.94             | 12,788.34             | 10,295.54             | 86.86            | 82.66         | 66.02                 | 2,970.68                            | 757.66       | 1,782.74               | 1,625.69                | 157.04                    | 11.352            |                    |           |
| 14,100.00                                     | 11,044.74             | 12,869.45             | 10,297.96             | 88.44            | 83.99         | 66.07                 | 3,051.69                            | 754.60       | 1,778.96               | 1,619.10                | 159.86                    | 11.128            |                    |           |
| 14,200.00                                     | 11,044.54             | 12,959.88             | 10,300.05             | 90.05            | 85.48         | 66.11                 | 3,142.05                            | 751.65       | 1,775.93               | 1,613.09                | 162.84                    | 10.906            |                    |           |
| 14,300.00                                     | 11,044.34             | 13,046.20             | 10,301.57             | 91.68            | 86.92         | 66.14                 | 3,228.33                            | 749.25       | 1,773.56               | 1,607.78                | 165.78                    | 10.698            |                    |           |
| 14,400.00                                     | 11,044.15             | 13,127.33             | 10,302.74             | 93.34            | 88.29         | 66.17                 | 3,309.43                            | 747.69       | 1,772.11               | 1,603.44                | 168.67                    | 10.506            |                    |           |
| 14,463.97                                     | 11,044.02             | 13,175.04             | 10,303.43             | 94.41            | 89.10         | 66.20                 | 3,357.14                            | 747.27       | 1,771.79               | 1,601.33                | 170.46                    | 10.394            |                    |           |
| 14,500.00                                     | 11,043.95             | 13,200.99             | 10,303.65             | 95.01            | 89.54         | 66.21                 | 3,383.08                            | 747.20       | 1,771.90               | 1,600.44                | 171.45                    | 10.335            |                    |           |
| 14,600.00                                     | 11,043.75             | 13,285.87             | 10,303.83             | 96.70            | 91.00         | 66.23                 | 3,467.96                            | 747.57       | 1,773.07               | 1,598.63                | 174.43                    | 10.165            |                    |           |
| 14,700.00                                     | 11,043.55             | 13,365.77             | 10,303.96             | 98.41            | 92.38         | 66.26                 | 3,547.86                            | 748.35       | 1,774.84               | 1,597.49                | 177.35                    | 10.008            |                    |           |
| 14,800.00                                     | 11,043.35             | 13,433.06             | 10,303.35             | 100.14           | 93.55         | 66.28                 | 3,615.12                            | 750.03       | 1,778.35               | 1,598.34                | 180.01                    | 9.879             |                    |           |
| 14,900.00                                     | 11,043.15             | 13,513.96             | 10,301.37             | 101.89           | 94.97         | 66.27                 | 3,695.95                            | 752.73       | 1,783.27               | 1,600.35                | 182.92                    | 9.749             |                    |           |
| 15,000.00                                     | 11,042.95             | 13,607.75             | 10,297.68             | 103.65           | 96.64         | 66.23                 | 3,789.61                            | 756.02       | 1,788.96               | 1,602.88                | 186.08                    | 9.614             |                    |           |
| 15,100.00                                     | 11,042.75             | 13,729.78             | 10,294.31             | 105.42           | 98.82         | 66.20                 | 3,911.51                            | 760.20       | 1,794.08               | 1,604.20                | 189.88                    | 9.448             |                    |           |
| 15,200.00                                     | 11,042.55             | 13,820.20             | 10,293.29             | 107.21           | 100.45        | 66.24                 | 4,001.86                            | 763.64       | 1,798.91               | 1,605.81                | 193.10                    | 9.316             |                    |           |
| 15,300.00                                     | 11,042.35             | 14,259.56             | 10,286.48             | 109.02           | 108.52        | 65.82                 | 4,439.14                            | 740.54       | 1,799.01               | 1,597.85                | 201.16                    | 8.943             |                    |           |
| 15,400.00                                     | 11,042.15             | 14,694.19             | 10,306.76             | 110.83           | 116.64        | 65.15                 | 4,860.60                            | 640.68       | 1,779.77               | 1,575.35                | 204.42                    | 8.707             |                    |           |
| 15,500.00                                     | 11,041.95             | 14,804.37             | 10,317.39             | 112.66           | 118.71        | 64.99                 | 4,964.32                            | 605.08       | 1,747.16               | 1,539.60                | 207.56                    | 8.418             |                    |           |
| 15,600.00                                     | 11,041.75             | 14,857.00             | 10,322.53             | 114.50           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,714.90               | 1,503.74                | 211.16                    | 8.121             |                    |           |
| 15,700.00                                     | 11,041.55             | 14,857.00             | 10,322.53             | 116.35           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,687.14               | 1,472.15                | 214.99                    | 7.848             |                    |           |
| 15,800.00                                     | 11,041.36             | 14,857.00             | 10,322.53             | 118.22           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,664.93               | 1,446.47                | 218.46                    | 7.621             |                    |           |
| 15,900.00                                     | 11,041.16             | 14,857.00             | 10,322.53             | 120.09           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,648.50               | 1,427.01                | 221.49                    | 7.443             |                    |           |
| 16,000.00                                     | 11,040.96             | 14,857.00             | 10,322.53             | 121.97           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,638.02               | 1,414.01                | 224.01                    | 7.312             |                    |           |
| 16,100.00                                     | 11,040.76             | 14,857.00             | 10,322.53             | 123.86           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,633.61               | 1,407.65                | 225.96                    | 7.230             |                    |           |
| 16,122.22                                     | 11,040.71             | 14,857.00             | 10,322.53             | 124.28           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,633.45               | 1,407.15                | 226.31                    | 7.218             |                    |           |
| 16,200.00                                     | 11,040.56             | 14,857.00             | 10,322.53             | 125.76           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,635.31               | 1,408.01                | 227.30                    | 7.194 SF          |                    |           |
| 16,300.00                                     | 11,040.36             | 14,857.00             | 10,322.53             | 127.67           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,643.10               | 1,415.08                | 228.02                    | 7.206             |                    |           |
| 16,400.00                                     | 11,040.16             | 14,857.00             | 10,322.53             | 129.59           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,656.91               | 1,428.77                | 228.13                    | 7.263             |                    |           |
| 16,479.98                                     | 11,040.00             | 14,857.00             | 10,322.53             | 131.12           | 119.71        | 64.91                 | 5,013.83                            | 587.98       | 1,672.17               | 1,444.37                | 227.80                    | 7.341             |                    |           |



# Pro Directional Anticollision Report



|                           |                          |                                     |                                                 |
|---------------------------|--------------------------|-------------------------------------|-------------------------------------------------|
| <b>Company:</b>           | Tap Rock Operating, LLC  | <b>Local Co-ordinate Reference:</b> | Well 233H                                       |
| <b>Project:</b>           | Eddy County, NM (NAD 83) | <b>TVD Reference:</b>               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Reference Site:</b>    | Cypress 34               | <b>MD Reference:</b>                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Site Error:</b>        | 0.00 usft                | <b>North Reference:</b>             | Grid                                            |
| <b>Reference Well:</b>    | 233H                     | <b>Survey Calculation Method:</b>   | Minimum Curvature                               |
| <b>Well Error:</b>        | 0.00 usft                | <b>Output errors are at</b>         | 3.00 sigma                                      |
| <b>Reference Wellbore</b> | OH                       | <b>Database:</b>                    | WellPlanner1                                    |
| <b>Reference Design:</b>  | Plan 1                   | <b>Offset TVD Reference:</b>        | Offset Datum                                    |

| Offset Design Cypress 34 - 243H - OH - Plan 1 |                       |                       |                       |                  |               |                       |                        |              |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 0-MWD+HDGM                    |                       |                       |                       |                  |               |                       |                        |              |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               | Highside Toolface (°) | Offset Wellbore Centre |              | Distance               |                         | Minimum Separation (usft) | Separation Factor | Warning            |           |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) |                       | +N/-S (usft)           | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) |                           |                   |                    |           |
| 0.00                                          | 0.00                  | 0.00                  | 0.00                  | 0.00             | 0.00          | -90.00                | 0.00                   | -25.00       | 25.00                  |                         |                           |                   |                    |           |
| 100.00                                        | 100.00                | 100.00                | 100.00                | 0.20             | 0.20          | -90.00                | 0.00                   | -25.00       | 25.00                  | 24.60                   | 0.40                      | 63.257            |                    |           |
| 200.00                                        | 200.00                | 200.00                | 200.00                | 0.74             | 0.74          | -90.00                | 0.00                   | -25.00       | 25.00                  | 23.53                   | 1.47                      | 17.000            |                    |           |
| 300.00                                        | 300.00                | 300.00                | 300.00                | 1.27             | 1.27          | -90.00                | 0.00                   | -25.00       | 25.00                  | 22.45                   | 2.55                      | 9.819             |                    |           |
| 400.00                                        | 400.00                | 400.00                | 400.00                | 1.81             | 1.81          | -90.00                | 0.00                   | -25.00       | 25.00                  | 21.38                   | 3.62                      | 6.903             |                    |           |
| 450.00                                        | 450.00                | 450.00                | 450.00                | 2.08             | 2.08          | -90.00                | 0.00                   | -25.00       | 25.00                  | 20.84                   | 4.16                      | 6.011 CC          |                    |           |
| 500.00                                        | 500.00                | 499.57                | 499.57                | 2.34             | 2.34          | 15.66                 | -0.08                  | -25.42       | 25.00                  | 20.33                   | 4.68                      | 5.344             |                    |           |
| 600.00                                        | 599.93                | 598.72                | 598.66                | 2.86             | 2.85          | 16.33                 | -0.71                  | -28.79       | 25.05                  | 19.35                   | 5.70                      | 4.395             |                    |           |
| 700.00                                        | 699.68                | 697.87                | 697.56                | 3.38             | 3.37          | 17.66                 | -1.98                  | -35.53       | 25.14                  | 18.41                   | 6.73                      | 3.735             |                    |           |
| 800.00                                        | 799.13                | 797.02                | 796.17                | 3.93             | 3.91          | 19.65                 | -3.89                  | -45.63       | 25.30                  | 17.53                   | 7.77                      | 3.255             |                    |           |
| 900.00                                        | 898.15                | 896.17                | 894.37                | 4.49             | 4.47          | 22.24                 | -6.42                  | -59.07       | 25.56                  | 16.74                   | 8.82                      | 2.897             |                    |           |
| 1,000.00                                      | 996.63                | 995.32                | 992.03                | 5.08             | 5.06          | 25.39                 | -9.58                  | -75.85       | 25.97                  | 16.07                   | 9.90                      | 2.623             |                    |           |
| 1,038.40                                      | 1,034.27              | 1,033.38              | 1,029.36              | 5.32             | 5.30          | 26.73                 | -10.96                 | -83.17       | 26.17                  | 15.85                   | 10.32                     | 2.536 ES          |                    |           |
| 1,100.00                                      | 1,094.58              | 1,094.45              | 1,089.03              | 5.70             | 5.68          | 28.36                 | -13.37                 | -95.93       | 27.13                  | 16.13                   | 11.00                     | 2.467             |                    |           |
| 1,200.00                                      | 1,192.48              | 1,193.45              | 1,185.13              | 6.34             | 6.33          | 28.53                 | -17.76                 | -119.27      | 31.27                  | 19.17                   | 12.10                     | 2.584             |                    |           |
| 1,300.00                                      | 1,290.37              | 1,306.97              | 1,281.20              | 6.98             | 7.12          | 27.19                 | -22.61                 | -145.00      | 37.60                  | 24.28                   | 13.33                     | 2.822             |                    |           |
| 1,400.00                                      | 1,388.27              | 1,407.18              | 1,377.46              | 7.64             | 7.84          | 26.20                 | -27.49                 | -170.87      | 44.03                  | 29.53                   | 14.50                     | 3.037             |                    |           |
| 1,500.00                                      | 1,486.17              | 1,507.39              | 1,473.72              | 8.30             | 8.57          | 25.46                 | -32.36                 | -196.74      | 50.46                  | 34.79                   | 15.67                     | 3.220             |                    |           |
| 1,600.00                                      | 1,584.07              | 1,607.60              | 1,569.98              | 8.96             | 9.31          | 24.89                 | -37.24                 | -222.60      | 56.90                  | 40.04                   | 16.86                     | 3.375             |                    |           |
| 1,700.00                                      | 1,681.97              | 1,707.81              | 1,666.23              | 9.63             | 10.06         | 24.43                 | -42.11                 | -248.47      | 63.34                  | 45.30                   | 18.05                     | 3.510             |                    |           |
| 1,800.00                                      | 1,779.86              | 1,808.02              | 1,762.49              | 10.30            | 10.81         | 24.06                 | -46.99                 | -274.34      | 69.79                  | 50.55                   | 19.24                     | 3.628             |                    |           |
| 1,900.00                                      | 1,877.76              | 1,908.23              | 1,858.75              | 10.98            | 11.57         | 23.75                 | -51.86                 | -300.20      | 76.24                  | 55.80                   | 20.44                     | 3.731             |                    |           |
| 2,000.00                                      | 1,975.66              | 2,008.44              | 1,955.00              | 11.66            | 12.33         | 23.49                 | -56.73                 | -326.07      | 82.69                  | 61.05                   | 21.63                     | 3.822             |                    |           |
| 2,100.00                                      | 2,073.56              | 2,108.65              | 2,051.26              | 12.33            | 13.09         | 23.27                 | -61.61                 | -351.93      | 89.14                  | 66.30                   | 22.84                     | 3.903             |                    |           |
| 2,200.00                                      | 2,171.46              | 2,208.85              | 2,147.52              | 13.01            | 13.86         | 23.08                 | -66.48                 | -377.80      | 95.59                  | 71.55                   | 24.04                     | 3.976             |                    |           |
| 2,300.00                                      | 2,269.36              | 2,290.94              | 2,243.78              | 13.69            | 14.49         | 22.91                 | -71.36                 | -403.67      | 102.05                 | 76.91                   | 25.13                     | 4.060             |                    |           |
| 2,400.00                                      | 2,367.25              | 2,390.73              | 2,340.03              | 14.38            | 15.26         | 22.76                 | -76.23                 | -429.53      | 108.50                 | 82.16                   | 26.34                     | 4.119             |                    |           |
| 2,500.00                                      | 2,465.15              | 2,509.48              | 2,436.29              | 15.06            | 16.18         | 22.63                 | -81.11                 | -455.40      | 114.96                 | 87.30                   | 27.66                     | 4.156             |                    |           |
| 2,600.00                                      | 2,563.05              | 2,590.31              | 2,532.55              | 15.74            | 16.80         | 22.51                 | -85.98                 | -481.27      | 121.42                 | 92.66                   | 28.75                     | 4.223             |                    |           |
| 2,700.00                                      | 2,660.95              | 2,690.10              | 2,628.80              | 16.43            | 17.58         | 22.41                 | -90.85                 | -507.13      | 127.87                 | 97.91                   | 29.96                     | 4.268             |                    |           |
| 2,800.00                                      | 2,758.85              | 2,789.89              | 2,725.06              | 17.11            | 18.35         | 22.31                 | -95.73                 | -533.00      | 134.33                 | 103.16                  | 31.17                     | 4.310             |                    |           |
| 2,900.00                                      | 2,856.74              | 2,889.68              | 2,821.32              | 17.80            | 19.13         | 22.22                 | -100.60                | -558.86      | 140.79                 | 108.41                  | 32.38                     | 4.348             |                    |           |
| 3,000.00                                      | 2,954.64              | 2,989.47              | 2,917.57              | 18.48            | 19.90         | 22.14                 | -105.48                | -584.73      | 147.25                 | 113.66                  | 33.59                     | 4.383             |                    |           |
| 3,100.00                                      | 3,052.54              | 3,089.27              | 3,013.83              | 19.17            | 20.68         | 22.07                 | -110.35                | -610.60      | 153.71                 | 118.90                  | 34.80                     | 4.416             |                    |           |
| 3,200.00                                      | 3,150.44              | 3,189.06              | 3,110.09              | 19.86            | 21.46         | 22.01                 | -115.22                | -636.46      | 160.16                 | 124.15                  | 36.01                     | 4.447             |                    |           |
| 3,300.00                                      | 3,248.34              | 3,288.85              | 3,206.35              | 20.54            | 22.23         | 21.94                 | -120.10                | -662.33      | 166.62                 | 129.40                  | 37.23                     | 4.476             |                    |           |
| 3,400.00                                      | 3,346.23              | 3,388.64              | 3,302.60              | 21.23            | 23.01         | 21.89                 | -124.97                | -688.20      | 173.08                 | 134.64                  | 38.44                     | 4.503             |                    |           |
| 3,500.00                                      | 3,444.13              | 3,488.43              | 3,398.86              | 21.92            | 23.79         | 21.83                 | -129.85                | -714.06      | 179.54                 | 139.89                  | 39.65                     | 4.528             |                    |           |
| 3,600.00                                      | 3,542.03              | 3,588.22              | 3,495.12              | 22.61            | 24.57         | 21.78                 | -134.72                | -739.93      | 186.00                 | 145.13                  | 40.87                     | 4.551             |                    |           |
| 3,700.00                                      | 3,639.93              | 3,688.01              | 3,591.37              | 23.30            | 25.35         | 21.74                 | -139.60                | -765.79      | 192.46                 | 150.38                  | 42.08                     | 4.573             |                    |           |
| 3,800.00                                      | 3,737.83              | 3,787.80              | 3,687.63              | 23.99            | 26.13         | 21.70                 | -144.47                | -791.66      | 198.92                 | 155.62                  | 43.30                     | 4.594             |                    |           |
| 3,900.00                                      | 3,835.73              | 3,887.59              | 3,783.89              | 24.67            | 26.91         | 21.66                 | -149.34                | -817.53      | 205.38                 | 160.87                  | 44.51                     | 4.614             |                    |           |
| 4,000.00                                      | 3,933.62              | 3,987.38              | 3,880.15              | 25.36            | 27.69         | 21.62                 | -154.22                | -843.39      | 211.84                 | 166.11                  | 45.73                     | 4.633             |                    |           |
| 4,100.00                                      | 4,031.52              | 4,087.18              | 3,976.40              | 26.05            | 28.47         | 21.58                 | -159.09                | -869.26      | 218.30                 | 171.36                  | 46.94                     | 4.650             |                    |           |
| 4,200.00                                      | 4,129.42              | 4,186.97              | 4,072.66              | 26.74            | 29.26         | 21.55                 | -163.97                | -895.13      | 224.76                 | 176.60                  | 48.16                     | 4.667             |                    |           |
| 4,300.00                                      | 4,227.32              | 4,286.76              | 4,168.92              | 27.43            | 30.04         | 21.52                 | -168.84                | -920.99      | 231.22                 | 181.84                  | 49.37                     | 4.683             |                    |           |
| 4,400.00                                      | 4,325.22              | 4,386.55              | 4,265.17              | 28.12            | 30.82         | 21.49                 | -173.72                | -946.86      | 237.68                 | 187.09                  | 50.59                     | 4.698             |                    |           |
| 4,500.00                                      | 4,423.11              | 4,486.34              | 4,361.43              | 28.81            | 31.60         | 21.46                 | -178.59                | -972.72      | 244.14                 | 192.33                  | 51.81                     | 4.713             |                    |           |
| 4,600.00                                      | 4,521.01              | 4,586.13              | 4,457.69              | 29.50            | 32.38         | 21.43                 | -183.46                | -998.59      | 250.60                 | 197.58                  | 53.02                     | 4.726             |                    |           |
| 4,702.88                                      | 4,621.73              | 4,688.80              | 4,556.72              | 30.21            | 33.19         | 21.41                 | -188.48                | -1,025.20    | 257.24                 | 202.97                  | 54.27                     | 4.740             |                    |           |
| 4,800.00                                      | 4,717.13              | 4,785.60              | 4,650.09              | 30.86            | 33.95         | 21.31                 | -193.21                | -1,050.29    | 265.05                 | 209.62                  | 55.43                     | 4.782             |                    |           |

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



# Pro Directional Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 243H - OH - Plan 1 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         | Offset Site Error: 0.00 usft |         |                   |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------------|---------|-------------------|
| Survey Program: 0-MWD+HDGM                    |                       |                       |                       |                  |               |                       |                                     |              |                        |                         | Offset Well Error: 0.00 usft |         |                   |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                              | Warning |                   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft)    |         | Separation Factor |
| 4,900.00                                      | 4,815.94              | 4,884.94              | 4,745.91              | 31.48            | 34.73         | 20.98                 | -198.06                             | -1,076.04    | 276.28                 | 219.71                  | 56.57                        | 4.884   |                   |
| 5,000.00                                      | 4,915.22              | 4,983.83              | 4,841.31              | 32.07            | 35.50         | 20.47                 | -202.89                             | -1,101.68    | 290.77                 | 233.11                  | 57.65                        | 5.043   |                   |
| 5,100.00                                      | 5,014.86              | 5,082.15              | 4,936.15              | 32.61            | 36.28         | 19.81                 | -207.69                             | -1,127.16    | 308.53                 | 249.83                  | 58.70                        | 5.256   |                   |
| 5,200.00                                      | 5,114.74              | 5,179.79              | 5,030.32              | 33.11            | 37.04         | 19.05                 | -212.46                             | -1,152.47    | 329.57                 | 269.87                  | 59.70                        | 5.520   |                   |
| 5,291.28                                      | 5,206.00              | 5,278.21              | 5,125.57              | 33.52            | 37.79         | -87.32                | -217.05                             | -1,176.81    | 350.61                 | 289.89                  | 60.71                        | 5.775   |                   |
| 5,300.00                                      | 5,214.72              | 5,287.84              | 5,134.94              | 33.55            | 37.86         | -87.41                | -217.47                             | -1,179.03    | 352.59                 | 291.78                  | 60.81                        | 5.798   |                   |
| 5,400.00                                      | 5,314.72              | 5,399.34              | 5,243.87              | 33.98            | 38.65         | -88.26                | -221.87                             | -1,202.38    | 373.41                 | 311.54                  | 61.87                        | 6.035   |                   |
| 5,500.00                                      | 5,414.72              | 5,512.58              | 5,355.36              | 34.41            | 39.38         | -88.89                | -225.53                             | -1,221.82    | 390.50                 | 327.64                  | 62.87                        | 6.211   |                   |
| 5,600.00                                      | 5,514.72              | 5,627.25              | 5,468.96              | 34.84            | 40.05         | -89.35                | -228.41                             | -1,237.08    | 403.78                 | 339.98                  | 63.80                        | 6.329   |                   |
| 5,700.00                                      | 5,614.72              | 5,742.99              | 5,584.17              | 35.27            | 40.66         | -89.65                | -230.45                             | -1,247.94    | 413.15                 | 348.51                  | 64.64                        | 6.391   |                   |
| 5,800.00                                      | 5,714.72              | 5,859.45              | 5,700.44              | 35.70            | 41.20         | -89.82                | -231.64                             | -1,254.24    | 418.56                 | 353.16                  | 65.40                        | 6.400   |                   |
| 5,900.00                                      | 5,814.72              | 5,973.75              | 5,814.72              | 36.14            | 41.68         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 353.92                  | 66.09                        | 6.355   |                   |
| 6,000.00                                      | 5,914.72              | 6,073.75              | 5,914.72              | 36.59            | 42.07         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 352.98                  | 67.03                        | 6.266   |                   |
| 6,100.00                                      | 6,014.72              | 6,173.75              | 6,014.72              | 37.03            | 42.45         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 352.04                  | 67.97                        | 6.180   |                   |
| 6,200.00                                      | 6,114.72              | 6,273.75              | 6,114.72              | 37.48            | 42.85         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 351.10                  | 68.91                        | 6.095   |                   |
| 6,300.00                                      | 6,214.72              | 6,373.75              | 6,214.72              | 37.92            | 43.24         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 350.16                  | 69.85                        | 6.013   |                   |
| 6,400.00                                      | 6,314.72              | 6,473.75              | 6,314.72              | 38.38            | 43.64         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 349.21                  | 70.80                        | 5.932   |                   |
| 6,500.00                                      | 6,414.72              | 6,573.75              | 6,414.72              | 38.83            | 44.04         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 348.25                  | 71.76                        | 5.853   |                   |
| 6,600.00                                      | 6,514.72              | 6,673.75              | 6,514.72              | 39.28            | 44.44         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 347.30                  | 72.71                        | 5.776   |                   |
| 6,700.00                                      | 6,614.72              | 6,773.75              | 6,614.72              | 39.74            | 44.85         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 346.34                  | 73.67                        | 5.701   |                   |
| 6,800.00                                      | 6,714.72              | 6,873.75              | 6,714.72              | 40.20            | 45.26         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 345.38                  | 74.64                        | 5.627   |                   |
| 6,900.00                                      | 6,814.72              | 6,973.75              | 6,814.72              | 40.66            | 45.67         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 344.41                  | 75.60                        | 5.556   |                   |
| 7,000.00                                      | 6,914.72              | 7,073.75              | 6,914.72              | 41.13            | 46.08         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 343.44                  | 76.57                        | 5.485   |                   |
| 7,100.00                                      | 7,014.72              | 7,173.75              | 7,014.72              | 41.59            | 46.50         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 342.47                  | 77.54                        | 5.417   |                   |
| 7,200.00                                      | 7,114.72              | 7,273.75              | 7,114.72              | 42.06            | 46.92         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 341.49                  | 78.52                        | 5.349   |                   |
| 7,300.00                                      | 7,214.72              | 7,373.75              | 7,214.72              | 42.53            | 47.34         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 340.52                  | 79.49                        | 5.284   |                   |
| 7,400.00                                      | 7,314.72              | 7,473.75              | 7,314.72              | 43.00            | 47.76         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 339.54                  | 80.47                        | 5.219   |                   |
| 7,500.00                                      | 7,414.72              | 7,573.75              | 7,414.72              | 43.47            | 48.19         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 338.56                  | 81.45                        | 5.156   |                   |
| 7,600.00                                      | 7,514.72              | 7,673.75              | 7,514.72              | 43.94            | 48.62         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 337.57                  | 82.44                        | 5.095   |                   |
| 7,700.00                                      | 7,614.72              | 7,773.75              | 7,614.72              | 44.42            | 49.05         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 336.59                  | 83.42                        | 5.035   |                   |
| 7,800.00                                      | 7,714.72              | 7,873.75              | 7,714.72              | 44.89            | 49.48         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 335.60                  | 84.41                        | 4.976   |                   |
| 7,900.00                                      | 7,814.72              | 7,973.75              | 7,814.72              | 45.37            | 49.91         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 334.61                  | 85.40                        | 4.918   |                   |
| 8,000.00                                      | 7,914.72              | 8,073.75              | 7,914.72              | 45.85            | 50.35         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 333.62                  | 86.40                        | 4.861   |                   |
| 8,100.00                                      | 8,014.72              | 8,173.75              | 8,014.72              | 46.33            | 50.79         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 332.62                  | 87.39                        | 4.806   |                   |
| 8,200.00                                      | 8,114.72              | 8,273.75              | 8,114.72              | 46.81            | 51.23         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 331.62                  | 88.39                        | 4.752   |                   |
| 8,300.00                                      | 8,214.72              | 8,373.75              | 8,214.72              | 47.29            | 51.67         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 330.63                  | 89.38                        | 4.699   |                   |
| 8,400.00                                      | 8,314.72              | 8,473.75              | 8,314.72              | 47.78            | 52.12         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 329.63                  | 90.38                        | 4.647   |                   |
| 8,500.00                                      | 8,414.72              | 8,573.75              | 8,414.72              | 48.26            | 52.56         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 328.62                  | 91.39                        | 4.596   |                   |
| 8,600.00                                      | 8,514.72              | 8,673.75              | 8,514.72              | 48.75            | 53.01         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 327.62                  | 92.39                        | 4.546   |                   |
| 8,700.00                                      | 8,614.72              | 8,773.75              | 8,614.72              | 49.23            | 53.46         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 326.62                  | 93.39                        | 4.497   |                   |
| 8,800.00                                      | 8,714.72              | 8,873.75              | 8,714.72              | 49.72            | 53.91         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 325.61                  | 94.40                        | 4.449   |                   |
| 8,900.00                                      | 8,814.72              | 8,973.75              | 8,814.72              | 50.21            | 54.36         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 324.60                  | 95.41                        | 4.402   |                   |
| 9,000.00                                      | 8,914.72              | 9,073.75              | 8,914.72              | 50.70            | 54.82         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 323.59                  | 96.42                        | 4.356   |                   |
| 9,100.00                                      | 9,014.72              | 9,173.75              | 9,014.72              | 51.19            | 55.27         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 322.58                  | 97.43                        | 4.311   |                   |
| 9,200.00                                      | 9,114.72              | 9,273.75              | 9,114.72              | 51.68            | 55.73         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 321.57                  | 98.44                        | 4.267   |                   |
| 9,300.00                                      | 9,214.72              | 9,373.75              | 9,214.72              | 52.18            | 56.19         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 320.56                  | 99.46                        | 4.223   |                   |
| 9,400.00                                      | 9,314.72              | 9,473.75              | 9,314.72              | 52.67            | 56.65         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 319.54                  | 100.47                       | 4.180   |                   |
| 9,500.00                                      | 9,414.72              | 9,573.75              | 9,414.72              | 53.17            | 57.11         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 318.52                  | 101.49                       | 4.139   |                   |
| 9,600.00                                      | 9,514.72              | 9,673.75              | 9,514.72              | 53.66            | 57.57         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 317.51                  | 102.50                       | 4.098   |                   |
| 9,700.00                                      | 9,614.72              | 9,773.75              | 9,614.72              | 54.16            | 58.03         | -89.86                | -231.96                             | -1,255.94    | 420.01                 | 316.49                  | 103.52                       | 4.057   |                   |

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



Pro Directional  
Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 243H - OH - Plan 1 |                             |                             |                             |                 |        |                             |                        |                 |                              |                               |                                 |                      |         | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------|--------|-----------------------------|------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|--------------------|-----------|
| Survey Program: 0-MWD+HDGM                    |                             |                             |                             |                 |        |                             |                        |                 |                              |                               |                                 |                      |         | Offset Well Error: | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis |        | Highside<br>Toolface<br>(°) | Offset Wellbore Centre |                 | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                    |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference       | Offset |                             | +N/-S<br>(usft)        | +E/-W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |         |                    |           |
| 9,800.00                                      | 9,714.72                    | 9,873.75                    | 9,714.72                    | 54.65           | 58.50  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 315.47                        | 104.54                          | 4.018                |         |                    |           |
| 9,900.00                                      | 9,814.72                    | 9,973.75                    | 9,814.72                    | 55.15           | 58.97  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 314.45                        | 105.56                          | 3.979                |         |                    |           |
| 10,000.00                                     | 9,914.72                    | 10,073.75                   | 9,914.72                    | 55.65           | 59.43  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 313.43                        | 106.58                          | 3.941                |         |                    |           |
| 10,100.00                                     | 10,014.72                   | 10,173.75                   | 10,014.72                   | 56.15           | 59.90  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 312.40                        | 107.61                          | 3.903                |         |                    |           |
| 10,200.00                                     | 10,114.72                   | 10,273.75                   | 10,114.72                   | 56.65           | 60.37  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 311.38                        | 108.63                          | 3.866                |         |                    |           |
| 10,300.00                                     | 10,214.72                   | 10,373.75                   | 10,214.72                   | 57.15           | 60.84  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 310.36                        | 109.66                          | 3.830                |         |                    |           |
| 10,400.00                                     | 10,314.72                   | 10,473.75                   | 10,314.72                   | 57.65           | 61.31  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 309.33                        | 110.68                          | 3.795                |         |                    |           |
| 10,500.00                                     | 10,414.72                   | 10,573.75                   | 10,414.72                   | 58.15           | 61.79  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 308.30                        | 111.71                          | 3.760                |         |                    |           |
| 10,562.32                                     | 10,477.04                   | 10,636.07                   | 10,477.04                   | 58.47           | 62.08  | -89.86                      | -231.96                | -1,255.94       | 420.01                       | 307.66                        | 112.35                          | 3.738                |         |                    |           |
| 10,600.00                                     | 10,514.70                   | 10,673.72                   | 10,514.70                   | 58.65           | 62.26  | -89.42                      | -231.96                | -1,255.94       | 420.00                       | 307.27                        | 112.72                          | 3.726                |         |                    |           |
| 10,641.56                                     | 10,556.03                   | 10,715.06                   | 10,556.03                   | 58.86           | 62.46  | -90.00                      | -231.96                | -1,255.94       | 419.98                       | 306.87                        | 113.10                          | 3.713                |         |                    |           |
| 10,650.00                                     | 10,564.38                   | 10,723.41                   | 10,564.38                   | 58.90           | 62.50  | -90.17                      | -231.96                | -1,255.94       | 419.98                       | 306.80                        | 113.18                          | 3.711                |         |                    |           |
| 10,700.00                                     | 10,613.40                   | 10,772.43                   | 10,613.40                   | 59.13           | 62.73  | -91.46                      | -231.96                | -1,255.94       | 420.12                       | 306.53                        | 113.59                          | 3.699                |         |                    |           |
| 10,750.00                                     | 10,661.38                   | 10,820.41                   | 10,661.38                   | 59.35           | 62.96  | -93.23                      | -231.96                | -1,255.94       | 420.72                       | 306.75                        | 113.96                          | 3.692                |         |                    |           |
| 10,800.00                                     | 10,707.96                   | 10,867.48                   | 10,708.45                   | 59.56           | 63.18  | -95.39                      | -231.92                | -1,255.94       | 422.18                       | 307.86                        | 114.32                          | 3.693                |         |                    |           |
| 10,850.00                                     | 10,752.79                   | 10,918.15                   | 10,759.02                   | 59.75           | 63.42  | -97.82                      | -229.12                | -1,255.97       | 424.63                       | 310.04                        | 114.59                          | 3.706                |         |                    |           |
| 10,900.00                                     | 10,795.51                   | 10,970.87                   | 10,811.17                   | 59.92           | 63.66  | -100.23                     | -221.47                | -1,256.05       | 427.95                       | 313.15                        | 114.79                          | 3.728                |         |                    |           |
| 10,950.00                                     | 10,835.81                   | 11,025.86                   | 10,864.57                   | 60.06           | 63.90  | -102.59                     | -208.43                | -1,256.19       | 432.04                       | 317.17                        | 114.87                          | 3.761                |         |                    |           |
| 11,000.00                                     | 10,873.38                   | 11,083.37                   | 10,918.80                   | 60.19           | 64.13  | -104.89                     | -189.38                | -1,256.39       | 436.80                       | 322.03                        | 114.78                          | 3.806                |         |                    |           |
| 11,050.00                                     | 10,907.93                   | 11,143.62                   | 10,973.27                   | 60.30           | 64.35  | -107.11                     | -163.70                | -1,256.66       | 442.08                       | 327.63                        | 114.44                          | 3.863                |         |                    |           |
| 11,100.00                                     | 10,939.21                   | 11,206.81                   | 11,027.18                   | 60.39           | 64.55  | -109.22                     | -130.78                | -1,257.01       | 447.67                       | 333.85                        | 113.83                          | 3.933                |         |                    |           |
| 11,150.00                                     | 10,966.96                   | 11,273.13                   | 11,079.49                   | 60.46           | 64.72  | -111.19                     | -90.07                 | -1,257.44       | 453.38                       | 340.49                        | 112.90                          | 4.016                |         |                    |           |
| 11,200.00                                     | 10,990.99                   | 11,342.66                   | 11,128.90                   | 60.51           | 64.88  | -113.00                     | -41.21                 | -1,257.96       | 458.96                       | 347.29                        | 111.67                          | 4.110                |         |                    |           |
| 11,250.00                                     | 11,011.11                   | 11,415.38                   | 11,173.84                   | 60.55           | 64.99  | -114.60                     | 15.89                  | -1,258.56       | 464.15                       | 353.92                        | 110.23                          | 4.211                |         |                    |           |
| 11,300.00                                     | 11,027.16                   | 11,491.11                   | 11,212.57                   | 60.59           | 65.08  | -115.95                     | 80.90                  | -1,259.25       | 468.70                       | 359.99                        | 108.71                          | 4.311                |         |                    |           |
| 11,350.00                                     | 11,039.02                   | 11,569.49                   | 11,243.27                   | 60.62           | 65.14  | -117.02                     | 152.95                 | -1,260.01       | 472.37                       | 365.05                        | 107.32                          | 4.402                |         |                    |           |
| 11,400.00                                     | 11,046.61                   | 11,649.97                   | 11,264.26                   | 60.65           | 65.19  | -117.75                     | 230.56                 | -1,260.83       | 474.95                       | 368.68                        | 106.27                          | 4.469                |         |                    |           |
| 11,450.00                                     | 11,049.87                   | 11,731.79                   | 11,274.25                   | 60.70           | 65.25  | -118.14                     | 311.70                 | -1,261.69       | 476.30                       | 370.51                        | 105.79                          | 4.502                |         |                    |           |
| 11,463.46                                     | 11,050.00                   | 11,753.94                   | 11,274.95                   | 60.71           | 65.27  | -118.17                     | 333.84                 | -1,261.92       | 476.44                       | 370.67                        | 105.77                          | 4.504                |         |                    |           |
| 11,500.00                                     | 11,049.92                   | 11,806.72                   | 11,275.00                   | 60.76           | 65.32  | -118.19                     | 373.17                 | -1,262.34       | 476.49                       | 370.56                        | 105.93                          | 4.498                |         |                    |           |
| 11,600.00                                     | 11,049.72                   | 11,906.72                   | 11,275.00                   | 60.97           | 65.47  | -118.21                     | 473.17                 | -1,263.40       | 476.58                       | 370.17                        | 106.41                          | 4.479                |         |                    |           |
| 11,700.00                                     | 11,049.53                   | 11,993.28                   | 11,275.00                   | 61.29           | 65.66  | -118.23                     | 573.16                 | -1,264.46       | 476.67                       | 369.67                        | 107.00                          | 4.455                |         |                    |           |
| 11,800.00                                     | 11,049.33                   | 12,106.72                   | 11,275.00                   | 61.73           | 65.99  | -118.25                     | 673.16                 | -1,265.51       | 476.77                       | 368.95                        | 107.82                          | 4.422                |         |                    |           |
| 11,900.00                                     | 11,049.13                   | 12,206.72                   | 11,275.00                   | 62.27           | 66.38  | -118.27                     | 773.15                 | -1,266.57       | 476.86                       | 368.13                        | 108.74                          | 4.385                |         |                    |           |
| 12,000.00                                     | 11,048.93                   | 12,293.28                   | 11,275.00                   | 62.89           | 66.78  | -118.29                     | 873.15                 | -1,267.63       | 476.96                       | 367.24                        | 109.71                          | 4.347                |         |                    |           |
| 12,100.00                                     | 11,048.73                   | 12,406.72                   | 11,275.00                   | 63.59           | 67.41  | -118.31                     | 973.14                 | -1,268.69       | 477.05                       | 366.08                        | 110.97                          | 4.299                |         |                    |           |
| 12,200.00                                     | 11,048.53                   | 12,506.72                   | 11,275.00                   | 64.37           | 68.06  | -118.34                     | 1,073.13               | -1,269.74       | 477.15                       | 364.87                        | 112.28                          | 4.250                |         |                    |           |
| 12,300.00                                     | 11,048.33                   | 12,606.72                   | 11,275.00                   | 65.21           | 68.79  | -118.36                     | 1,173.13               | -1,270.80       | 477.24                       | 363.53                        | 113.71                          | 4.197                |         |                    |           |
| 12,400.00                                     | 11,048.13                   | 12,706.72                   | 11,275.00                   | 66.11           | 69.59  | -118.38                     | 1,273.12               | -1,271.86       | 477.34                       | 362.08                        | 115.26                          | 4.141                |         |                    |           |
| 12,500.00                                     | 11,047.93                   | 12,806.72                   | 11,275.00                   | 67.07           | 70.46  | -118.40                     | 1,373.12               | -1,272.92       | 477.43                       | 360.51                        | 116.92                          | 4.083                |         |                    |           |
| 12,600.00                                     | 11,047.73                   | 12,906.72                   | 11,275.00                   | 68.09           | 71.39  | -118.42                     | 1,473.11               | -1,273.97       | 477.53                       | 358.83                        | 118.70                          | 4.023                |         |                    |           |
| 12,700.00                                     | 11,047.53                   | 13,006.72                   | 11,275.00                   | 69.16           | 72.38  | -118.44                     | 1,573.10               | -1,275.03       | 477.62                       | 357.05                        | 120.57                          | 3.961                |         |                    |           |
| 12,800.00                                     | 11,047.33                   | 13,106.72                   | 11,275.00                   | 70.28           | 73.43  | -118.46                     | 1,673.10               | -1,276.09       | 477.72                       | 355.17                        | 122.55                          | 3.898                |         |                    |           |
| 12,900.00                                     | 11,047.13                   | 13,193.28                   | 11,275.00                   | 71.45           | 74.38  | -118.48                     | 1,773.09               | -1,277.15       | 477.81                       | 353.34                        | 124.47                          | 3.839                |         |                    |           |
| 13,000.00                                     | 11,046.93                   | 13,306.72                   | 11,275.00                   | 72.67           | 75.69  | -118.50                     | 1,873.09               | -1,278.20       | 477.91                       | 351.14                        | 126.77                          | 3.770                |         |                    |           |
| 13,100.00                                     | 11,046.74                   | 13,393.28                   | 11,275.00                   | 73.92           | 76.72  | -118.52                     | 1,973.08               | -1,279.26       | 478.00                       | 349.14                        | 128.86                          | 3.709                |         |                    |           |
| 13,200.00                                     | 11,046.54                   | 13,506.72                   | 11,275.00                   | 75.22           | 78.13  | -118.55                     | 2,073.08               | -1,280.32       | 478.10                       | 346.76                        | 131.34                          | 3.640                |         |                    |           |
| 13,300.00                                     | 11,046.34                   | 13,606.72                   | 11,275.00                   | 76.56           | 79.41  | -118.57                     | 2,173.07               | -1,281.38       | 478.19                       | 344.46                        | 133.74                          | 3.576                |         |                    |           |
| 13,400.00                                     | 11,046.14                   | 13,693.28                   | 11,275.00                   | 77.94           | 80.55  | -118.59                     | 2,273.06               | -1,282.44       | 478.29                       | 342.25                        | 136.04                          | 3.516                |         |                    |           |
| 13,500.00                                     | 11,045.94                   | 13,793.28                   | 11,275.00                   | 79.34           | 81.91  | -118.61                     | 2,373.06               | -1,283.49       | 478.39                       | 339.81                        | 138.57                          | 3.452                |         |                    |           |
| 13,600.00                                     | 11,045.74                   | 13,893.28                   | 11,275.00                   | 80.79           | 83.29  | -118.63                     | 2,473.05               | -1,284.55       | 478.48                       | 337.31                        | 141.17                          | 3.389                |         |                    |           |

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



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Reference Site:** Cypress 34  
**Site Error:** 0.00 usft  
**Reference Well:** 233H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** WellPlanner1  
**Offset TVD Reference:** Offset Datum

| Offset Design Cypress 34 - 243H - OH - Plan 1 |                       |                       |                       |                  |               |                       |                                    |             |                        |                         |                           |                   |  | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|------------------------------------|-------------|------------------------|-------------------------|---------------------------|-------------------|--|--------------------|-----------|
| Survey Program: 0-MWD+HDGM                    |                       |                       |                       |                  |               |                       |                                    |             |                        |                         |                           |                   |  | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                           |             |                        |                         |                           |                   |  |                    | Warning   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N-S (usft) | +E-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |  |                    |           |
| 13,700.00                                     | 11,045.54             | 14,006.72             | 11,275.00             | 82.26            | 84.91         | -118.65               | 2,573.05                           | -1,285.61   | 478.58                 | 334.57                  | 144.01                    | 3.323             |  |                    |           |
| 13,800.00                                     | 11,045.34             | 14,106.72             | 11,275.00             | 83.77            | 86.37         | -118.67               | 2,673.04                           | -1,286.67   | 478.67                 | 331.94                  | 146.73                    | 3.262             |  |                    |           |
| 13,900.00                                     | 11,045.14             | 14,193.28             | 11,275.00             | 85.30            | 87.65         | -118.69               | 2,773.04                           | -1,287.72   | 478.77                 | 329.45                  | 149.32                    | 3.206             |  |                    |           |
| 14,000.00                                     | 11,044.94             | 14,306.73             | 11,275.00             | 86.86            | 89.37         | -118.71               | 2,873.03                           | -1,288.78   | 478.86                 | 326.53                  | 152.33                    | 3.144             |  |                    |           |
| 14,100.00                                     | 11,044.74             | 14,406.73             | 11,275.00             | 88.44            | 90.91         | -118.73               | 2,973.02                           | -1,289.84   | 478.96                 | 323.75                  | 155.21                    | 3.086             |  |                    |           |
| 14,200.00                                     | 11,044.54             | 14,493.27             | 11,275.00             | 90.05            | 92.27         | -118.75               | 3,073.02                           | -1,290.90   | 479.06                 | 321.13                  | 157.93                    | 3.033             |  |                    |           |
| 14,300.00                                     | 11,044.34             | 14,606.73             | 11,275.00             | 91.68            | 94.07         | -118.78               | 3,173.01                           | -1,291.95   | 479.15                 | 318.06                  | 161.09                    | 2.974             |  |                    |           |
| 14,400.00                                     | 11,044.15             | 14,706.73             | 11,275.00             | 93.34            | 95.68         | -118.80               | 3,273.01                           | -1,293.01   | 479.25                 | 315.16                  | 164.09                    | 2.921             |  |                    |           |
| 14,500.00                                     | 11,043.95             | 14,806.73             | 11,275.00             | 95.01            | 97.32         | -118.82               | 3,373.00                           | -1,294.07   | 479.34                 | 312.21                  | 167.13                    | 2.868             |  |                    |           |
| 14,600.00                                     | 11,043.75             | 14,906.73             | 11,275.00             | 96.70            | 98.97         | -118.84               | 3,472.99                           | -1,295.13   | 479.44                 | 309.23                  | 170.21                    | 2.817             |  |                    |           |
| 14,700.00                                     | 11,043.55             | 15,006.73             | 11,275.00             | 98.41            | 100.64        | -118.86               | 3,572.99                           | -1,296.18   | 479.54                 | 306.22                  | 173.32                    | 2.767             |  |                    |           |
| 14,800.00                                     | 11,043.35             | 15,093.27             | 11,275.00             | 100.14           | 102.11        | -118.88               | 3,672.98                           | -1,297.24   | 479.63                 | 303.38                  | 176.25                    | 2.721             |  |                    |           |
| 14,900.00                                     | 11,043.15             | 15,206.73             | 11,275.00             | 101.89           | 104.05        | -118.90               | 3,772.98                           | -1,298.30   | 479.73                 | 300.09                  | 179.64                    | 2.671             |  |                    |           |
| 15,000.00                                     | 11,042.95             | 15,306.73             | 11,275.00             | 103.65           | 105.77        | -118.92               | 3,872.97                           | -1,299.36   | 479.83                 | 296.99                  | 182.84                    | 2.624             |  |                    |           |
| 15,100.00                                     | 11,042.75             | 15,406.73             | 11,275.00             | 105.42           | 107.52        | -118.94               | 3,972.97                           | -1,300.42   | 479.92                 | 293.85                  | 186.07                    | 2.579             |  |                    |           |
| 15,200.00                                     | 11,042.55             | 15,506.73             | 11,275.00             | 107.21           | 109.27        | -118.96               | 4,072.96                           | -1,301.47   | 480.02                 | 290.69                  | 189.33                    | 2.535             |  |                    |           |
| 15,300.00                                     | 11,042.35             | 15,606.73             | 11,275.00             | 109.02           | 111.05        | -118.98               | 4,172.95                           | -1,302.53   | 480.12                 | 287.51                  | 192.61                    | 2.493             |  |                    |           |
| 15,400.00                                     | 11,042.15             | 15,706.73             | 11,275.00             | 110.83           | 112.83        | -119.00               | 4,272.95                           | -1,303.59   | 480.21                 | 284.30                  | 195.91                    | 2.451             |  |                    |           |
| 15,500.00                                     | 11,041.95             | 15,806.73             | 11,275.00             | 112.66           | 114.63        | -119.03               | 4,372.94                           | -1,304.65   | 480.31                 | 281.07                  | 199.24                    | 2.411             |  |                    |           |
| 15,600.00                                     | 11,041.75             | 15,906.73             | 11,275.00             | 114.50           | 116.44        | -119.05               | 4,472.94                           | -1,305.70   | 480.41                 | 277.82                  | 202.58                    | 2.371             |  |                    |           |
| 15,700.00                                     | 11,041.55             | 16,006.73             | 11,275.00             | 116.35           | 118.27        | -119.07               | 4,572.93                           | -1,306.76   | 480.50                 | 274.55                  | 205.95                    | 2.333             |  |                    |           |
| 15,800.00                                     | 11,041.36             | 16,106.73             | 11,275.00             | 118.22           | 120.10        | -119.09               | 4,672.93                           | -1,307.82   | 480.60                 | 271.27                  | 209.34                    | 2.296             |  |                    |           |
| 15,900.00                                     | 11,041.16             | 16,206.73             | 11,275.00             | 120.09           | 121.95        | -119.11               | 4,772.92                           | -1,308.88   | 480.70                 | 267.96                  | 212.74                    | 2.260             |  |                    |           |
| 16,000.00                                     | 11,040.96             | 16,306.73             | 11,275.00             | 121.97           | 123.80        | -119.13               | 4,872.91                           | -1,309.93   | 480.80                 | 264.64                  | 216.16                    | 2.224             |  |                    |           |
| 16,100.00                                     | 11,040.76             | 16,393.27             | 11,275.00             | 123.86           | 125.41        | -119.15               | 4,972.91                           | -1,310.99   | 480.89                 | 261.53                  | 219.36                    | 2.192             |  |                    |           |
| 16,200.00                                     | 11,040.56             | 16,506.73             | 11,275.00             | 125.76           | 127.54        | -119.17               | 5,072.90                           | -1,312.05   | 480.99                 | 257.94                  | 223.05                    | 2.156             |  |                    |           |
| 16,300.00                                     | 11,040.36             | 16,606.73             | 11,275.00             | 127.67           | 129.42        | -119.19               | 5,172.90                           | -1,313.11   | 481.09                 | 254.58                  | 226.51                    | 2.124             |  |                    |           |
| 16,400.00                                     | 11,040.16             | 16,693.27             | 11,275.00             | 129.59           | 131.06        | -119.21               | 5,272.89                           | -1,314.16   | 481.18                 | 251.43                  | 229.75                    | 2.094             |  |                    |           |
| 16,479.98                                     | 11,040.00             | 16,773.25             | 11,275.00             | 131.12           | 132.58        | -119.23               | 5,352.86                           | -1,315.01   | 481.26                 | 248.72                  | 232.54                    | 2.070 SF          |  |                    |           |



Pro Directional  
Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 246H - OH - Plan 1 |                             |                             |                             |                     |                  |                            |                                           |                 |                              |                               |                                 |                      | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|----------------------------|-------------------------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|--------------------|-----------|
| Survey Program: 0-MWD+HDGM                    |                             |                             |                             |                     |                  |                            |                                           |                 |                              |                               |                                 |                      | Offset Well Error: | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Tooface<br>(") | Distance                                  |                 | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning            |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                            | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) |                              |                               |                                 |                      |                    |           |
| 0.00                                          | 0.00                        | 0.00                        | 0.00                        | 0.00                | 0.00             | 87.71                      | 1.00                                      | 25.00           | 25.02                        |                               |                                 |                      |                    |           |
| 100.00                                        | 100.00                      | 100.00                      | 100.00                      | 0.20                | 0.20             | 87.71                      | 1.00                                      | 25.00           | 25.02                        | 24.62                         | 0.40                            | 63.307               |                    |           |
| 200.00                                        | 200.00                      | 200.00                      | 200.00                      | 0.74                | 0.74             | 87.71                      | 1.00                                      | 25.00           | 25.02                        | 23.55                         | 1.47                            | 17.013               |                    |           |
| 300.00                                        | 300.00                      | 300.00                      | 300.00                      | 1.27                | 1.27             | 87.71                      | 1.00                                      | 25.00           | 25.02                        | 22.47                         | 2.55                            | 9.827                |                    |           |
| 400.00                                        | 400.00                      | 400.00                      | 400.00                      | 1.81                | 1.81             | 87.71                      | 1.00                                      | 25.00           | 25.02                        | 21.40                         | 3.62                            | 6.909                |                    |           |
| 450.00                                        | 450.00                      | 450.00                      | 450.00                      | 2.08                | 2.08             | 87.71                      | 1.00                                      | 25.00           | 25.02                        | 20.86                         | 4.16                            | 6.016 CC             |                    |           |
| 500.00                                        | 500.00                      | 500.40                      | 500.39                      | 2.34                | 2.34             | -166.51                    | 0.79                                      | 24.61           | 25.05                        | 20.37                         | 4.68                            | 5.351                |                    |           |
| 600.00                                        | 599.93                      | 601.19                      | 601.12                      | 2.86                | 2.86             | -164.88                    | -0.86                                     | 21.47           | 25.28                        | 19.58                         | 5.70                            | 4.433                |                    |           |
| 700.00                                        | 699.68                      | 701.96                      | 701.64                      | 3.38                | 3.39             | -161.71                    | -4.17                                     | 15.21           | 25.81                        | 19.07                         | 6.74                            | 3.828 ES             |                    |           |
| 800.00                                        | 799.13                      | 802.48                      | 801.61                      | 3.93                | 3.93             | -157.42                    | -9.04                                     | 5.99            | 26.88                        | 19.08                         | 7.80                            | 3.445                |                    |           |
| 900.00                                        | 898.15                      | 902.40                      | 900.90                      | 4.49                | 4.48             | -155.40                    | -14.28                                    | -3.93           | 30.56                        | 21.67                         | 8.89                            | 3.438                |                    |           |
| 1,000.00                                      | 996.63                      | 1,002.16                    | 1,000.03                    | 5.08                | 5.04             | -156.14                    | -19.51                                    | -13.83          | 37.42                        | 27.43                         | 9.98                            | 3.748                |                    |           |
| 1,038.40                                      | 1,034.27                    | 1,040.39                    | 1,038.02                    | 5.32                | 5.26             | -156.86                    | -21.52                                    | -17.62          | 40.90                        | 30.49                         | 10.41                           | 3.929                |                    |           |
| 1,100.00                                      | 1,094.58                    | 1,101.70                    | 1,098.94                    | 5.70                | 5.61             | -158.03                    | -24.73                                    | -23.71          | 46.89                        | 35.80                         | 11.09                           | 4.229                |                    |           |
| 1,200.00                                      | 1,192.48                    | 1,201.22                    | 1,197.82                    | 6.34                | 6.18             | -159.40                    | -29.95                                    | -33.59          | 56.63                        | 44.44                         | 12.19                           | 4.645                |                    |           |
| 1,300.00                                      | 1,290.37                    | 1,300.73                    | 1,296.71                    | 6.98                | 6.75             | -160.36                    | -35.17                                    | -43.46          | 66.40                        | 53.10                         | 13.31                           | 4.991                |                    |           |
| 1,400.00                                      | 1,388.27                    | 1,400.25                    | 1,395.60                    | 7.64                | 7.32             | -161.08                    | -40.39                                    | -53.34          | 76.18                        | 61.76                         | 14.42                           | 5.282                |                    |           |
| 1,500.00                                      | 1,486.17                    | 1,500.24                    | 1,494.49                    | 8.30                | 7.90             | -161.63                    | -45.61                                    | -63.22          | 85.97                        | 70.43                         | 15.55                           | 5.530                |                    |           |
| 1,600.00                                      | 1,584.07                    | 1,600.72                    | 1,593.37                    | 8.96                | 8.48             | -162.07                    | -50.83                                    | -73.10          | 95.77                        | 79.10                         | 16.68                           | 5.743                |                    |           |
| 1,700.00                                      | 1,681.97                    | 1,701.20                    | 1,692.26                    | 9.63                | 9.06             | -162.43                    | -56.05                                    | -82.97          | 105.57                       | 87.77                         | 17.81                           | 5.929                |                    |           |
| 1,800.00                                      | 1,779.86                    | 1,798.31                    | 1,791.15                    | 10.30               | 9.63             | -162.73                    | -61.26                                    | -92.85          | 115.38                       | 96.46                         | 18.92                           | 6.097                |                    |           |
| 1,900.00                                      | 1,877.76                    | 1,902.17                    | 1,890.04                    | 10.98               | 10.23            | -162.98                    | -66.48                                    | -102.73         | 125.19                       | 105.11                        | 20.08                           | 6.235                |                    |           |
| 2,000.00                                      | 1,975.66                    | 2,002.65                    | 1,988.92                    | 11.66               | 10.82            | -163.20                    | -71.70                                    | -112.61         | 135.00                       | 113.78                        | 21.22                           | 6.363                |                    |           |
| 2,100.00                                      | 2,073.56                    | 2,103.14                    | 2,087.81                    | 12.33               | 11.40            | -163.38                    | -76.92                                    | -122.48         | 144.81                       | 122.45                        | 22.35                           | 6.478                |                    |           |
| 2,200.00                                      | 2,171.46                    | 2,203.62                    | 2,186.70                    | 13.01               | 11.99            | -163.55                    | -82.14                                    | -132.36         | 154.62                       | 131.13                        | 23.49                           | 6.581                |                    |           |
| 2,300.00                                      | 2,269.36                    | 2,304.10                    | 2,285.59                    | 13.69               | 12.58            | -163.69                    | -87.36                                    | -142.24         | 164.43                       | 139.80                        | 24.63                           | 6.675                |                    |           |
| 2,400.00                                      | 2,367.25                    | 2,395.41                    | 2,384.47                    | 14.38               | 13.11            | -163.82                    | -92.58                                    | -152.12         | 174.25                       | 148.52                        | 25.72                           | 6.774                |                    |           |
| 2,500.00                                      | 2,465.15                    | 2,505.07                    | 2,483.36                    | 15.06               | 13.75            | -163.93                    | -97.79                                    | -162.00         | 184.06                       | 157.15                        | 26.92                           | 6.838                |                    |           |
| 2,600.00                                      | 2,563.05                    | 2,605.55                    | 2,582.25                    | 15.74               | 14.34            | -164.03                    | -103.01                                   | -171.87         | 193.88                       | 165.82                        | 28.06                           | 6.909                |                    |           |
| 2,700.00                                      | 2,660.95                    | 2,706.04                    | 2,681.14                    | 16.43               | 14.93            | -164.12                    | -108.23                                   | -181.75         | 203.70                       | 174.49                        | 29.20                           | 6.975                |                    |           |
| 2,800.00                                      | 2,758.85                    | 2,793.48                    | 2,780.02                    | 17.11               | 15.44            | -164.21                    | -113.45                                   | -191.63         | 213.51                       | 183.24                        | 30.27                           | 7.053                |                    |           |
| 2,900.00                                      | 2,856.74                    | 2,907.00                    | 2,878.91                    | 17.80               | 16.11            | -164.28                    | -118.67                                   | -201.51         | 223.33                       | 191.84                        | 31.49                           | 7.092                |                    |           |
| 3,000.00                                      | 2,954.64                    | 3,007.49                    | 2,977.80                    | 18.48               | 16.70            | -164.35                    | -123.89                                   | -211.38         | 233.15                       | 200.51                        | 32.64                           | 7.144                |                    |           |
| 3,100.00                                      | 3,052.54                    | 3,107.97                    | 3,076.69                    | 19.17               | 17.28            | -164.42                    | -129.11                                   | -221.26         | 242.97                       | 209.19                        | 33.78                           | 7.192                |                    |           |
| 3,200.00                                      | 3,150.44                    | 3,208.45                    | 3,175.57                    | 19.86               | 17.87            | -164.47                    | -134.32                                   | -231.14         | 252.79                       | 217.86                        | 34.93                           | 7.238                |                    |           |
| 3,300.00                                      | 3,248.34                    | 3,308.94                    | 3,274.46                    | 20.54               | 18.46            | -164.53                    | -139.54                                   | -241.02         | 262.60                       | 226.53                        | 36.07                           | 7.280                |                    |           |
| 3,400.00                                      | 3,346.23                    | 3,409.42                    | 3,373.35                    | 21.23               | 19.05            | -164.58                    | -144.76                                   | -250.89         | 272.42                       | 235.21                        | 37.22                           | 7.320                |                    |           |
| 3,500.00                                      | 3,444.13                    | 3,509.91                    | 3,472.24                    | 21.92               | 19.64            | -164.63                    | -149.98                                   | -260.77         | 282.24                       | 243.88                        | 38.36                           | 7.357                |                    |           |
| 3,600.00                                      | 3,542.03                    | 3,589.61                    | 3,571.12                    | 22.61               | 20.11            | -164.67                    | -155.20                                   | -270.65         | 292.06                       | 252.67                        | 39.39                           | 7.414                |                    |           |
| 3,700.00                                      | 3,639.93                    | 3,689.13                    | 3,670.01                    | 23.30               | 20.69            | -164.71                    | -160.42                                   | -280.53         | 301.88                       | 261.35                        | 40.53                           | 7.447                |                    |           |
| 3,800.00                                      | 3,737.83                    | 3,788.64                    | 3,768.90                    | 23.99               | 21.28            | -164.75                    | -165.64                                   | -290.40         | 311.70                       | 270.02                        | 41.68                           | 7.479                |                    |           |
| 3,900.00                                      | 3,835.73                    | 3,888.16                    | 3,867.79                    | 24.67               | 21.86            | -164.79                    | -170.85                                   | -300.28         | 321.52                       | 278.70                        | 42.82                           | 7.509                |                    |           |
| 4,000.00                                      | 3,933.62                    | 3,987.68                    | 3,966.67                    | 25.36               | 22.44            | -164.82                    | -176.07                                   | -310.16         | 331.34                       | 287.38                        | 43.96                           | 7.538                |                    |           |
| 4,100.00                                      | 4,031.52                    | 4,087.19                    | 4,065.56                    | 26.05               | 23.03            | -164.85                    | -181.29                                   | -320.04         | 341.16                       | 296.06                        | 45.10                           | 7.564                |                    |           |
| 4,200.00                                      | 4,129.42                    | 4,186.71                    | 4,164.45                    | 26.74               | 23.61            | -164.88                    | -186.51                                   | -329.92         | 350.98                       | 304.74                        | 46.24                           | 7.590                |                    |           |
| 4,300.00                                      | 4,227.32                    | 4,286.23                    | 4,263.34                    | 27.43               | 24.20            | -164.91                    | -191.73                                   | -339.79         | 360.80                       | 313.42                        | 47.38                           | 7.614                |                    |           |
| 4,400.00                                      | 4,325.22                    | 4,385.74                    | 4,362.22                    | 28.12               | 24.78            | -164.94                    | -196.95                                   | -349.67         | 370.62                       | 322.09                        | 48.53                           | 7.638                |                    |           |
| 4,500.00                                      | 4,423.11                    | 4,485.26                    | 4,461.11                    | 28.81               | 25.37            | -164.97                    | -202.17                                   | -359.55         | 380.44                       | 330.77                        | 49.67                           | 7.660                |                    |           |
| 4,600.00                                      | 4,521.01                    | 4,584.78                    | 4,560.00                    | 29.50               | 25.95            | -164.99                    | -207.38                                   | -369.43         | 390.26                       | 339.45                        | 50.81                           | 7.681                |                    |           |
| 4,702.88                                      | 4,621.73                    | 4,687.16                    | 4,661.73                    | 30.21               | 26.55            | -165.01                    | -212.75                                   | -379.59         | 400.36                       | 348.38                        | 51.99                           | 7.701                |                    |           |
| 4,800.00                                      | 4,717.13                    | 4,783.95                    | 4,757.91                    | 30.86               | 27.12            | -165.02                    | -217.83                                   | -389.20         | 408.32                       | 355.22                        | 53.09                           | 7.691                |                    |           |

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



Pro Directional  
Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 246H - OH - Plan 1 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|------------------------------|
| Survey Program: 0-MWD+HDGM                    |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   | Warning                      |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                              |
| 4,900.00                                      | 4,815.94              | 4,883.82              | 4,857.15              | 31.48            | 27.71         | -164.88               | -223.07                             | -399.11      | 413.19                 | 358.96                  | 54.23                     | 7.619             |                              |
| 5,000.00                                      | 4,915.22              | 4,973.34              | 4,946.22              | 32.07            | 28.22         | -164.71               | -227.22                             | -406.98      | 415.86                 | 360.62                  | 55.24                     | 7.528             |                              |
| 5,100.00                                      | 5,014.86              | 5,061.89              | 5,034.56              | 32.61            | 28.71         | -164.61               | -230.06                             | -412.35      | 417.89                 | 361.72                  | 56.17                     | 7.439             |                              |
| 5,200.00                                      | 5,114.74              | 5,150.42              | 5,123.03              | 33.11            | 29.18         | -164.56               | -231.63                             | -415.31      | 419.30                 | 362.26                  | 57.05                     | 7.350             |                              |
| 5,291.28                                      | 5,206.00              | 5,233.40              | 5,206.00              | 33.52            | 29.60         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 362.18                  | 57.81                     | 7.265             |                              |
| 5,300.00                                      | 5,214.72              | 5,242.12              | 5,214.72              | 33.55            | 29.64         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 362.10                  | 57.89                     | 7.255             |                              |
| 5,400.00                                      | 5,314.72              | 5,342.12              | 5,314.72              | 33.98            | 30.11         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 361.15                  | 58.84                     | 7.137             |                              |
| 5,500.00                                      | 5,414.72              | 5,442.12              | 5,414.72              | 34.41            | 30.58         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 360.19                  | 59.80                     | 7.023             |                              |
| 5,600.00                                      | 5,514.72              | 5,542.12              | 5,514.72              | 34.84            | 31.05         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 359.23                  | 60.76                     | 6.912             |                              |
| 5,700.00                                      | 5,614.72              | 5,642.12              | 5,614.72              | 35.27            | 31.53         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 358.26                  | 61.73                     | 6.804             |                              |
| 5,800.00                                      | 5,714.72              | 5,742.12              | 5,714.72              | 35.70            | 32.01         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 357.29                  | 62.70                     | 6.699             |                              |
| 5,900.00                                      | 5,814.72              | 5,842.12              | 5,814.72              | 36.14            | 32.49         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 356.32                  | 63.67                     | 6.596             |                              |
| 6,000.00                                      | 5,914.72              | 5,942.12              | 5,914.72              | 36.59            | 32.97         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 355.34                  | 64.65                     | 6.497             |                              |
| 6,100.00                                      | 6,014.72              | 6,042.12              | 6,014.72              | 37.03            | 33.46         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 354.36                  | 65.62                     | 6.400             |                              |
| 6,200.00                                      | 6,114.72              | 6,142.12              | 6,114.72              | 37.48            | 33.94         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 353.38                  | 66.61                     | 6.306             |                              |
| 6,300.00                                      | 6,214.72              | 6,242.12              | 6,214.72              | 37.92            | 34.43         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 352.40                  | 67.59                     | 6.214             |                              |
| 6,400.00                                      | 6,314.72              | 6,342.12              | 6,314.72              | 38.38            | 34.92         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 351.41                  | 68.58                     | 6.124             |                              |
| 6,500.00                                      | 6,414.72              | 6,442.12              | 6,414.72              | 38.83            | 35.41         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 350.42                  | 69.57                     | 6.037             |                              |
| 6,600.00                                      | 6,514.72              | 6,542.12              | 6,514.72              | 39.28            | 35.90         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 349.43                  | 70.56                     | 5.952             |                              |
| 6,700.00                                      | 6,614.72              | 6,642.12              | 6,614.72              | 39.74            | 36.40         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 348.43                  | 71.56                     | 5.869             |                              |
| 6,800.00                                      | 6,714.72              | 6,742.12              | 6,714.72              | 40.20            | 36.89         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 347.44                  | 72.55                     | 5.789             |                              |
| 6,900.00                                      | 6,814.72              | 6,842.12              | 6,814.72              | 40.66            | 37.38         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 346.44                  | 73.55                     | 5.710             |                              |
| 7,000.00                                      | 6,914.72              | 6,942.12              | 6,914.72              | 41.13            | 37.88         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 345.43                  | 74.55                     | 5.633             |                              |
| 7,100.00                                      | 7,014.72              | 7,042.12              | 7,014.72              | 41.59            | 38.38         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 344.43                  | 75.56                     | 5.559             |                              |
| 7,200.00                                      | 7,114.72              | 7,142.12              | 7,114.72              | 42.06            | 38.88         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 343.43                  | 76.56                     | 5.486             |                              |
| 7,300.00                                      | 7,214.72              | 7,242.12              | 7,214.72              | 42.53            | 39.38         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 342.42                  | 77.57                     | 5.414             |                              |
| 7,400.00                                      | 7,314.72              | 7,342.12              | 7,314.72              | 43.00            | 39.88         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 341.41                  | 78.58                     | 5.345             |                              |
| 7,500.00                                      | 7,414.72              | 7,442.12              | 7,414.72              | 43.47            | 40.38         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 340.40                  | 79.59                     | 5.277             |                              |
| 7,600.00                                      | 7,514.72              | 7,542.12              | 7,514.72              | 43.94            | 40.88         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 339.39                  | 80.60                     | 5.211             |                              |
| 7,700.00                                      | 7,614.72              | 7,642.12              | 7,614.72              | 44.42            | 41.39         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 338.37                  | 81.62                     | 5.146             |                              |
| 7,800.00                                      | 7,714.72              | 7,742.12              | 7,714.72              | 44.89            | 41.89         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 337.36                  | 82.63                     | 5.083             |                              |
| 7,900.00                                      | 7,814.72              | 7,842.12              | 7,814.72              | 45.37            | 42.40         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 336.34                  | 83.65                     | 5.021             |                              |
| 8,000.00                                      | 7,914.72              | 7,942.12              | 7,914.72              | 45.85            | 42.90         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 335.32                  | 84.67                     | 4.960             |                              |
| 8,100.00                                      | 8,014.72              | 8,042.12              | 8,014.72              | 46.33            | 43.41         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 334.30                  | 85.69                     | 4.901             |                              |
| 8,200.00                                      | 8,114.72              | 8,142.12              | 8,114.72              | 46.81            | 43.92         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 333.28                  | 86.71                     | 4.844             |                              |
| 8,300.00                                      | 8,214.72              | 8,242.12              | 8,214.72              | 47.29            | 44.42         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 332.26                  | 87.73                     | 4.787             |                              |
| 8,400.00                                      | 8,314.72              | 8,342.12              | 8,314.72              | 47.78            | 44.93         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 331.23                  | 88.76                     | 4.732             |                              |
| 8,500.00                                      | 8,414.72              | 8,442.12              | 8,414.72              | 48.26            | 45.44         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 330.21                  | 89.78                     | 4.678             |                              |
| 8,600.00                                      | 8,514.72              | 8,542.12              | 8,514.72              | 48.75            | 45.95         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 329.18                  | 90.81                     | 4.625             |                              |
| 8,700.00                                      | 8,614.72              | 8,642.12              | 8,614.72              | 49.23            | 46.46         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 328.15                  | 91.83                     | 4.573             |                              |
| 8,800.00                                      | 8,714.72              | 8,742.12              | 8,714.72              | 49.72            | 46.98         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 327.13                  | 92.86                     | 4.523             |                              |
| 8,900.00                                      | 8,814.72              | 8,842.12              | 8,814.72              | 50.21            | 47.49         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 326.10                  | 93.89                     | 4.473             |                              |
| 9,000.00                                      | 8,914.72              | 8,942.12              | 8,914.72              | 50.70            | 48.00         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 325.07                  | 94.92                     | 4.425             |                              |
| 9,100.00                                      | 9,014.72              | 9,042.12              | 9,014.72              | 51.19            | 48.51         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 324.03                  | 95.95                     | 4.377             |                              |
| 9,200.00                                      | 9,114.72              | 9,142.12              | 9,114.72              | 51.68            | 49.03         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 323.00                  | 96.99                     | 4.330             |                              |
| 9,300.00                                      | 9,214.72              | 9,242.12              | 9,214.72              | 52.18            | 49.54         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 321.97                  | 98.02                     | 4.285             |                              |
| 9,400.00                                      | 9,314.72              | 9,342.12              | 9,314.72              | 52.67            | 50.06         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 320.93                  | 99.05                     | 4.240             |                              |
| 9,500.00                                      | 9,414.72              | 9,442.12              | 9,414.72              | 53.17            | 50.57         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 319.90                  | 100.09                    | 4.196             |                              |
| 9,600.00                                      | 9,514.72              | 9,542.12              | 9,514.72              | 53.66            | 51.09         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 318.86                  | 101.13                    | 4.153             |                              |
| 9,700.00                                      | 9,614.72              | 9,642.12              | 9,614.72              | 54.16            | 51.60         | 89.86                 | -231.96                             | -415.94      | 419.99                 | 317.83                  | 102.16                    | 4.111             |                              |

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



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - 246H - OH - Plan 1 |                             |                             |                             |                 |        |                             |                              |                               |                                 |                      |         |                           | Offset Site Error:        | 0.00 usft |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------|--------|-----------------------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|---------------------------|---------------------------|-----------|
| Survey Program: 0-MWD+HDGM                    |                             |                             |                             |                 |        |                             |                              |                               |                                 |                      |         |                           | Offset Well Error:        | 0.00 usft |
| Reference                                     |                             | Offset                      |                             | Semi Major Axis |        | Highside<br>Toolface<br>(°) | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                           |                           |           |
| Measured<br>Depth<br>(usft)                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference       | Offset |                             | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |         | Offset<br>+N/-S<br>(usft) | Offset<br>+E/-W<br>(usft) |           |
| 9,800.00                                      | 9,714.72                    | 9,742.12                    | 9,714.72                    | 54.65           | 52.12  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 316.79               | 103.20  | 4.070                     |                           |           |
| 9,900.00                                      | 9,814.72                    | 9,842.12                    | 9,814.72                    | 55.15           | 52.64  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 315.75               | 104.24  | 4.029                     |                           |           |
| 10,000.00                                     | 9,914.72                    | 9,942.12                    | 9,914.72                    | 55.65           | 53.15  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 314.71               | 105.28  | 3.989                     |                           |           |
| 10,100.00                                     | 10,014.72                   | 10,042.12                   | 10,014.72                   | 56.15           | 53.67  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 313.67               | 106.32  | 3.950                     |                           |           |
| 10,200.00                                     | 10,114.72                   | 10,142.12                   | 10,114.72                   | 56.65           | 54.19  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 312.63               | 107.36  | 3.912                     |                           |           |
| 10,300.00                                     | 10,214.72                   | 10,242.12                   | 10,214.72                   | 57.15           | 54.71  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 311.59               | 108.40  | 3.874                     |                           |           |
| 10,400.00                                     | 10,314.72                   | 10,342.12                   | 10,314.72                   | 57.65           | 55.23  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 310.55               | 109.44  | 3.838                     |                           |           |
| 10,500.00                                     | 10,414.72                   | 10,442.12                   | 10,414.72                   | 58.15           | 55.75  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 309.51               | 110.48  | 3.801                     |                           |           |
| 10,562.32                                     | 10,477.04                   | 10,504.44                   | 10,477.04                   | 58.47           | 56.07  | 89.86                       | -231.96                      | -415.94                       | 419.99                          | 308.86               | 111.13  | 3.779                     |                           |           |
| 10,600.00                                     | 10,514.70                   | 10,542.09                   | 10,514.70                   | 58.65           | 56.27  | 90.63                       | -231.96                      | -415.94                       | 420.00                          | 308.47               | 111.53  | 3.766                     |                           |           |
| 10,650.00                                     | 10,564.38                   | 10,608.22                   | 10,564.38                   | 58.90           | 56.61  | 91.36                       | -231.96                      | -415.94                       | 420.10                          | 307.94               | 112.16  | 3.746                     |                           |           |
| 10,700.00                                     | 10,613.40                   | 10,640.80                   | 10,613.40                   | 59.13           | 56.78  | 92.63                       | -231.96                      | -415.94                       | 420.44                          | 307.82               | 112.62  | 3.733                     |                           |           |
| 10,750.00                                     | 10,661.38                   | 10,688.78                   | 10,661.38                   | 59.35           | 57.03  | 94.37                       | -231.96                      | -415.94                       | 421.34                          | 308.15               | 113.19  | 3.723                     |                           |           |
| 10,800.00                                     | 10,707.96                   | 10,735.46                   | 10,708.06                   | 59.56           | 57.27  | 96.47                       | -231.96                      | -415.94                       | 423.18                          | 309.42               | 113.76  | 3.720                     |                           |           |
| 10,850.00                                     | 10,752.79                   | 10,786.84                   | 10,759.36                   | 59.75           | 57.53  | 98.94                       | -229.57                      | -415.97                       | 426.11                          | 311.68               | 114.42  | 3.724                     |                           |           |
| 10,900.00                                     | 10,795.51                   | 10,840.41                   | 10,812.40                   | 59.92           | 57.80  | 101.37                      | -222.19                      | -416.05                       | 429.90                          | 314.84               | 115.07  | 3.736                     |                           |           |
| 10,950.00                                     | 10,835.81                   | 10,896.41                   | 10,866.86                   | 60.06           | 58.07  | 103.75                      | -209.22                      | -416.18                       | 434.48                          | 318.84               | 115.64  | 3.757                     |                           |           |
| 11,000.00                                     | 10,873.38                   | 10,955.10                   | 10,922.28                   | 60.19           | 58.33  | 106.07                      | -190.00                      | -416.39                       | 439.69                          | 323.63               | 116.05  | 3.789                     |                           |           |
| 11,050.00                                     | 10,907.93                   | 11,016.72                   | 10,978.03                   | 60.30           | 58.58  | 108.29                      | -163.83                      | -416.66                       | 445.36                          | 329.11               | 116.25  | 3.831                     |                           |           |
| 11,100.00                                     | 10,939.21                   | 11,081.48                   | 11,033.25                   | 60.39           | 58.81  | 110.39                      | -130.04                      | -417.02                       | 451.29                          | 335.11               | 116.18  | 3.884                     |                           |           |
| 11,150.00                                     | 10,966.96                   | 11,149.56                   | 11,086.78                   | 60.46           | 59.02  | 112.35                      | -88.05                       | -417.46                       | 457.23                          | 341.41               | 115.82  | 3.948                     |                           |           |
| 11,200.00                                     | 10,990.99                   | 11,221.00                   | 11,137.20                   | 60.51           | 59.19  | 114.12                      | -37.49                       | -418.00                       | 462.93                          | 347.73               | 115.19  | 4.019                     |                           |           |
| 11,250.00                                     | 11,011.11                   | 11,295.75                   | 11,182.78                   | 60.55           | 59.33  | 115.66                      | 21.68                        | -418.62                       | 468.11                          | 353.73               | 114.38  | 4.092                     |                           |           |
| 11,300.00                                     | 11,027.16                   | 11,373.55                   | 11,221.62                   | 60.59           | 59.43  | 116.93                      | 89.02                        | -419.34                       | 472.51                          | 358.97               | 113.54  | 4.162                     |                           |           |
| 11,350.00                                     | 11,039.02                   | 11,453.94                   | 11,251.80                   | 60.62           | 59.49  | 117.88                      | 163.44                       | -420.12                       | 475.88                          | 363.03               | 112.85  | 4.217                     |                           |           |
| 11,400.00                                     | 11,046.61                   | 11,536.23                   | 11,271.60                   | 60.65           | 59.65  | 118.49                      | 243.24                       | -420.97                       | 478.03                          | 365.52               | 112.51  | 4.249                     |                           |           |
| 11,450.00                                     | 11,049.87                   | 11,619.56                   | 11,279.80                   | 60.70           | 59.93  | 118.71                      | 326.09                       | -421.84                       | 478.84                          | 366.16               | 112.68  | 4.249                     |                           |           |
| 11,462.88                                     | 11,050.00                   | 11,641.08                   | 11,279.96                   | 60.71           | 60.00  | 118.70                      | 347.60                       | -422.07                       | 478.82                          | 366.00               | 112.82  | 4.244                     |                           |           |
| 11,463.46                                     | 11,050.00                   | 11,638.99                   | 11,280.00                   | 60.71           | 60.00  | 118.71                      | 345.52                       | -422.05                       | 478.83                          | 366.03               | 112.80  | 4.245                     |                           |           |
| 11,500.00                                     | 11,049.92                   | 11,675.53                   | 11,280.00                   | 60.76           | 60.12  | 118.72                      | 382.06                       | -422.43                       | 478.87                          | 365.81               | 113.06  | 4.236                     |                           |           |
| 11,600.00                                     | 11,049.72                   | 11,775.53                   | 11,280.00                   | 60.97           | 60.53  | 118.74                      | 482.05                       | -423.49                       | 478.96                          | 365.12               | 113.85  | 4.207                     |                           |           |
| 11,700.00                                     | 11,049.53                   | 11,875.53                   | 11,280.00                   | 61.29           | 60.99  | 118.76                      | 582.04                       | -424.55                       | 479.06                          | 364.30               | 114.76  | 4.174                     |                           |           |
| 11,800.00                                     | 11,049.33                   | 11,975.53                   | 11,280.00                   | 61.73           | 61.53  | 118.78                      | 682.04                       | -425.61                       | 479.16                          | 363.35               | 115.81  | 4.138                     |                           |           |
| 11,900.00                                     | 11,049.13                   | 12,075.53                   | 11,280.00                   | 62.27           | 62.14  | 118.80                      | 782.03                       | -426.66                       | 479.25                          | 362.28               | 116.98  | 4.097                     |                           |           |
| 12,000.00                                     | 11,048.93                   | 12,175.53                   | 11,280.00                   | 62.89           | 62.81  | 118.82                      | 882.03                       | -427.72                       | 479.35                          | 361.08               | 118.26  | 4.053                     |                           |           |
| 12,100.00                                     | 11,048.73                   | 12,275.53                   | 11,280.00                   | 63.59           | 63.54  | 118.84                      | 982.02                       | -428.78                       | 479.45                          | 359.78               | 119.67  | 4.006                     |                           |           |
| 12,200.00                                     | 11,048.53                   | 12,375.53                   | 11,280.00                   | 64.37           | 64.34  | 118.86                      | 1,082.01                     | -429.83                       | 479.54                          | 358.35               | 121.19  | 3.957                     |                           |           |
| 12,300.00                                     | 11,048.33                   | 12,475.53                   | 11,280.00                   | 65.21           | 65.20  | 118.88                      | 1,182.01                     | -430.89                       | 479.64                          | 356.82               | 122.81  | 3.905                     |                           |           |
| 12,400.00                                     | 11,048.13                   | 12,575.53                   | 11,280.00                   | 66.11           | 66.12  | 118.90                      | 1,282.00                     | -431.95                       | 479.74                          | 355.19               | 124.54  | 3.852                     |                           |           |
| 12,500.00                                     | 11,047.93                   | 12,675.53                   | 11,280.00                   | 67.07           | 67.09  | 118.92                      | 1,382.00                     | -433.00                       | 479.83                          | 353.46               | 126.37  | 3.797                     |                           |           |
| 12,600.00                                     | 11,047.73                   | 12,775.53                   | 11,280.00                   | 68.09           | 68.12  | 118.94                      | 1,481.99                     | -434.06                       | 479.93                          | 351.63               | 128.30  | 3.741                     |                           |           |
| 12,700.00                                     | 11,047.53                   | 12,875.53                   | 11,280.00                   | 69.16           | 69.20  | 118.97                      | 1,581.99                     | -435.12                       | 480.03                          | 349.71               | 130.31  | 3.684                     |                           |           |
| 12,800.00                                     | 11,047.33                   | 12,975.53                   | 11,280.00                   | 70.28           | 70.33  | 118.99                      | 1,681.98                     | -436.18                       | 480.12                          | 347.71               | 132.42  | 3.626                     |                           |           |
| 12,900.00                                     | 11,047.13                   | 13,075.53                   | 11,280.00                   | 71.45           | 71.50  | 119.01                      | 1,781.97                     | -437.23                       | 480.22                          | 345.62               | 134.60  | 3.568                     |                           |           |
| 13,000.00                                     | 11,046.93                   | 13,175.53                   | 11,280.00                   | 72.67           | 72.73  | 119.03                      | 1,881.97                     | -438.29                       | 480.32                          | 343.45               | 136.86  | 3.509                     |                           |           |
| 13,100.00                                     | 11,046.74                   | 13,275.53                   | 11,280.00                   | 73.92           | 73.99  | 119.05                      | 1,981.96                     | -439.35                       | 480.41                          | 341.21               | 139.20  | 3.451                     |                           |           |
| 13,200.00                                     | 11,046.54                   | 13,375.53                   | 11,280.00                   | 75.22           | 75.30  | 119.07                      | 2,081.96                     | -440.40                       | 480.51                          | 338.90               | 141.61  | 3.393                     |                           |           |
| 13,300.00                                     | 11,046.34                   | 13,475.53                   | 11,280.00                   | 76.56           | 76.64  | 119.09                      | 2,181.95                     | -441.46                       | 480.61                          | 336.52               | 144.08  | 3.336                     |                           |           |
| 13,400.00                                     | 11,046.14                   | 13,575.53                   | 11,280.00                   | 77.94           | 78.02  | 119.11                      | 2,281.95                     | -442.52                       | 480.71                          | 334.08               | 146.62  | 3.279                     |                           |           |
| 13,500.00                                     | 11,045.94                   | 13,675.53                   | 11,280.00                   | 79.34           | 79.44  | 119.13                      | 2,381.94                     | -443.57                       | 480.80                          | 331.58               | 149.22  | 3.222                     |                           |           |
| 13,600.00                                     | 11,045.74                   | 13,775.53                   | 11,280.00                   | 80.79           | 80.89  | 119.15                      | 2,481.93                     | -444.63                       | 480.90                          | 329.02               | 151.88  | 3.166                     |                           |           |

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



Pro Directional  
Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)  
Reference Site: Cypress 34  
Site Error: 0.00 usft  
Reference Well: 233H  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at 3.00 sigma  
Database: WellPlanner1  
Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - 246H - OH - Plan 1 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 0-MWD+HDGM                    |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                     |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   |                    | Warning   |
| Measured Depth (usft)                         | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 13,700.00                                     | 11,045.54             | 13,875.53             | 11,280.00             | 82.26            | 82.37         | 119.17                | 2,581.93                            | -445.69      | 481.00                 | 326.41                  | 154.59                    | 3.111             |                    |           |
| 13,800.00                                     | 11,045.34             | 13,975.53             | 11,280.00             | 83.77            | 83.88         | 119.19                | 2,681.92                            | -446.75      | 481.10                 | 323.75                  | 157.35                    | 3.058             |                    |           |
| 13,900.00                                     | 11,045.14             | 14,075.53             | 11,280.00             | 85.30            | 85.41         | 119.21                | 2,781.92                            | -447.80      | 481.19                 | 321.03                  | 160.16                    | 3.004             |                    |           |
| 14,000.00                                     | 11,044.94             | 14,175.53             | 11,280.00             | 86.86            | 86.98         | 119.23                | 2,881.91                            | -448.86      | 481.29                 | 318.28                  | 163.01                    | 2.952             |                    |           |
| 14,100.00                                     | 11,044.74             | 14,275.53             | 11,280.00             | 88.44            | 88.57         | 119.26                | 2,981.90                            | -449.92      | 481.39                 | 315.47                  | 165.91                    | 2.901             |                    |           |
| 14,200.00                                     | 11,044.54             | 14,375.53             | 11,280.00             | 90.05            | 90.18         | 119.28                | 3,081.90                            | -450.97      | 481.49                 | 312.63                  | 168.85                    | 2.851             |                    |           |
| 14,300.00                                     | 11,044.34             | 14,475.53             | 11,280.00             | 91.68            | 91.82         | 119.30                | 3,181.89                            | -452.03      | 481.58                 | 309.75                  | 171.83                    | 2.803             |                    |           |
| 14,400.00                                     | 11,044.15             | 14,575.53             | 11,280.00             | 93.34            | 93.47         | 119.32                | 3,281.89                            | -453.09      | 481.68                 | 306.83                  | 174.85                    | 2.755             |                    |           |
| 14,500.00                                     | 11,043.95             | 14,675.53             | 11,280.00             | 95.01            | 95.15         | 119.34                | 3,381.88                            | -454.14      | 481.78                 | 303.88                  | 177.90                    | 2.708             |                    |           |
| 14,600.00                                     | 11,043.75             | 14,775.53             | 11,280.00             | 96.70            | 96.85         | 119.36                | 3,481.88                            | -455.20      | 481.88                 | 300.89                  | 180.99                    | 2.663             |                    |           |
| 14,700.00                                     | 11,043.55             | 14,875.53             | 11,280.00             | 98.41            | 98.56         | 119.38                | 3,581.87                            | -456.26      | 481.98                 | 297.88                  | 184.10                    | 2.618             |                    |           |
| 14,800.00                                     | 11,043.35             | 14,975.53             | 11,280.00             | 100.14           | 100.30        | 119.40                | 3,681.86                            | -457.32      | 482.07                 | 294.83                  | 187.25                    | 2.575             |                    |           |
| 14,900.00                                     | 11,043.15             | 15,075.52             | 11,280.00             | 101.89           | 102.05        | 119.42                | 3,781.86                            | -458.37      | 482.17                 | 291.75                  | 190.42                    | 2.532             |                    |           |
| 15,000.00                                     | 11,042.95             | 15,175.52             | 11,280.00             | 103.65           | 103.81        | 119.44                | 3,881.85                            | -459.43      | 482.27                 | 288.65                  | 193.62                    | 2.491             |                    |           |
| 15,100.00                                     | 11,042.75             | 15,275.52             | 11,280.00             | 105.42           | 105.59        | 119.46                | 3,981.85                            | -460.49      | 482.37                 | 285.52                  | 196.85                    | 2.450             |                    |           |
| 15,200.00                                     | 11,042.55             | 15,375.52             | 11,280.00             | 107.21           | 107.38        | 119.48                | 4,081.84                            | -461.54      | 482.47                 | 282.37                  | 200.10                    | 2.411             |                    |           |
| 15,300.00                                     | 11,042.35             | 15,475.52             | 11,280.00             | 109.02           | 109.19        | 119.50                | 4,181.84                            | -462.60      | 482.57                 | 279.20                  | 203.37                    | 2.373             |                    |           |
| 15,400.00                                     | 11,042.15             | 15,575.52             | 11,280.00             | 110.83           | 111.01        | 119.52                | 4,281.83                            | -463.66      | 482.66                 | 276.00                  | 206.66                    | 2.336             |                    |           |
| 15,500.00                                     | 11,041.95             | 15,675.52             | 11,280.00             | 112.66           | 112.84        | 119.54                | 4,381.82                            | -464.71      | 482.76                 | 272.78                  | 209.98                    | 2.299             |                    |           |
| 15,600.00                                     | 11,041.75             | 15,775.52             | 11,280.00             | 114.50           | 114.69        | 119.56                | 4,481.82                            | -465.77      | 482.86                 | 269.55                  | 213.31                    | 2.264             |                    |           |
| 15,700.00                                     | 11,041.55             | 15,875.52             | 11,280.00             | 116.35           | 116.54        | 119.59                | 4,581.81                            | -466.83      | 482.96                 | 266.29                  | 216.67                    | 2.229             |                    |           |
| 15,800.00                                     | 11,041.36             | 15,975.52             | 11,280.00             | 118.22           | 118.41        | 119.61                | 4,681.81                            | -467.89      | 483.06                 | 263.02                  | 220.04                    | 2.195             |                    |           |
| 15,900.00                                     | 11,041.16             | 16,075.52             | 11,280.00             | 120.09           | 120.28        | 119.63                | 4,781.80                            | -468.94      | 483.16                 | 259.73                  | 223.43                    | 2.162             |                    |           |
| 16,000.00                                     | 11,040.96             | 16,175.52             | 11,280.00             | 121.97           | 122.17        | 119.65                | 4,881.80                            | -470.00      | 483.26                 | 256.43                  | 226.83                    | 2.130             |                    |           |
| 16,100.00                                     | 11,040.76             | 16,275.52             | 11,280.00             | 123.86           | 124.06        | 119.67                | 4,981.79                            | -471.06      | 483.36                 | 253.11                  | 230.25                    | 2.099             |                    |           |
| 16,200.00                                     | 11,040.56             | 16,375.52             | 11,280.00             | 125.76           | 125.96        | 119.69                | 5,081.78                            | -472.11      | 483.46                 | 249.77                  | 233.68                    | 2.069             |                    |           |
| 16,300.00                                     | 11,040.36             | 16,475.52             | 11,280.00             | 127.67           | 127.87        | 119.71                | 5,181.78                            | -473.17      | 483.55                 | 246.42                  | 237.13                    | 2.039             |                    |           |
| 16,400.00                                     | 11,040.16             | 16,575.52             | 11,280.00             | 129.59           | 129.79        | 119.73                | 5,281.77                            | -474.23      | 483.65                 | 243.06                  | 240.59                    | 2.010             |                    |           |
| 16,479.98                                     | 11,040.00             | 16,655.50             | 11,280.00             | 131.12           | 131.33        | 119.75                | 5,361.74                            | -475.07      | 483.73                 | 240.36                  | 243.37                    | 1.988 SF          |                    |           |



# Pro Directional Anticollision Report



|                    |                          |                              |                                                 |
|--------------------|--------------------------|------------------------------|-------------------------------------------------|
| Company:           | Tap Rock Operating, LLC  | Local Co-ordinate Reference: | Well 233H                                       |
| Project:           | Eddy County, NM (NAD 83) | TVD Reference:               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Reference Site:    | Cypress 34               | MD Reference:                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| Site Error:        | 0.00 usft                | North Reference:             | Grid                                            |
| Reference Well:    | 233H                     | Survey Calculation Method:   | Minimum Curvature                               |
| Well Error:        | 0.00 usft                | Output errors are at         | 3.00 sigma                                      |
| Reference Wellbore | OH                       | Database:                    | WellPlanner1                                    |
| Reference Design:  | Plan 1                   | Offset TVD Reference:        | Offset Datum                                    |

| Offset Design Cypress 34 - Knoll AOK 002 (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                           |                   |         | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|---------------------------|-------------------|---------|--------------------|-----------|
| Survey Program: 100-MWD+HDGM, 7421-MWD+HDGM            |                       |                       |                       |                  |               |                       |                                     |              |                           |                   |         | Offset Well Error: | 0.00 usft |
| Reference                                              |                       | Offset                |                       | Semi Major Axis  |               | Highside Toolface (°) | Distance                            |              | Minimum Separation (usft) | Separation Factor | Warning |                    |           |
| Measured Depth (usft)                                  | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) |                       | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) |                           |                   |         |                    |           |
| 0.00                                                   | 0.00                  | 0.00                  | 0.00                  | 0.00             | 0.00          | 97.25                 | -88.10                              | 692.60       | 699.13                    |                   |         |                    |           |
| 100.00                                                 | 100.00                | 66.40                 | 66.40                 | 0.20             | 0.18          | 97.25                 | -88.07                              | 692.46       | 698.05                    | 697.67            | 0.38    | 1,852.725          |           |
| 200.00                                                 | 200.00                | 168.46                | 168.46                | 0.74             | 0.64          | 97.24                 | -87.86                              | 691.85       | 697.43                    | 696.06            | 1.37    | 508.205            |           |
| 300.00                                                 | 300.00                | 266.46                | 266.46                | 1.27             | 1.16          | 97.20                 | -87.28                              | 691.30       | 696.80                    | 694.36            | 2.43    | 286.453            |           |
| 351.62                                                 | 351.62                | 315.13                | 315.12                | 1.55             | 1.42          | 97.15                 | -86.76                              | 691.23       | 696.66                    | 693.69            | 2.97    | 234.734            |           |
| 400.00                                                 | 400.00                | 358.33                | 358.32                | 1.81             | 1.65          | 97.09                 | -86.03                              | 691.49       | 696.84                    | 693.38            | 3.46    | 201.659            |           |
| 450.00                                                 | 450.00                | 402.96                | 402.93                | 2.08             | 1.88          | 97.00                 | -84.95                              | 692.13       | 697.40                    | 693.44            | 3.96    | 176.161            |           |
| 500.00                                                 | 500.00                | 447.18                | 447.12                | 2.34             | 2.11          | -157.54               | -83.71                              | 693.14       | 698.77                    | 694.31            | 4.45    | 156.907            |           |
| 600.00                                                 | 599.93                | 538.73                | 538.57                | 2.86             | 2.60          | -157.85               | -80.97                              | 696.30       | 705.07                    | 699.62            | 5.45    | 129.303            |           |
| 700.00                                                 | 699.68                | 637.77                | 637.50                | 3.38             | 3.12          | -158.23               | -78.33                              | 700.27       | 715.22                    | 708.72            | 6.51    | 109.941            |           |
| 800.00                                                 | 799.13                | 740.37                | 740.00                | 3.93             | 3.67          | -158.65               | -76.09                              | 703.90       | 728.23                    | 720.64            | 7.59    | 96.006             |           |
| 900.00                                                 | 898.15                | 840.62                | 840.20                | 4.49             | 4.20          | -159.06               | -74.82                              | 707.03       | 744.19                    | 735.53            | 8.66    | 85.944             |           |
| 1,000.00                                               | 996.63                | 937.94                | 937.48                | 5.08             | 4.72          | -159.44               | -74.36                              | 709.84       | 763.25                    | 753.53            | 9.72    | 78.505             |           |
| 1,038.40                                               | 1,034.27              | 973.73                | 973.25                | 5.32             | 4.91          | -159.57               | -74.34                              | 710.94       | 771.53                    | 761.40            | 10.13   | 76.171             |           |
| 1,100.00                                               | 1,094.58              | 1,029.73              | 1,029.22              | 5.70             | 5.21          | -159.88               | -74.45                              | 712.83       | 785.39                    | 774.63            | 10.76   | 72.989             |           |
| 1,200.00                                               | 1,192.48              | 1,120.02              | 1,119.43              | 6.34             | 5.69          | -160.31               | -75.09                              | 716.57       | 808.70                    | 796.92            | 11.78   | 68.651             |           |
| 1,300.00                                               | 1,290.37              | 1,216.86              | 1,216.16              | 6.98             | 6.20          | -160.71               | -76.37                              | 720.95       | 832.47                    | 819.63            | 12.84   | 64.832             |           |
| 1,400.00                                               | 1,388.27              | 1,320.41              | 1,319.61              | 7.64             | 6.75          | -161.09               | -78.07                              | 725.11       | 855.79                    | 841.84            | 13.95   | 61.366             |           |
| 1,500.00                                               | 1,486.17              | 1,420.40              | 1,419.52              | 8.30             | 7.28          | -161.43               | -79.75                              | 728.67       | 878.71                    | 863.68            | 15.04   | 58.444             |           |
| 1,600.00                                               | 1,584.07              | 1,524.54              | 1,523.61              | 8.96             | 7.84          | -161.82               | -80.73                              | 731.80       | 901.08                    | 884.93            | 16.16   | 55.776             |           |
| 1,700.00                                               | 1,681.97              | 1,627.46              | 1,626.50              | 9.63             | 8.39          | -162.24               | -80.70                              | 734.18       | 922.79                    | 905.52            | 17.27   | 53.425             |           |
| 1,800.00                                               | 1,779.86              | 1,726.47              | 1,725.50              | 10.30            | 8.92          | -162.64               | -80.56                              | 736.09       | 944.16                    | 925.79            | 18.37   | 51.401             |           |
| 1,900.00                                               | 1,877.76              | 1,821.58              | 1,820.59              | 10.98            | 9.43          | -162.98               | -80.73                              | 737.98       | 965.63                    | 946.19            | 19.44   | 49.672             |           |
| 2,000.00                                               | 1,975.66              | 1,914.33              | 1,913.31              | 11.66            | 9.93          | -163.29               | -81.14                              | 740.19       | 987.52                    | 967.03            | 20.50   | 48.181             |           |
| 2,100.00                                               | 2,073.56              | 2,008.49              | 2,007.43              | 12.33            | 10.44         | -163.58               | -81.79                              | 742.83       | 1,009.86                  | 988.30            | 21.56   | 46.837             |           |
| 2,200.00                                               | 2,171.46              | 2,113.07              | 2,111.97              | 13.01            | 11.00         | -163.86               | -82.77                              | 745.53       | 1,032.00                  | 1,009.30          | 22.70   | 45.469             |           |
| 2,300.00                                               | 2,269.36              | 2,217.08              | 2,215.95              | 13.69            | 11.55         | -164.12               | -84.01                              | 747.48       | 1,053.47                  | 1,029.64          | 23.83   | 44.213             |           |
| 2,400.00                                               | 2,367.25              | 2,314.53              | 2,313.38              | 14.38            | 12.07         | -164.36               | -85.20                              | 749.00       | 1,074.66                  | 1,049.75          | 24.91   | 43.135             |           |
| 2,500.00                                               | 2,465.15              | 2,405.01              | 2,403.84              | 15.06            | 12.55         | -164.56               | -86.36                              | 750.76       | 1,096.24                  | 1,070.29          | 25.95   | 42.239             |           |
| 2,600.00                                               | 2,563.05              | 2,488.37              | 2,487.14              | 15.74            | 13.00         | -164.70               | -88.18                              | 753.21       | 1,118.78                  | 1,091.84          | 26.94   | 41.526             |           |
| 2,700.00                                               | 2,660.95              | 2,576.26              | 2,574.91              | 16.43            | 13.47         | -164.78               | -91.37                              | 756.73       | 1,142.36                  | 1,114.40          | 27.96   | 40.856             |           |
| 2,800.00                                               | 2,758.85              | 2,674.72              | 2,673.17              | 17.11            | 14.00         | -164.81               | -95.92                              | 761.12       | 1,166.36                  | 1,137.30          | 29.06   | 40.137             |           |
| 2,900.00                                               | 2,856.74              | 2,772.21              | 2,770.43              | 17.80            | 14.53         | -164.82               | -100.92                             | 765.23       | 1,190.13                  | 1,159.98          | 30.15   | 39.470             |           |
| 3,000.00                                               | 2,954.64              | 2,873.06              | 2,870.95              | 18.48            | 15.07         | -164.74               | -107.93                             | 769.45       | 1,213.84                  | 1,182.57          | 31.27   | 38.813             |           |
| 3,100.00                                               | 3,052.54              | 2,973.65              | 2,971.11              | 19.17            | 15.61         | -164.59               | -116.40                             | 773.29       | 1,237.19                  | 1,204.80          | 32.40   | 38.189             |           |
| 3,200.00                                               | 3,150.44              | 3,073.16              | 3,070.20              | 19.86            | 16.15         | -164.45               | -124.79                             | 776.88       | 1,260.35                  | 1,226.84          | 33.51   | 37.608             |           |
| 3,300.00                                               | 3,248.34              | 3,169.91              | 3,166.62              | 20.54            | 16.68         | -164.35               | -132.12                             | 780.28       | 1,283.42                  | 1,248.81          | 34.61   | 37.084             |           |
| 3,400.00                                               | 3,346.23              | 3,267.48              | 3,263.90              | 21.23            | 17.21         | -164.30               | -138.69                             | 783.76       | 1,306.54                  | 1,270.83          | 35.71   | 36.586             |           |
| 3,500.00                                               | 3,444.13              | 3,365.94              | 3,362.10              | 21.92            | 17.74         | -164.26               | -145.04                             | 787.20       | 1,329.60                  | 1,292.78          | 36.82   | 36.108             |           |
| 3,600.00                                               | 3,542.03              | 3,463.14              | 3,459.03              | 22.61            | 18.27         | -164.22               | -151.31                             | 790.53       | 1,352.60                  | 1,314.67          | 37.93   | 35.665             |           |
| 3,700.00                                               | 3,639.93              | 3,558.44              | 3,554.08              | 23.30            | 18.79         | -164.19               | -157.33                             | 793.88       | 1,375.67                  | 1,336.66          | 39.01   | 35.262             |           |
| 3,800.00                                               | 3,737.83              | 3,654.58              | 3,649.98              | 23.99            | 19.32         | -164.16               | -163.29                             | 797.41       | 1,398.90                  | 1,358.79          | 40.11   | 34.878             |           |
| 3,900.00                                               | 3,835.73              | 3,752.14              | 3,747.28              | 24.67            | 19.85         | -164.13               | -169.42                             | 800.99       | 1,422.14                  | 1,380.92          | 41.22   | 34.504             |           |
| 4,000.00                                               | 3,933.62              | 3,853.06              | 3,847.94              | 25.36            | 20.40         | -164.10               | -175.68                             | 804.61       | 1,445.29                  | 1,402.94          | 42.35   | 34.125             |           |
| 4,100.00                                               | 4,031.52              | 3,952.22              | 3,946.86              | 26.05            | 20.95         | -164.09               | -181.60                             | 807.85       | 1,468.13                  | 1,424.65          | 43.48   | 33.769             |           |
| 4,200.00                                               | 4,129.42              | 4,048.19              | 4,042.61              | 26.74            | 21.47         | -164.07               | -187.35                             | 811.06       | 1,491.05                  | 1,446.47          | 44.57   | 33.453             |           |
| 4,300.00                                               | 4,227.32              | 4,146.66              | 4,140.86              | 27.43            | 22.01         | -164.07               | -193.05                             | 814.38       | 1,513.98                  | 1,468.29          | 45.69   | 33.137             |           |
| 4,400.00                                               | 4,325.22              | 4,245.47              | 4,239.46              | 28.12            | 22.56         | -164.07               | -198.51                             | 817.57       | 1,536.78                  | 1,489.97          | 46.81   | 32.831             |           |
| 4,500.00                                               | 4,423.11              | 4,343.54              | 4,337.34              | 28.81            | 23.09         | -164.07               | -203.90                             | 820.71       | 1,559.55                  | 1,511.63          | 47.92   | 32.544             |           |
| 4,600.00                                               | 4,521.01              | 4,442.05              | 4,435.66              | 29.50            | 23.63         | -164.08               | -209.16                             | 823.77       | 1,582.24                  | 1,533.20          | 49.04   | 32.265             |           |
| 4,702.88                                               | 4,621.73              | 4,542.07              | 4,535.50              | 30.21            | 24.18         | -164.09               | -214.42                             | 826.86       | 1,605.56                  | 1,555.38          | 50.18   | 31.997             |           |

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



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)  
**Reference Site:** Cypress 34  
**Site Error:** 0.00 usft  
**Reference Well:** 233H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1

**Local Co-ordinate Reference:** Well 233H  
**TVD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**MD Reference:** Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** WellPlanner1  
**Offset TVD Reference:** Offset Datum

| Offset Design Cypress 34 - Knoi AOK 002 (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   |  | Offset Site Error: | 0.00 usft |
|-------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--|--------------------|-----------|
| Survey Program: 100-MWD+HDGM, 7421-MWD+HDGM           |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   |  | Offset Well Error: | 0.00 usft |
| Reference                                             |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   |  |                    | Warning   |
| Measured Depth (usft)                                 | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |  |                    |           |
| 4,800.00                                              | 4,717.13              | 4,638.42              | 4,631.66              | 30.86            | 24.71         | -164.20               | -219.51                             | 829.84       | 1,626.03               | 1,574.77                | 51.26                     | 31.720            |  |                    |           |
| 4,900.00                                              | 4,815.94              | 4,740.96              | 4,734.02              | 31.48            | 25.27         | -164.26               | -224.91                             | 832.80       | 1,643.65               | 1,591.26                | 52.39                     | 31.371            |  |                    |           |
| 5,000.00                                              | 4,915.22              | 4,843.09              | 4,835.99              | 32.07            | 25.83         | -164.27               | -230.01                             | 835.51       | 1,657.74               | 1,604.24                | 53.51                     | 30.981            |  |                    |           |
| 5,100.00                                              | 5,014.86              | 4,944.85              | 4,937.59              | 32.61            | 26.39         | -164.24               | -234.95                             | 838.05       | 1,668.34               | 1,613.73                | 54.60                     | 30.553            |  |                    |           |
| 5,200.00                                              | 5,114.74              | 5,045.53              | 5,038.13              | 33.11            | 26.94         | -164.16               | -239.74                             | 840.46       | 1,675.48               | 1,619.80                | 55.68                     | 30.092            |  |                    |           |
| 5,291.28                                              | 5,206.00              | 5,136.53              | 5,129.00              | 33.52            | 27.43         | 90.37                 | -243.94                             | 842.62       | 1,679.07               | 1,622.44                | 56.63                     | 29.652            |  |                    |           |
| 5,300.00                                              | 5,214.72              | 5,145.20              | 5,137.66              | 33.55            | 27.48         | 90.39                 | -244.34                             | 842.82       | 1,679.28               | 1,622.57                | 56.71                     | 29.610            |  |                    |           |
| 5,400.00                                              | 5,314.72              | 5,245.86              | 5,238.19              | 33.98            | 28.03         | 90.54                 | -248.96                             | 845.22       | 1,681.70               | 1,623.96                | 57.74                     | 29.126            |  |                    |           |
| 5,500.00                                              | 5,414.72              | 5,345.63              | 5,337.84              | 34.41            | 28.57         | 90.69                 | -253.34                             | 847.51       | 1,684.05               | 1,625.29                | 58.76                     | 28.661            |  |                    |           |
| 5,600.00                                              | 5,514.72              | 5,444.83              | 5,436.91              | 34.84            | 29.12         | 90.84                 | -257.84                             | 849.89       | 1,686.51               | 1,626.73                | 59.78                     | 28.214            |  |                    |           |
| 5,700.00                                              | 5,614.72              | 5,546.25              | 5,538.20              | 35.27            | 29.67         | 91.00                 | -262.33                             | 852.25       | 1,688.91               | 1,628.10                | 60.81                     | 27.772            |  |                    |           |
| 5,800.00                                              | 5,714.72              | 5,646.66              | 5,638.49              | 35.70            | 30.22         | 91.14                 | -266.64                             | 854.53       | 1,691.26               | 1,629.42                | 61.84                     | 27.348            |  |                    |           |
| 5,900.00                                              | 5,814.72              | 5,746.23              | 5,737.95              | 36.14            | 30.76         | 91.28                 | -270.80                             | 856.79       | 1,693.62               | 1,630.75                | 62.87                     | 26.940            |  |                    |           |
| 6,000.00                                              | 5,914.72              | 5,845.39              | 5,836.99              | 36.59            | 31.30         | 91.42                 | -274.97                             | 859.07       | 1,696.03               | 1,632.14                | 63.89                     | 26.546            |  |                    |           |
| 6,100.00                                              | 6,014.72              | 5,946.07              | 5,937.57              | 37.03            | 31.85         | 91.56                 | -279.08                             | 861.42       | 1,698.46               | 1,633.53                | 64.93                     | 26.159            |  |                    |           |
| 6,200.00                                              | 6,114.72              | 6,046.61              | 6,038.01              | 37.48            | 32.40         | 91.69                 | -283.02                             | 863.67       | 1,700.81               | 1,634.85                | 65.96                     | 25.784            |  |                    |           |
| 6,300.00                                              | 6,214.72              | 6,148.11              | 6,139.41              | 37.92            | 32.95         | 91.81                 | -286.75                             | 865.96       | 1,703.18               | 1,636.17                | 67.01                     | 25.417            |  |                    |           |
| 6,400.00                                              | 6,314.72              | 6,250.81              | 6,241.69              | 38.38            | 33.50         | -173.06               | -437.64                             | -860.85      | 1,672.22               | 1,628.19                | 44.03                     | 37.983            |  |                    |           |
| 6,500.00                                              | 6,414.72              | 6,352.30              | 6,342.72              | 38.83            | 34.05         | -173.75               | -437.62                             | -858.34      | 1,573.03               | 1,528.55                | 44.49                     | 35.361            |  |                    |           |
| 6,600.00                                              | 6,514.72              | 6,453.97              | 6,443.76              | 39.28            | 34.60         | -174.40               | -437.61                             | -856.01      | 1,473.95               | 1,428.96                | 44.99                     | 32.763            |  |                    |           |
| 6,700.00                                              | 6,614.72              | 6,554.80              | 6,543.80              | 39.74            | 35.15         | -175.00               | -437.60                             | -853.84      | 1,374.99               | 1,329.45                | 45.55                     | 30.188            |  |                    |           |
| 6,800.00                                              | 6,714.72              | 6,655.79              | 6,644.79              | 40.20            | 35.70         | -175.56               | -437.58                             | -851.83      | 1,276.20               | 1,230.02                | 46.18                     | 27.636            |  |                    |           |
| 6,900.00                                              | 6,814.72              | 6,756.80              | 6,745.80              | 40.66            | 36.25         | -176.08               | -437.57                             | -849.95      | 1,177.61               | 1,130.71                | 46.90                     | 25.107            |  |                    |           |
| 7,000.00                                              | 6,914.72              | 6,857.81              | 6,846.81              | 41.13            | 36.80         | -176.57               | -437.56                             | -848.18      | 1,079.28               | 1,031.53                | 47.75                     | 22.602            |  |                    |           |
| 7,100.00                                              | 7,014.72              | 6,958.82              | 6,947.82              | 41.59            | 37.35         | -177.03               | -437.55                             | -846.53      | 981.28                 | 932.51                  | 48.77                     | 20.120            |  |                    |           |
| 7,200.00                                              | 7,114.72              | 7,059.83              | 7,048.83              | 42.06            | 37.90         | -177.47               | -437.54                             | -844.98      | 883.73                 | 833.70                  | 50.03                     | 17.663            |  |                    |           |
| 7,300.00                                              | 7,214.72              | 7,160.84              | 7,149.84              | 42.53            | 38.45         | -177.88               | -437.53                             | -843.52      | 786.79                 | 735.14                  | 51.65                     | 15.234            |  |                    |           |
| 7,400.00                                              | 7,314.72              | 7,261.85              | 7,250.85              | 43.00            | 39.00         | -178.25               | -437.52                             | -842.19      | 690.72                 | 636.93                  | 53.79                     | 12.841            |  |                    |           |
| 7,500.00                                              | 7,414.72              | 7,362.86              | 7,351.86              | 43.47            | 39.55         | -178.59               | -437.52                             | -840.95      | 595.95                 | 539.19                  | 56.76                     | 10.499            |  |                    |           |
| 7,600.00                                              | 7,514.72              | 7,463.87              | 7,452.87              | 43.94            | 40.10         | -178.93               | -437.51                             | -839.76      | 503.20                 | 442.14                  | 61.06                     | 8.241             |  |                    |           |
| 7,700.00                                              | 7,614.72              | 7,564.88              | 7,553.88              | 44.42            | 40.65         | -179.25               | -437.50                             | -838.62      | 413.83                 | 346.27                  | 67.56                     | 6.126             |  |                    |           |
| 7,800.00                                              | 7,714.72              | 7,665.89              | 7,654.89              | 44.89            | 41.20         | -179.55               | -437.50                             | -837.53      | 320.61                 | 252.99                  | 77.63                     | 4.259             |  |                    |           |
| 7,900.00                                              | 7,814.72              | 7,766.90              | 7,755.90              | 45.37            | 41.75         | -179.85               | -437.49                             | -836.48      | 229.52                 | 166.96                  | 92.56                     | 2.804             |  |                    |           |
| 8,000.00                                              | 7,914.72              | 7,867.91              | 7,856.91              | 45.85            | 42.30         | -179.87               | -437.49                             | -835.47      | 138.06                 | 104.13                  | 108.93                    | 1.956             |  |                    |           |
| 8,059.79                                              | 7,974.52              | 7,924.85              | 7,913.02              | 46.14            | 42.65         | -179.71               | -437.48                             | -834.89      | 204.50                 | 91.16                   | 113.33                    | 1.804 CC, ES, SF  |  |                    |           |
| 8,100.00                                              | 8,014.72              | 7,924.46              | 7,913.02              | 46.33            | 42.64         | -179.60               | -437.48                             | -834.50      | 208.41                 | 96.34                   | 112.07                    | 1.860             |  |                    |           |
| 8,200.00                                              | 8,114.72              | 7,923.53              | 7,912.03              | 46.81            | 42.61         | -179.34               | -437.48                             | -833.57      | 247.94                 | 149.16                  | 98.78                     | 2.510             |  |                    |           |
| 8,300.00                                              | 8,214.72              | 7,922.63              | 7,911.04              | 47.29            | 42.59         | -179.09               | -437.47                             | -832.67      | 315.46                 | 231.37                  | 84.09                     | 3.751             |  |                    |           |
| 8,400.00                                              | 8,314.72              | 7,921.76              | 7,910.05              | 47.78            | 42.56         | -178.84               | -437.47                             | -831.80      | 396.92                 | 323.07                  | 73.85                     | 5.375             |  |                    |           |
| 8,500.00                                              | 8,414.72              | 7,920.92              | 7,909.05              | 48.26            | 42.54         | -178.61               | -437.46                             | -830.96      | 485.37                 | 418.01                  | 67.36                     | 7.206             |  |                    |           |
| 8,600.00                                              | 8,514.72              | 7,920.11              | 7,908.06              | 48.75            | 42.52         | -178.38               | -437.46                             | -830.16      | 577.59                 | 514.33                  | 63.26                     | 9.130             |  |                    |           |
| 8,700.00                                              | 8,614.72              | 7,919.33              | 7,908.07              | 49.23            | 42.50         | -178.16               | -437.46                             | -829.38      | 672.05                 | 611.42                  | 60.63                     | 11.084            |  |                    |           |
| 8,800.00                                              | 8,714.72              | 7,918.58              | 7,907.07              | 49.72            | 42.48         | -177.95               | -437.45                             | -828.62      | 767.90                 | 708.98                  | 58.92                     | 13.033            |  |                    |           |
| 8,900.00                                              | 8,814.72              | 7,917.85              | 7,906.08              | 50.21            | 42.46         | -177.75               | -437.45                             | -827.89      | 864.70                 | 806.90                  | 57.80                     | 14.959            |  |                    |           |
| 9,000.00                                              | 8,914.72              | 7,917.15              | 7,906.09              | 50.70            | 42.44         | -177.55               | -437.45                             | -827.19      | 962.15                 | 905.06                  | 57.09                     | 16.854            |  |                    |           |
| 9,100.00                                              | 9,014.72              | 7,916.46              | 7,906.09              | 51.19            | 42.42         | -177.36               | -437.44                             | -826.51      | 1,060.08               | 1,003.43                | 56.64                     | 18.715            |  |                    |           |
| 9,200.00                                              | 9,114.72              | 7,915.80              | 7,906.10              | 51.68            | 42.40         | -177.18               | -437.44                             | -825.85      | 1,158.35               | 1,101.96                | 56.39                     | 20.541            |  |                    |           |
| 9,300.00                                              | 9,214.72              | 7,915.16              | 7,906.10              | 52.18            | 42.38         | -177.00               | -437.44                             | -825.21      | 1,256.91               | 1,200.62                | 56.29                     | 22.330            |  |                    |           |
| 9,400.00                                              | 9,314.72              | 7,914.54              | 7,906.11              | 52.67            | 42.36         | -176.82               | -437.44                             | -824.59      | 1,355.67               | 1,299.38                | 56.29                     | 24.084            |  |                    |           |
| 9,500.00                                              | 9,414.72              | 7,913.94              | 7,906.11              | 53.17            | 42.35         | -176.66               | -437.43                             | -823.98      | 1,454.60               | 1,398.23                | 56.37                     | 25.804            |  |                    |           |

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



# Pro Directional Anticollision Report



|                           |                          |                                     |                                                 |
|---------------------------|--------------------------|-------------------------------------|-------------------------------------------------|
| <b>Company:</b>           | Tap Rock Operating, LLC  | <b>Local Co-ordinate Reference:</b> | Well 233H                                       |
| <b>Project:</b>           | Eddy County, NM (NAD 83) | <b>TVD Reference:</b>               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Reference Site:</b>    | Cypress 34               | <b>MD Reference:</b>                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Site Error:</b>        | 0.00 usft                | <b>North Reference:</b>             | Grid                                            |
| <b>Reference Well:</b>    | 233H                     | <b>Survey Calculation Method:</b>   | Minimum Curvature                               |
| <b>Well Error:</b>        | 0.00 usft                | <b>Output errors are at</b>         | 3.00 sigma                                      |
| <b>Reference Wellbore</b> | OH                       | <b>Database:</b>                    | WellPlanner1                                    |
| <b>Reference Design:</b>  | Plan 1                   | <b>Offset TVD Reference:</b>        | Offset Datum                                    |

| Offset Design Cypress 34 - Knoll AOK 002 (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                           |                   |         |        | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|---------------------------|-------------------|---------|--------|--------------------|-----------|
| Survey Program: 100-MWD+HDGM, 7421-MWD+HDGM            |                       |                       |                       |                  |               |                       |                                     |              |                           |                   |         |        | Offset Well Error: | 0.00 usft |
| Reference                                              |                       | Offset                |                       | Semi Major Axis  |               | Highside Toolface (°) | Distance                            |              | Minimum Separation (usft) | Separation Factor | Warning |        |                    |           |
| Measured Depth (usft)                                  | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) |                       | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) |                           |                   |         |        |                    |           |
| 9,600.00                                               | 9,514.72              | 9,513.36              | 7,938.12              | 53.66            | 67.33         | 176.49                | -437.43                             | -823.40      | 1,553.67                  | 1,497.15          | 56.52   | 27.489 |                    |           |
| 9,700.00                                               | 9,614.72              | 9,512.79              | 7,938.12              | 54.16            | 67.31         | 176.33                | -437.43                             | -822.83      | 1,652.85                  | 1,596.13          | 56.72   | 29.142 |                    |           |
| 9,800.00                                               | 9,714.72              | 9,512.24              | 7,938.13              | 54.65            | 67.30         | 176.18                | -437.43                             | -822.28      | 1,752.12                  | 1,695.16          | 56.96   | 30.762 |                    |           |
| 9,900.00                                               | 9,814.72              | 9,511.70              | 7,938.13              | 55.15            | 67.28         | 176.03                | -437.43                             | -821.75      | 1,851.47                  | 1,794.24          | 57.23   | 32.351 |                    |           |
| 10,000.00                                              | 9,914.72              | 9,511.18              | 7,938.13              | 55.65            | 67.27         | 175.89                | -437.42                             | -821.23      | 1,950.89                  | 1,893.35          | 57.53   | 33.908 |                    |           |
| 10,100.00                                              | 10,014.72             | 9,510.68              | 7,938.14              | 56.15            | 67.26         | 175.75                | -437.42                             | -820.72      | 2,050.36                  | 1,992.50          | 57.86   | 35.436 |                    |           |
| 10,200.00                                              | 10,114.72             | 9,510.19              | 7,938.14              | 56.65            | 67.24         | 175.61                | -437.42                             | -820.23      | 2,149.88                  | 2,091.67          | 58.21   | 36.934 |                    |           |
| 10,300.00                                              | 10,214.72             | 9,509.71              | 7,938.14              | 57.15            | 67.23         | 175.47                | -437.42                             | -819.75      | 2,249.45                  | 2,190.87          | 58.58   | 38.403 |                    |           |
| 10,400.00                                              | 10,314.72             | 9,509.24              | 7,938.15              | 57.65            | 67.22         | 175.34                | -437.42                             | -819.28      | 2,349.05                  | 2,290.09          | 58.96   | 39.843 |                    |           |
| 10,500.00                                              | 10,414.72             | 9,508.79              | 7,938.15              | 58.15            | 67.20         | 175.22                | -437.42                             | -818.83      | 2,448.68                  | 2,389.33          | 59.35   | 41.256 |                    |           |
| 10,562.32                                              | 10,477.04             | 9,508.51              | 7,938.15              | 58.47            | 67.20         | 175.14                | -437.42                             | -818.55      | 2,510.78                  | 2,451.18          | 59.61   | 42.122 |                    |           |
| 10,600.00                                              | 10,514.70             | 9,508.35              | 7,938.15              | 58.65            | 67.19         | 158.21                | -437.42                             | -818.39      | 2,548.42                  | 2,488.64          | 59.77   | 42.635 |                    |           |
| 10,650.00                                              | 10,564.38             | 9,508.16              | 7,938.15              | 58.90            | 67.19         | 4.78                  | -437.41                             | -818.20      | 2,598.38                  | 2,538.36          | 60.02   | 43.293 |                    |           |
| 10,700.00                                              | 10,613.40             | 9,508.00              | 7,938.16              | 59.13            | 67.18         | 2.18                  | -437.41                             | -818.04      | 2,648.04                  | 2,587.75          | 60.29   | 43.921 |                    |           |
| 10,750.00                                              | 10,661.38             | 9,507.86              | 7,938.16              | 59.35            | 67.18         | 1.42                  | -437.41                             | -817.91      | 2,697.04                  | 2,636.45          | 60.59   | 44.516 |                    |           |
| 10,800.00                                              | 10,707.96             | 9,507.76              | 7,938.16              | 59.56            | 67.18         | 1.05                  | -437.41                             | -817.80      | 2,745.06                  | 2,684.15          | 60.91   | 45.071 |                    |           |
| 10,850.00                                              | 10,752.79             | 9,507.68              | 7,938.16              | 59.75            | 67.17         | 0.84                  | -437.41                             | -817.72      | 2,791.78                  | 2,730.54          | 61.25   | 45.582 |                    |           |
| 10,900.00                                              | 10,795.51             | 9,507.63              | 7,938.16              | 59.92            | 67.17         | 0.70                  | -437.41                             | -817.67      | 2,836.94                  | 2,775.32          | 61.62   | 46.043 |                    |           |
| 10,950.00                                              | 10,835.81             | 9,507.60              | 7,938.16              | 60.06            | 67.17         | 0.60                  | -437.41                             | -817.65      | 2,880.26                  | 2,818.25          | 62.01   | 46.449 |                    |           |
| 11,000.00                                              | 10,873.38             | 9,507.61              | 7,938.16              | 60.19            | 67.17         | 0.53                  | -437.41                             | -817.65      | 2,921.51                  | 2,859.07          | 62.43   | 46.794 |                    |           |
| 11,050.00                                              | 10,907.93             | 9,507.64              | 7,938.16              | 60.30            | 67.17         | 0.47                  | -437.41                             | -817.68      | 2,960.46                  | 2,897.57          | 62.89   | 47.074 |                    |           |
| 11,100.00                                              | 10,939.21             | 9,507.69              | 7,938.16              | 60.39            | 67.17         | 0.43                  | -437.41                             | -817.74      | 2,996.91                  | 2,933.53          | 63.38   | 47.285 |                    |           |
| 11,150.00                                              | 10,966.96             | 9,507.78              | 7,938.16              | 60.46            | 67.18         | 0.40                  | -437.41                             | -817.82      | 3,030.68                  | 2,966.77          | 63.91   | 47.422 |                    |           |
| 11,200.00                                              | 10,990.99             | 9,507.88              | 7,938.16              | 60.51            | 67.18         | 0.37                  | -437.41                             | -817.92      | 3,061.61                  | 2,997.13          | 64.48   | 47.482 |                    |           |
| 11,250.00                                              | 11,011.11             | 9,508.01              | 7,938.16              | 60.55            | 67.18         | 0.34                  | -437.41                             | -818.05      | 3,089.54                  | 3,024.45          | 65.09   | 47.463 |                    |           |
| 11,300.00                                              | 11,027.16             | 9,508.16              | 7,938.15              | 60.59            | 67.19         | 0.32                  | -437.41                             | -818.20      | 3,114.36                  | 3,048.60          | 65.75   | 47.363 |                    |           |
| 11,350.00                                              | 11,039.02             | 9,508.33              | 7,938.15              | 60.62            | 67.19         | 0.31                  | -437.42                             | -818.37      | 3,135.94                  | 3,069.48          | 66.46   | 47.184 |                    |           |
| 11,400.00                                              | 11,046.61             | 9,508.52              | 7,938.15              | 60.65            | 67.20         | 0.29                  | -437.42                             | -818.56      | 3,154.19                  | 3,086.97          | 67.22   | 46.925 |                    |           |
| 11,450.00                                              | 11,049.87             | 9,508.73              | 7,938.15              | 60.70            | 67.20         | 0.28                  | -437.42                             | -818.77      | 3,169.03                  | 3,101.01          | 68.02   | 46.588 |                    |           |
| 11,463.46                                              | 11,050.00             | 9,508.79              | 7,938.15              | 60.71            | 67.20         | 0.28                  | -437.42                             | -818.83      | 3,172.44                  | 3,104.19          | 68.24   | 46.486 |                    |           |
| 11,500.00                                              | 11,049.92             | 9,508.95              | 7,938.15              | 60.76            | 67.21         | 0.28                  | -437.42                             | -818.99      | 3,181.53                  | 3,112.66          | 68.87   | 46.196 |                    |           |
| 11,600.00                                              | 11,049.72             | 9,509.38              | 7,938.15              | 60.97            | 67.22         | 0.27                  | -437.42                             | -819.42      | 3,208.42                  | 3,137.75          | 70.67   | 45.403 |                    |           |
| 11,700.00                                              | 11,049.53             | 9,509.81              | 7,938.14              | 61.29            | 67.23         | 0.26                  | -437.42                             | -819.85      | 3,238.18                  | 3,165.62          | 72.56   | 44.630 |                    |           |
| 11,800.00                                              | 11,049.33             | 9,510.23              | 7,938.14              | 61.73            | 67.24         | 0.25                  | -437.42                             | -820.27      | 3,270.72                  | 3,196.20          | 74.52   | 43.893 |                    |           |
| 11,900.00                                              | 11,049.13             | 9,510.64              | 7,938.14              | 62.27            | 67.26         | 0.24                  | -437.42                             | -820.69      | 3,305.97                  | 3,229.45          | 76.52   | 43.202 |                    |           |
| 12,000.00                                              | 11,048.93             | 9,511.05              | 7,938.13              | 62.89            | 67.27         | 0.24                  | -437.42                             | -821.10      | 3,343.84                  | 3,265.28          | 78.56   | 42.565 |                    |           |
| 12,100.00                                              | 11,048.73             | 9,511.46              | 7,938.13              | 63.59            | 67.28         | 0.23                  | -437.43                             | -821.50      | 3,384.24                  | 3,303.63          | 80.61   | 41.985 |                    |           |
| 12,200.00                                              | 11,048.53             | 9,511.86              | 7,938.13              | 64.37            | 67.29         | 0.22                  | -437.43                             | -821.90      | 3,427.08                  | 3,344.43          | 82.65   | 41.465 |                    |           |
| 12,300.00                                              | 11,048.33             | 9,512.25              | 7,938.13              | 65.21            | 67.30         | 0.21                  | -437.43                             | -822.29      | 3,472.27                  | 3,387.60          | 84.68   | 41.005 |                    |           |
| 12,400.00                                              | 11,048.13             | 9,512.64              | 7,938.12              | 66.11            | 67.31         | 0.21                  | -437.43                             | -822.68      | 3,519.73                  | 3,433.05          | 86.68   | 40.605 |                    |           |
| 12,500.00                                              | 11,047.93             | 9,513.02              | 7,938.12              | 67.07            | 67.32         | 0.20                  | -437.43                             | -823.06      | 3,569.36                  | 3,480.71          | 88.65   | 40.264 |                    |           |
| 12,600.00                                              | 11,047.73             | 9,513.40              | 7,938.12              | 68.09            | 67.33         | 0.19                  | -437.43                             | -823.44      | 3,621.07                  | 3,530.49          | 90.57   | 39.979 |                    |           |
| 12,700.00                                              | 11,047.53             | 9,513.77              | 7,938.11              | 69.16            | 67.34         | 0.19                  | -437.43                             | -823.81      | 3,674.77                  | 3,582.32          | 92.45   | 39.748 |                    |           |
| 12,800.00                                              | 11,047.33             | 9,514.14              | 7,938.11              | 70.28            | 67.35         | 0.18                  | -437.44                             | -824.18      | 3,730.38                  | 3,636.10          | 94.28   | 39.567 |                    |           |
| 12,900.00                                              | 11,047.13             | 9,514.50              | 7,938.11              | 71.45            | 67.36         | 0.17                  | -437.44                             | -824.54      | 3,787.82                  | 3,691.77          | 96.05   | 39.435 |                    |           |
| 13,000.00                                              | 11,046.93             | 9,514.86              | 7,938.11              | 72.67            | 67.37         | 0.17                  | -437.44                             | -824.90      | 3,847.00                  | 3,749.23          | 97.77   | 39.348 |                    |           |
| 13,100.00                                              | 11,046.74             | 9,515.21              | 7,938.10              | 73.92            | 67.38         | 0.16                  | -437.44                             | -825.25      | 3,907.84                  | 3,808.41          | 99.43   | 39.303 |                    |           |
| 13,200.00                                              | 11,046.54             | 9,515.56              | 7,938.10              | 75.22            | 67.39         | 0.15                  | -437.44                             | -825.60      | 3,970.27                  | 3,869.24          | 101.03  | 39.298 |                    |           |
| 13,300.00                                              | 11,046.34             | 9,515.90              | 7,938.10              | 76.56            | 67.40         | 0.15                  | -437.44                             | -825.95      | 4,034.21                  | 3,931.63          | 102.57  | 39.330 |                    |           |
| 13,400.00                                              | 11,046.14             | 9,516.24              | 7,938.09              | 77.94            | 67.41         | 0.14                  | -437.44                             | -826.29      | 4,099.59                  | 3,995.53          | 104.06  | 39.397 |                    |           |
| 13,500.00                                              | 11,045.94             | 9,516.58              | 7,938.09              | 79.34            | 67.42         | 0.13                  | -437.44                             | -826.62      | 4,166.35                  | 4,060.86          | 105.49  | 39.496 |                    |           |

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



Pro Directional  
Anticollision Report



Company: Tap Rock Operating, LLC  
Project: Eddy County, NM (NAD 83)

Local Co-ordinate Reference: Well 233H  
TVD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')

Reference Site: Cypress 34

MD Reference: Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')

Site Error: 0.00 usft

North Reference: Grid

Reference Well: 233H

Survey Calculation Method: Minimum Curvature

Well Error: 0.00 usft

Output errors are at 3.00 sigma

Reference Wellbore OH

Database: WellPlanner1

Reference Design: Plan 1

Offset TVD Reference: Offset Datum

| Offset Design Cypress 34 - Knoll AOK 002 (O) - OH - OH |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: 0.00 usft |
|--------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|------------------------------|
| Survey Program: 100-MWD+HDGM, 7421-MWD+HDGM            |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: 0.00 usft |
| Reference                                              |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   |                              |
| Measured Depth (usft)                                  | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor | Warning                      |
| 13,600.00                                              | 11,045.74             | 9,516.91              | 7,938.09              | 80.79            | 67.43         | 0.13                  | -437.45                             | -826.95      | 4,234.41               | 4,127.55                | 106.86                    | 39.625            |                              |
| 13,700.00                                              | 11,045.54             | 9,517.24              | 7,938.09              | 82.26            | 67.44         | 0.12                  | -437.45                             | -827.28      | 4,303.73               | 4,195.54                | 108.18                    | 39.782            |                              |
| 13,800.00                                              | 11,045.34             | 9,517.56              | 7,938.08              | 83.77            | 67.45         | 0.11                  | -437.45                             | -827.60      | 4,374.23               | 4,264.78                | 109.45                    | 39.965            |                              |
| 13,900.00                                              | 11,045.14             | 9,517.88              | 7,938.08              | 85.30            | 67.46         | 0.11                  | -437.45                             | -827.92      | 4,445.86               | 4,335.19                | 110.67                    | 40.173            |                              |
| 14,000.00                                              | 11,044.94             | 9,518.20              | 7,938.08              | 86.86            | 67.46         | 0.10                  | -437.45                             | -828.24      | 4,518.57               | 4,406.74                | 111.83                    | 40.404            |                              |
| 14,100.00                                              | 11,044.74             | 9,518.51              | 7,938.08              | 88.44            | 67.47         | 0.10                  | -437.45                             | -828.55      | 4,592.31               | 4,479.35                | 112.96                    | 40.656            |                              |
| 14,200.00                                              | 11,044.54             | 9,518.82              | 7,938.07              | 90.05            | 67.48         | 0.09                  | -437.45                             | -828.86      | 4,667.02               | 4,552.99                | 114.03                    | 40.928            |                              |
| 14,300.00                                              | 11,044.34             | 9,519.12              | 7,938.07              | 91.68            | 67.49         | 0.09                  | -437.46                             | -829.16      | 4,742.67               | 4,627.61                | 115.06                    | 41.218            |                              |
| 14,400.00                                              | 11,044.15             | 9,519.42              | 7,938.07              | 93.34            | 67.50         | 0.08                  | -437.46                             | -829.46      | 4,819.20               | 4,703.15                | 116.05                    | 41.526            |                              |
| 14,500.00                                              | 11,043.95             | 9,519.72              | 7,938.06              | 95.01            | 67.51         | 0.07                  | -437.46                             | -829.76      | 4,896.58               | 4,779.58                | 117.00                    | 41.850            |                              |
| 14,600.00                                              | 11,043.75             | 9,520.01              | 7,938.06              | 96.70            | 67.52         | 0.07                  | -437.46                             | -830.05      | 4,974.77               | 4,856.85                | 117.92                    | 42.189            |                              |
| 14,700.00                                              | 11,043.55             | 9,520.30              | 7,938.06              | 98.41            | 67.52         | 0.06                  | -437.46                             | -830.34      | 5,053.73               | 4,934.93                | 118.79                    | 42.542            |                              |
| 14,800.00                                              | 11,043.35             | 9,520.59              | 7,938.06              | 100.14           | 67.53         | 0.06                  | -437.46                             | -830.63      | 5,133.42               | 5,013.78                | 119.63                    | 42.909            |                              |
| 14,900.00                                              | 11,043.15             | 9,520.87              | 7,938.05              | 101.89           | 67.54         | 0.05                  | -437.46                             | -830.91      | 5,213.80               | 5,093.36                | 120.44                    | 43.288            |                              |
| 15,000.00                                              | 11,042.95             | 9,521.15              | 7,938.05              | 103.65           | 67.55         | 0.05                  | -437.46                             | -831.19      | 5,294.86               | 5,173.64                | 121.22                    | 43.679            |                              |
| 15,100.00                                              | 11,042.75             | 9,521.43              | 7,938.05              | 105.42           | 67.55         | 0.04                  | -437.47                             | -831.47      | 5,376.56               | 5,254.59                | 121.97                    | 44.081            |                              |
| 15,200.00                                              | 11,042.55             | 9,521.70              | 7,938.05              | 107.21           | 67.56         | 0.04                  | -437.47                             | -831.74      | 5,458.86               | 5,336.17                | 122.69                    | 44.493            |                              |
| 15,300.00                                              | 11,042.35             | 9,521.97              | 7,938.04              | 109.02           | 67.57         | 0.03                  | -437.47                             | -832.01      | 5,541.75               | 5,418.37                | 123.38                    | 44.915            |                              |
| 15,400.00                                              | 11,042.15             | 9,522.24              | 7,938.04              | 110.83           | 67.58         | 0.03                  | -437.47                             | -832.28      | 5,625.19               | 5,501.14                | 124.05                    | 45.346            |                              |
| 15,500.00                                              | 11,041.95             | 9,522.50              | 7,938.04              | 112.66           | 67.58         | 0.02                  | -437.47                             | -832.54      | 5,709.17               | 5,584.47                | 124.69                    | 45.786            |                              |
| 15,600.00                                              | 11,041.75             | 9,522.76              | 7,938.04              | 114.50           | 67.59         | 0.02                  | -437.47                             | -832.81      | 5,793.65               | 5,668.34                | 125.31                    | 46.233            |                              |
| 15,700.00                                              | 11,041.55             | 9,523.02              | 7,938.03              | 116.35           | 67.60         | 0.01                  | -437.47                             | -833.06      | 5,878.62               | 5,752.71                | 125.91                    | 46.689            |                              |
| 15,800.00                                              | 11,041.36             | 9,523.28              | 7,938.03              | 118.22           | 67.61         | 0.01                  | -437.47                             | -833.32      | 5,964.06               | 5,837.57                | 126.49                    | 47.151            |                              |
| 15,900.00                                              | 11,041.16             | 9,523.53              | 7,938.03              | 120.09           | 67.61         | 0.00                  | -437.48                             | -833.57      | 6,049.94               | 5,922.89                | 127.05                    | 47.620            |                              |
| 16,000.00                                              | 11,040.96             | 9,523.78              | 7,938.03              | 121.97           | 67.62         | 0.00                  | -437.48                             | -833.82      | 6,136.25               | 6,008.67                | 127.59                    | 48.095            |                              |
| 16,100.00                                              | 11,040.76             | 9,524.03              | 7,938.02              | 123.86           | 67.63         | -0.01                 | -437.48                             | -834.07      | 6,222.97               | 6,094.87                | 128.11                    | 48.576            |                              |
| 16,200.00                                              | 11,040.56             | 9,524.27              | 7,938.02              | 125.76           | 67.63         | -0.01                 | -437.48                             | -834.31      | 6,310.09               | 6,181.48                | 128.61                    | 49.063            |                              |
| 16,300.00                                              | 11,040.36             | 9,524.51              | 7,938.02              | 127.67           | 67.64         | -0.01                 | -437.48                             | -834.56      | 6,397.58               | 6,268.48                | 129.10                    | 49.555            |                              |
| 16,400.00                                              | 11,040.16             | 9,524.75              | 7,938.02              | 129.59           | 67.65         | -0.02                 | -437.48                             | -834.80      | 6,485.43               | 6,355.86                | 129.57                    | 50.052            |                              |
| 16,479.98                                              | 11,040.00             | 9,524.94              | 7,938.02              | 131.12           | 67.65         | -0.02                 | -437.48                             | -834.99      | 6,555.94               | 6,426.00                | 129.94                    | 50.453            |                              |



# Pro Directional Anticollision Report

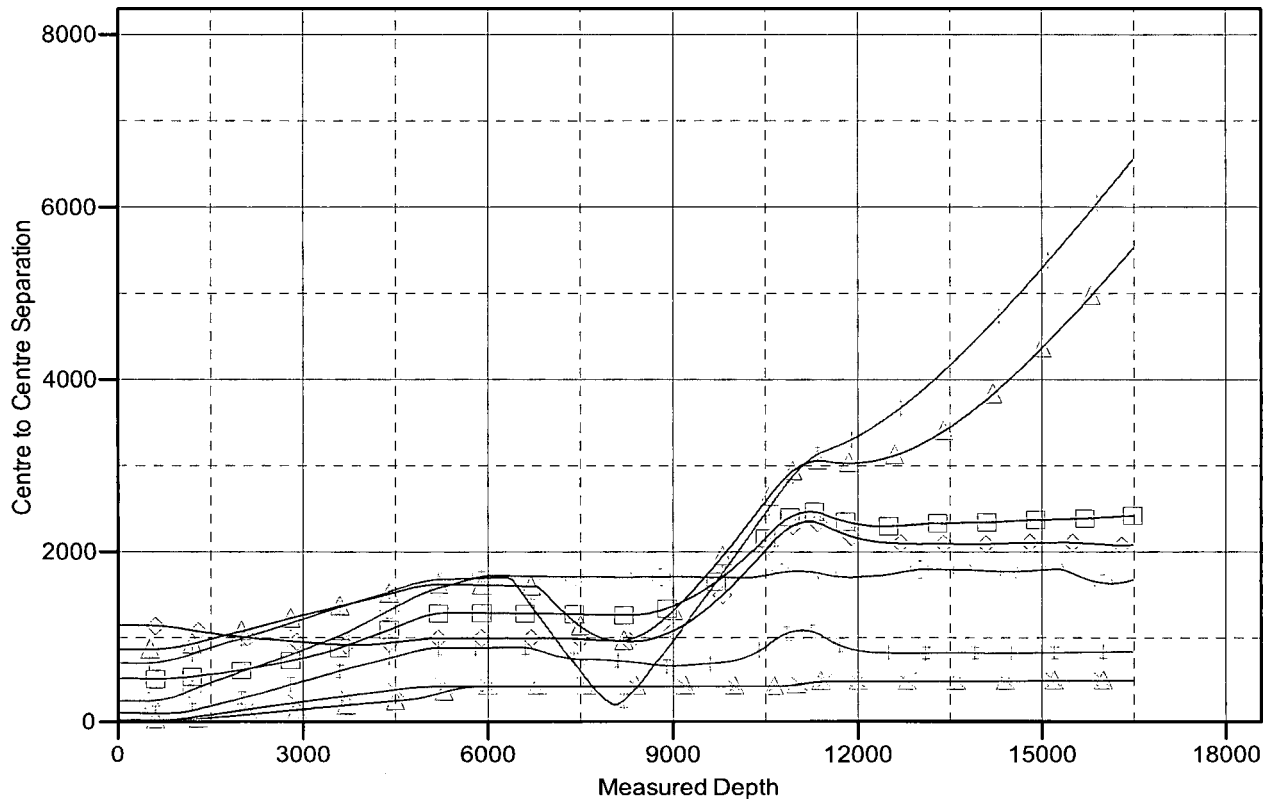


|                           |                          |                                     |                                                 |
|---------------------------|--------------------------|-------------------------------------|-------------------------------------------------|
| <b>Company:</b>           | Tap Rock Operating, LLC  | <b>Local Co-ordinate Reference:</b> | Well 233H                                       |
| <b>Project:</b>           | Eddy County, NM (NAD 83) | <b>TVD Reference:</b>               | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Reference Site:</b>    | Cypress 34               | <b>MD Reference:</b>                | Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5') |
| <b>Site Error:</b>        | 0.00 usft                | <b>North Reference:</b>             | Grid                                            |
| <b>Reference Well:</b>    | 233H                     | <b>Survey Calculation Method:</b>   | Minimum Curvature                               |
| <b>Well Error:</b>        | 0.00 usft                | <b>Output errors are at</b>         | 3.00 sigma                                      |
| <b>Reference Wellbore</b> | OH                       | <b>Database:</b>                    | WellPlanner1                                    |
| <b>Reference Design:</b>  | Plan 1                   | <b>Offset TVD Reference:</b>        | Offset Datum                                    |

Reference Depths are relative to Well @ 3119.50usft (GL: 3093' + Est.  
Offset Depths are relative to Offset Datum  
Central Meridian is -104.333334

Coordinates are relative to: 233H  
Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
Grid Convergence at Surface is: 0.20°

## Ladder Plot



### LEGEND

|                             |                     |                     |
|-----------------------------|---------------------|---------------------|
| K001 ACK 002 (O), OH, OH V0 | 009H (O), OH, OH V0 | 012H (O), OH, OH V0 |
| 001H (O), OH, OH V0         | 249H, OH, Plan 1 V0 | 009H (O), OH, OH V0 |
| 015H (O), OH, OH V0         | 243H, OH, Plan 1 V0 |                     |



# Pro Directional Anticollision Report



**Company:** Tap Rock Operating, LLC  
**Project:** Eddy County, NM (NAD 83)

**Reference Site:** Cypress 34

**Site Error:** 0.00 usft

**Reference Well:** 233H

**Well Error:** 0.00 usft

**Reference Wellbore:** OH

**Reference Design:** Plan 1

**Local Co-ordinate Reference:**

**TVD Reference:**

**MD Reference:**

**North Reference:**

**Survey Calculation Method:**

**Output errors are at**

**Database:**

**Offset TVD Reference:**

Well 233H

Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')

Well @ 3119.50usft (GL: 3093' + Est. KB: 26.5')

Grid

Minimum Curvature

3.00 sigma

WellPlanner1

Offset Datum

Reference Depths are relative to Well @ 3119.50usft (GL: 3093' + Est.

Offset Depths are relative to Offset Datum

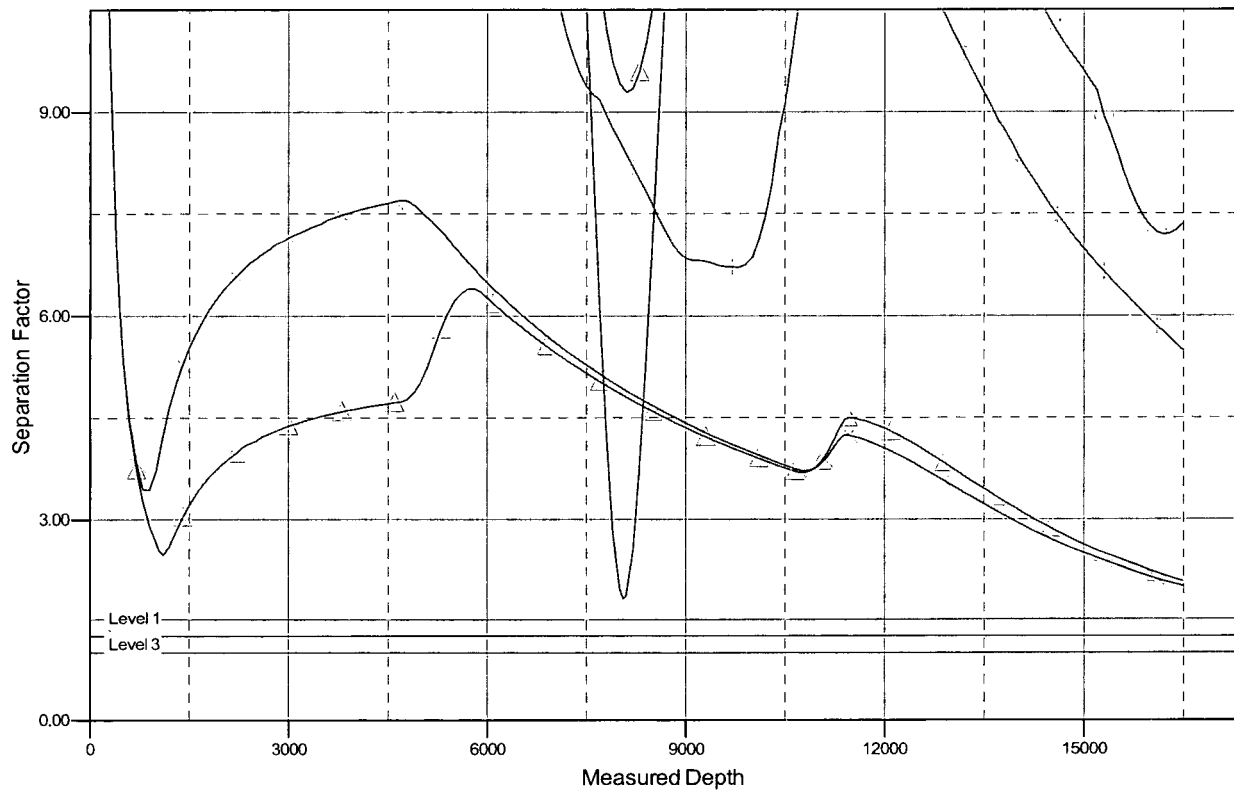
Central Meridian is -104.333334

Coordinates are relative to: 233H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: 0.20°

## Separation Factor Plot



### LEGEND



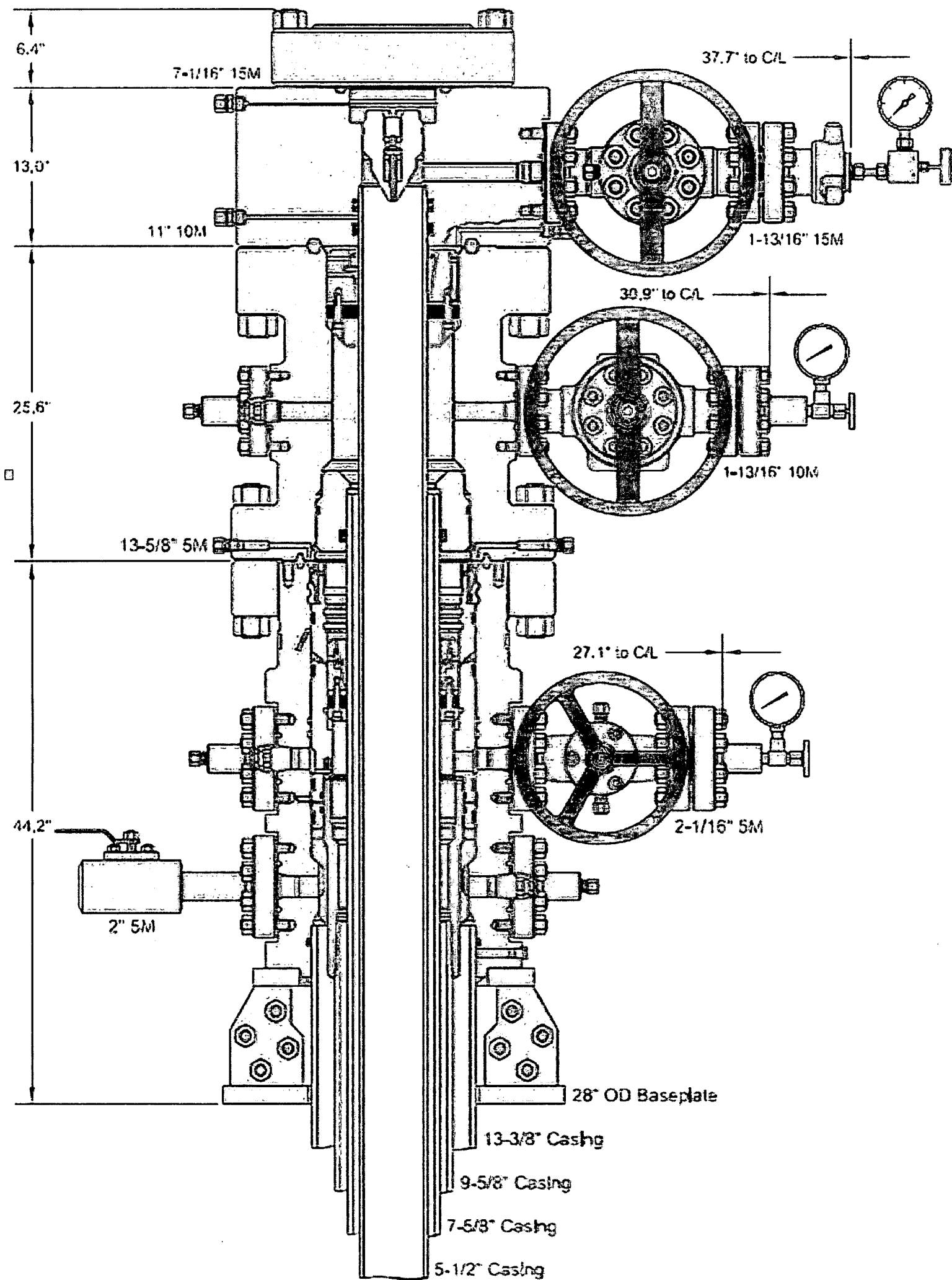
Knot AOK 002 (O), OH, OH V0  
001H (O), OH, OH V0  
015H (O), OH, OH V0



008H (O), OH, OH V0  
246H, OH, Plan 1 V0  
203H, OH, Plan 1 V0



012H (O), OH, OH V0  
009H (O), OH, OH V0





# Tenaris

## Casing and Tubing Performance Data

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

Size  Wall  Grade  Connection  Unit

### Pipe Body Data

| GEOMETRY            |              |                         |              |                          |            |
|---------------------|--------------|-------------------------|--------------|--------------------------|------------|
| Nominal OD          | 13.375 in    | Wall Thickness          | 0.380 in     | API Drift Diameter       | 12.459 in  |
| Nominal Weight      | 54.50 lbs/ft | Nominal ID              | 12.615 in    | Alternate Drift Diameter | n.a.       |
| Plain End Weight    | 52.79 lbs/ft | Nominal Cross Section   | 15.513 sq in |                          |            |
| PERFORMANCE         |              |                         |              |                          |            |
| Steel Grade         | J55          | Minimum Yield           | 55,000 psi   | Minimum Ultimate         | 75,000 psi |
| Body Yield Strength | 853,000 lbs  | Internal Yield Pressure | 2,730 psi    | Collapse Pressure        | 1,130 psi  |

### Connection Data

| GEOMETRY       |             |                              |            |                      |            |
|----------------|-------------|------------------------------|------------|----------------------|------------|
| Regular OD     | 14.375 in   | Threads Per Inch             | 5          | Make-Up Thread Turns | 1          |
| PERFORMANCE    |             |                              |            |                      |            |
| Steel Grade    | J55         | Minimum Yield                | 55,000 psi | Minimum Ultimate     | 75,000 psi |
| Joint Strength | 909,000 lbs | Internal Pressure Resistance | 2,730 psi  |                      |            |

[Tenaris Hybrid Premium Connections](#)

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Ver 8.6



## Casing and Tubing Performance Data

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

Size  Wall  Grade  Connection  Unit

### Pipe Body Data

#### GEOMETRY

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

#### PERFORMANCE

|                     |             |                         |            |                   |            |
|---------------------|-------------|-------------------------|------------|-------------------|------------|
| Steel Grade         | J55         | Minimum Yield           | 55,000 psi | Minimum Ultimate  | 75,000 psi |
| Body Yield Strength | 630,000 lbs | Internal Yield Pressure | 3,950 psi  | Collapse Pressure | 2,570 psi  |

### Connection Data

#### GEOMETRY

|            |           |                  |   |                      |   |
|------------|-----------|------------------|---|----------------------|---|
| Regular OD | 10.625 in | Threads Per Inch | 5 | Make-Up Thread Turns | 1 |
|------------|-----------|------------------|---|----------------------|---|

#### PERFORMANCE

|                |             |                              |            |                  |            |
|----------------|-------------|------------------------------|------------|------------------|------------|
| Steel Grade    | J55         | Minimum Yield                | 55,000 psi | Minimum Ultimate | 75,000 psi |
| Joint Strength | 714,000 lbs | Internal Pressure Resistance | 3,950 psi  |                  |            |

Tenaris Hydril Premium Connections

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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 |
|-----------------|----------|----------------|---|----------------------|---|

#### PERFORMANCE

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

## Wedge 513®

Printed on: 01/30/2018



|                  |           |                      |              |                |                 |
|------------------|-----------|----------------------|--------------|----------------|-----------------|
| Outside Diameter | 7.625 in. | Min. Wall Thickness  | 87.5%        | (*) Grade P110 |                 |
| Wall Thickness   | 0.375 in. | Connection OD Option | REGULAR      | COUPLING       | PIPE BODY       |
| Grade            | P110*     | Drift                | API Standard | Body: White    | 1st Band: 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)

TXP® BTC

SHARE EXPORT DATA PRINT



|                  |             |                      |              |   |                               |
|------------------|-------------|----------------------|--------------|---|-------------------------------|
| Outside Diameter | 5.500 in    | Min. Wall Thickness  | 37.5%        | ▼ | <a href="#">Clear Filters</a> |
|                  |             | Drift                | API Standard | ▼ | <a href="#">Compare</a>       |
| Wall Thickness   | 0.361 in    | Type                 | Casing       | ▼ | <a href="#">Request Info</a>  |
| Grade            | <u>P110</u> | Connection OD Option | REGULAR      | ▼ | 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 <sup>1)</sup> | 12640.000 psi |
| Compression Efficiency     | 100 %         | Compression Strength | 641.000 x 1000 lbs | Max. Allowable Bending                   | 92 x 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  |

Tap Rock Operating, LLC  
 Cypress 34 Federal #233H  
 SHL 241' FNL & 1171' FEL, Sec. 3, 24S, 29E  
 BHL 5' FNL & 2010' FEL, Sec. 34, 23S, 29E  
 Eddy County, NM

**DRILL PLAN PAGE 1**

**DRILLING PROGRAM**

**1. ESTIMATED TOPS**

| <b>Formation Name</b>                 | <b>MD'</b>   | <b>TVD'</b>  | <b>Bearing</b>       |
|---------------------------------------|--------------|--------------|----------------------|
| Quaternary caliche                    | 0            | 0            | water/salt           |
| Rustler anhydrite                     | 336          | 336          | salt                 |
| Salado salt (top salt)                | 651          | 651          | salt                 |
| Base salt                             | 3211         | 3161         | salt                 |
| Delaware Mountain Group               | 3231         | 3181         | hydrocarbons         |
| Lamar                                 | 3241         | 3191         | hydrocarbons         |
| Bell Canyon sandstone                 | 3262         | 3211         | hydrocarbons         |
| Brushy Canyon sandstone               | 5391         | 5306         | hydrocarbons         |
| Bone Spring limestone                 | 7006         | 6921         | hydrocarbons         |
| 1 <sup>st</sup> Bone Spring sandstone | 7971         | 7886         | hydrocarbons         |
| 2 <sup>nd</sup> Bone Spring sandstone | 8586         | 8501         | hydrocarbons         |
| 3 <sup>rd</sup> Bone Spring sandstone | 9916         | 9831         | hydrocarbons         |
| Wolfcamp A                            | 10231        | 10146        | hydrocarbons         |
| Wolfcamp A Fat                        | 10431        | 10346        | hydrocarbons         |
| <b>(KOP</b>                           | <b>10562</b> | <b>10477</b> | <b>hydrocarbons)</b> |
| Wolfcamp B                            | 10586        | 10501        | hydrocarbons         |
| Wolfcamp B2 <b>(Goal)</b>             | 11223        | 11001        | hydrocarbons         |
| <b>TD</b>                             | <b>16480</b> | <b>11040</b> | <b>--</b>            |

**2. NOTABLE ZONES**

Wolfcamp B2 is the goal. Closest water well (C 01627) in State Engineer records is 8,400' northwest. Well was drilled to 170'. Depth to water was not reported but OSE estimated ground water depth is 22'.

**3. PRESSURE CONTROL**

Pressure Control Equipment (See Schematics):

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. The BOP will be utilized below surface casing to TD. See attachments for BOP and choke manifold diagrams. Also present will be an accumulator

**Tap Rock Operating, LLC**  
**Cypress 34 Federal #233H**  
**SHL 241' FNL & 1171' FEL, Sec. 3, 24S, 29E**  
**BHL 5' FNL & 2010' FEL, Sec. 34, 23S, 29E**  
**Eddy County, NM**

**DRILL PLAN PAGE 2**

that meets the requirements of Onshore Order #2 for the pressure rating of the BOP stack. A rotating head will also be installed as needed. BOP will be inspected and operated as recommended in Onshore Order #2. A top drive check valve and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position. The wellhead will be a multi-bowl speed head.

BOP Test procedure will be as follows:

After surface casing is set and the BOP is nipped up, the BOP pressure tests will be made with a third party tester to 250 psi low, 5000 psi high, and the annular preventer will be tested to 3,500 psi. The BOP will be tested in this manner after any breaks, nipple ups, or passage of allotted time.

Casing Test procedure:

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

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

#### 4. CASING & CEMENT

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

| Hole O.<br>D. | Set<br>MD'      | Set<br>TVD'     | Casing<br>O. D.              | Weight<br>(lb/ft) | Grade | Joint        | Collapse | Burst | Tension |
|---------------|-----------------|-----------------|------------------------------|-------------------|-------|--------------|----------|-------|---------|
| 17.5"         | 0 - 410         | 0 - 410         | 13.375"<br>surface           | 54.5              | J-55  | BTC          | 1.13     | 1.15  | 1.51    |
| 12.25"        | 0 -<br>3300     | 0 -<br>3248     | 9.625"<br>inter. 1           | 40.0              | J-55  | BTC          | 1.13     | 1.15  | 1.51    |
| 8.75"         | 0 -<br>9562     | 0 -<br>9470     | 7.625"<br>inter. 2<br>bottom | 29.7              | P-110 | Wedge<br>513 | 1.13     | 1.15  | 1.51    |
| 6.75"         | 0 -<br>9362     | 0 -<br>9270     | 5.5"<br>product.<br>top      | 20.0              | P-110 | BTC          | 1.13     | 1.15  | 1.51    |
| 6.75"         | 9362 -<br>16480 | 9270 -<br>11040 | 5"<br>product.<br>bottom     | 18.0              | P-110 | Wedge<br>521 | 1.13     | 1.15  | 1.51    |

**Tap Rock Operating, LLC**  
**Cypress 34 Federal #233H**  
**SHL 241' FNL & 1171' FEL, Sec. 3, 24S, 29E**  
**BHL 5' FNL & 2010' FEL, Sec. 34, 23S, 29E**  
**Eddy County, NM**

**DRILL PLAN PAGE 3**

**Tap Rock requests a variance to run 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. Wedge 513 will be run on the 7 5/8" casing.**

| Name           | Type | Sacks       | Yield | Cu. Ft. | Weight                                                           | Blend                                                      |
|----------------|------|-------------|-------|---------|------------------------------------------------------------------|------------------------------------------------------------|
| Surface        | Tail | 316         | 1.8   | 486     | 13.5                                                             | Class C + 5% Bentonite + 2% CaCl + LCM                     |
| TOC = Surface  |      | 100% Excess |       |         | Centralizers per Onshore Order 2 III. B. 1f                      |                                                            |
| Intermediate 1 | Lead | 755         | 2.19  | 1653    | 12.7                                                             | Class C + bentonite + 1% CaCl <sub>2</sub> + 8% NaCl + LCM |
|                | Tail | 311         | 1.33  | 414     | 14.8                                                             | Class C + 5% NaCl + LCM                                    |
| TOC = Surface  |      | 100% Excess |       |         | 2 on btm jt, 1 on 2nd jt, 1 every 4th jt to surface              |                                                            |
| Intermediate 2 | Lead | 310         | 3.36  | 1042    | 11.5                                                             | TXI + fluid loss + dispersant + retarder + LCM             |
|                | Tail | 187         | 1.39  | 260     | 13.2                                                             | TXI + fluid loss + dispersant + retarder + LCM             |
| TOC = Surface  |      | 35% Excess  |       |         | 2 on btm jt, 1 on 2nd jt, 1 every other jt to top of tail cement |                                                            |
| Production     | Tail | 950         | 1.24  | 1178    | 14.2                                                             | Class H + fluid loss + dispersant + retarder + LCM         |
| TOC = 8562     |      | 10% Excess  |       |         | 2 on btm jt, 1 on 2nd jt, 1 every third jt to top of curve       |                                                            |

**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.

| Casing     | Hole Size | Type           | Interval (MD) | Mud Wt. (lb/gal) | Viscosity | Fluid Loss |
|------------|-----------|----------------|---------------|------------------|-----------|------------|
| Surface    | 17.5"     | FW spud mud    | 0 - 410       | 8.3              | 28        | NC         |
| Inter. 1   | 12.25"    | Brine water    | 410 - 3300    | 10.0             | 30-32     | NC         |
| Inter. 2   | 8.75"     | FW & cut brine | 3300 - 9562   | 9.0              | 30-32     | NC         |
| Production | 6.75"     | OBM            | 9562 - 16480  | 12.50            | 15-20     | <10        |

**Tap Rock Operating, LLC  
Cypress 34 Federal #233H  
SHL 241' FNL & 1171' FEL, Sec. 3, 24S, 29E  
BHL 5' FNL & 2010' FEL, Sec. 34, 23S, 29E  
Eddy County, NM**

**DRILL PLAN PAGE 4**

**6. CORES, TESTS, & LOGS**

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

**7. DOWN HOLE CONDITIONS**

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Tap Rock Operating does not anticipate that there will be enough H<sub>2</sub>S from the surface to the Wolfcamp formations to meet the BLM's minimum requirements for the submission of an "H<sub>2</sub>S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H<sub>2</sub>S safety package on all wells, attached is an "H<sub>2</sub>S Drilling Operations Plan". Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used

Estimated BHP: 6,624 psi  
Estimated BHT: 160°

**8. OTHER INFORMATION**

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

**Casing/Cementing Variance**

Tap Rock requests a variance to run 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.

Wedge 513 will be run on the bottom of the 7 5/8" casing, Butress will be run on top



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

## SUPO Data Report

06/17/2019

APD ID: 10400035647

Submission Date: 10/26/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: CYPRESS 34 FEDERAL

Well Number: 233H

[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:

Cypress\_233H\_Road\_Map1\_20181026145056.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? NO

### Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Cypress\_233H\_Well\_Map\_v1\_102518\_20181026145123.pdf

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

**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 will be located off-pad, on a separate central tank battery (CTB) site. This facility currently serves the Cypress 34 Fed 15H, which has already been drilled and completed on the same pad, and will also be used for the recently accepted 234H, 236H, and 244H and the proposed 233H, 243H, and 246H wells once they have been drilled. The CTB and its associated infrastructure (road, power line, and flowlines) is located on the producing lease in Section 34, 23S 29E and was permitted with the previous group of Cypress 34 wells (234H, 236H, and 244H). An additional 3 flow lines will be constructed for the 3 additional wells (233H, 243H, and 246H) from the existing Cypress CTB to the existing well pad. These buried flowlines will be poly ~4" OD.

**Production Facilities map:**

Cypress\_233H\_Production\_Facilities\_Diagram\_Plat\_20190418123101.pdf

#### 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:** PRIVATE

**Water source transport method:** TRUCKING

**Source transportation land ownership:** FEDERAL

**Water source volume (barrels):** 18000

**Source volume (acre-feet):** 2.3200758

**Source volume (gal):** 756000

**Water source and transportation map:**

Cypress\_233H\_Water\_Gravel\_Source\_Map\_20181026145332.pdf

**Water source comments:** This well will be drilled using a combination of water mud systems. Water will be trucked from a private water well (C 03662) on private land in NWNE 23-24s-33e.

**New water well?** NO

##### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Well target aquifer:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

**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:**

**Additional information attachment:**

## Section 6 - Construction Materials

**Construction Materials description:** NM One Call (811) will be notified before construction starts. There will be no topsoil as fill will be brought in to extend the pad. No topsoil will be removed as it was previously removed and stockpiled to the side of the pad when the location was originally constructed by Oxy USA. If additional caliche is needed it will be obtained from an existing BLM/State/Fee approved pit or from prevailing deposits found on location.

**Construction Materials source location attachment:**

Cypress\_233H\_Construction\_methods\_FIG1\_20181026145401.pdf

## Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

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

**Amount of waste:** 1000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Steel 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

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)**

**Reserve pit width (ft.)**

**Reserve pit depth (ft.)**

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

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

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** YES

**Description of cuttings location** Steel tanks on pad

**Cuttings area length (ft.)**

**Cuttings area width (ft.)**

**Cuttings area depth (ft.)**

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

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

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

### Section 8 - Ancillary Facilities

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

**Ancillary Facilities attachment:**

**Comments:**

### Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Cypress\_233H\_Well\_Site\_Layout\_20181026145720.pdf

**Comments:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

### Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** CYPRESS 34 FEDERAL

**Multiple Well Pad Number:** 233H

**Recontouring attachment:**

Cypress\_233H\_InterimRec\_Production\_FIG1\_20181026145753.pdf

Cypress\_233H\_PAD\_EXTENSION\_RECONTOUR\_PLATS\_20181026145848.pdf

**Drainage/Erosion control construction:** Crowned and ditched

**Drainage/Erosion control reclamation:** Harrowed on the contour

|                                                    |                                                   |                                                   |
|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| <b>Well pad proposed disturbance (acres):</b> 0.63 | <b>Well pad interim reclamation (acres):</b> 0.63 | <b>Well pad long term disturbance (acres):</b> 0  |
| <b>Road proposed disturbance (acres):</b> 0        | <b>Road interim reclamation (acres):</b> 0        | <b>Road long term disturbance (acres):</b> 0      |
| <b>Powerline proposed disturbance (acres):</b> 0   | <b>Powerline interim reclamation (acres):</b> 0   | <b>Powerline long term disturbance (acres):</b> 0 |
| <b>Pipeline proposed disturbance (acres):</b> 2.6  | <b>Pipeline interim reclamation (acres):</b> 2.6  | <b>Pipeline long term disturbance (acres):</b> 0  |
| <b>Other proposed disturbance (acres):</b> 0       | <b>Other interim reclamation (acres):</b> 0       | <b>Other long term disturbance (acres):</b> 0     |
| <b>Total proposed disturbance:</b> 3.23            | <b>Total interim reclamation:</b> 3.23            | <b>Total long term disturbance:</b> 0             |

**Disturbance Comments:**

**Reconstruction method:** Areas of the pad site not required for operations will be reclaimed. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

**Topsoil redistribution:** The original topsoil will be returned to the area of the drill pad not necessary to operate the well.

**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:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

**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:**

| Seed Summary |             |
|--------------|-------------|
| Seed Type    | Pounds/Acre |

**Total 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:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

**Weed treatment plan description:** To BLM standards

**Weed treatment plan attachment:**

**Monitoring plan description:** To BLM standards

**Monitoring plan attachment:**

**Success standards:** To BLM satisfaction

**Pit closure description:** No pit

**Pit closure attachment:**

## Section 11 - Surface Ownership

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** PIPELINE

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**Operator Name:** TAP ROCK OPERATING LLC

**Well Name:** CYPRESS 34 FEDERAL

**Well Number:** 233H

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

## Section 12 - Other Information

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

## ROW Applications

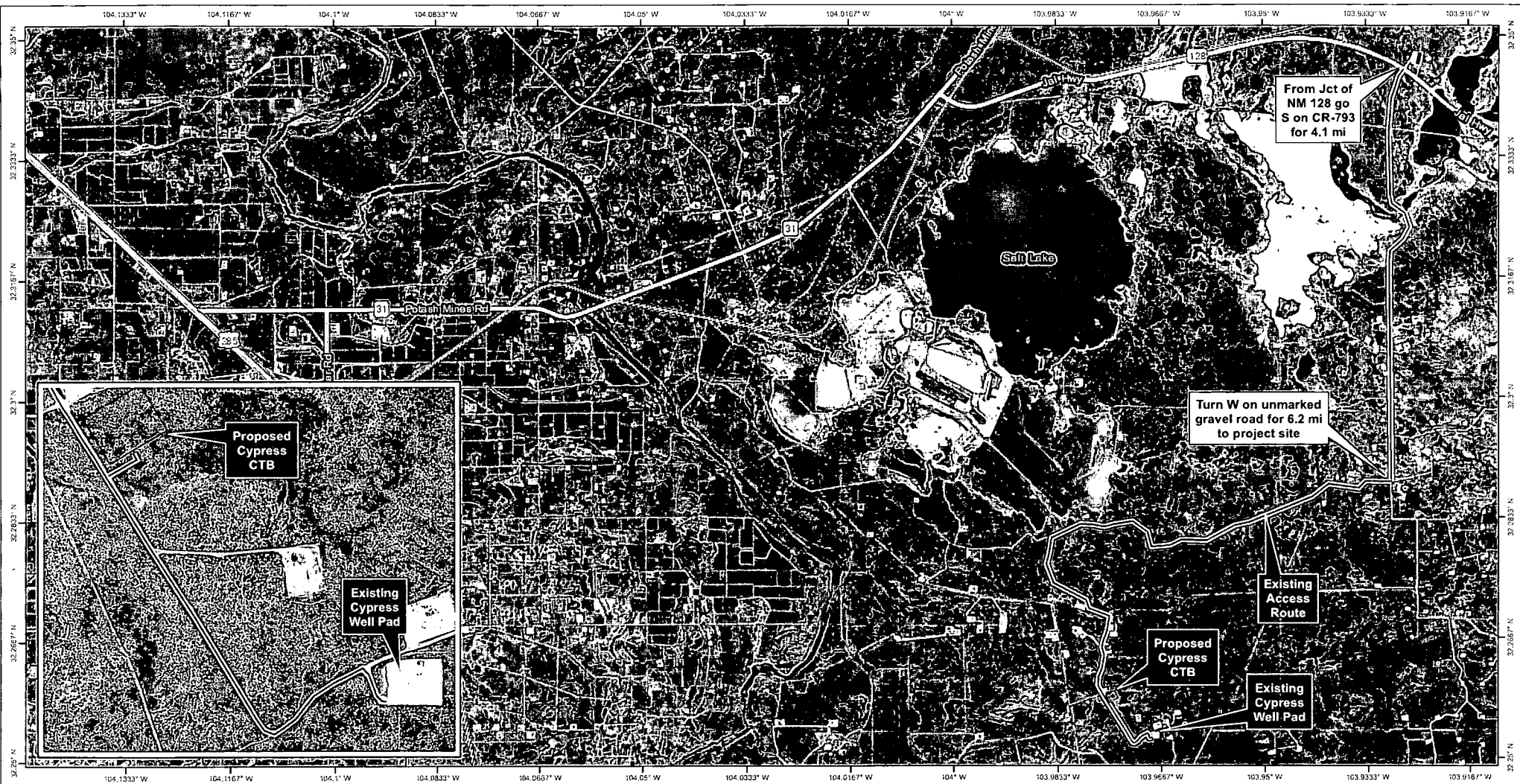
**SUPO Additional Information:**

**Use a previously conducted onsite?** YES

**Previous Onsite information:** On-site inspection for the pad extension was held with Matt Wirth (BLM) on August 24th, 2018.

## Other SUPO Attachment

Cypress\_233H\_SUPO\_20181026152331.pdf



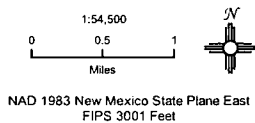
**Tap Rock Operating LLC**

**Cypress Well Pad & CTB  
Site Access Map**

Loving, Eddy County, New Mexico

Existing Access Road from NM  
Hwy 128

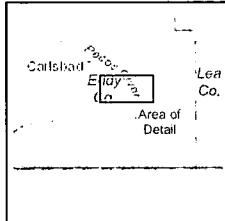
**Map 1-1**



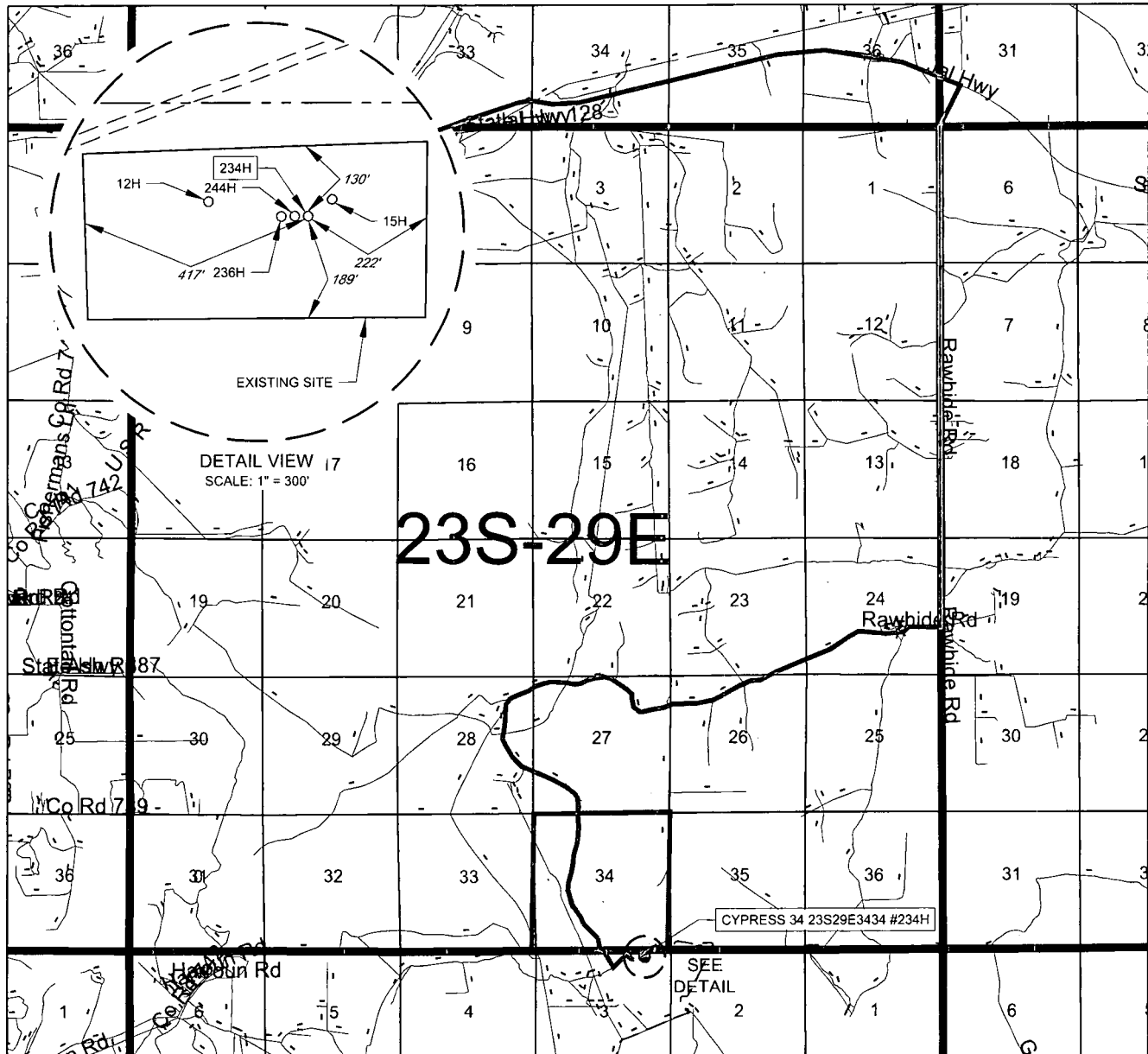
NAD 1983 New Mexico State Plane East  
FIPS 3001 Feet

**PERMITS WEST**  
PROVIDING PERMITS TO LAND OWNERS

Prepared by Permits West, Inc., May 31, 2018  
for Tap Rock Operating, LLC



# EXHIBIT 2 VICINITY MAP



LEASE NAME & WELL NO.: CYPRESS 34 23S29E3434 #234H

SECTION 3 TWP 24-S RGE 29-E SURVEY N.M.P.M.  
COUNTY EDDY STATE NM  
DESCRIPTION 209' FNL & 982' FEL

## DISTANCE & DIRECTION

FROM INT. OF NM-31, & NM-128-E, HEAD EAST ON NM-128 E  $\pm 4.5$   
MILES, THENCE SOUTH (RIGHT) ON RAWHIDE ROAD  $\pm 4.1$  MILES,  
THENCE WEST, (RIGHT) ON MAIN ROAD  $\pm 3.5$  MILES, THENCE SOUTH  
CONTINUING ON MAIN ROAD  $\pm 2.6$  MILES TO A POINT  $\pm 500$  FEET  
SOUTHWEST 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.

# Map 1-2



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



**TOPOGRAPHIC**  
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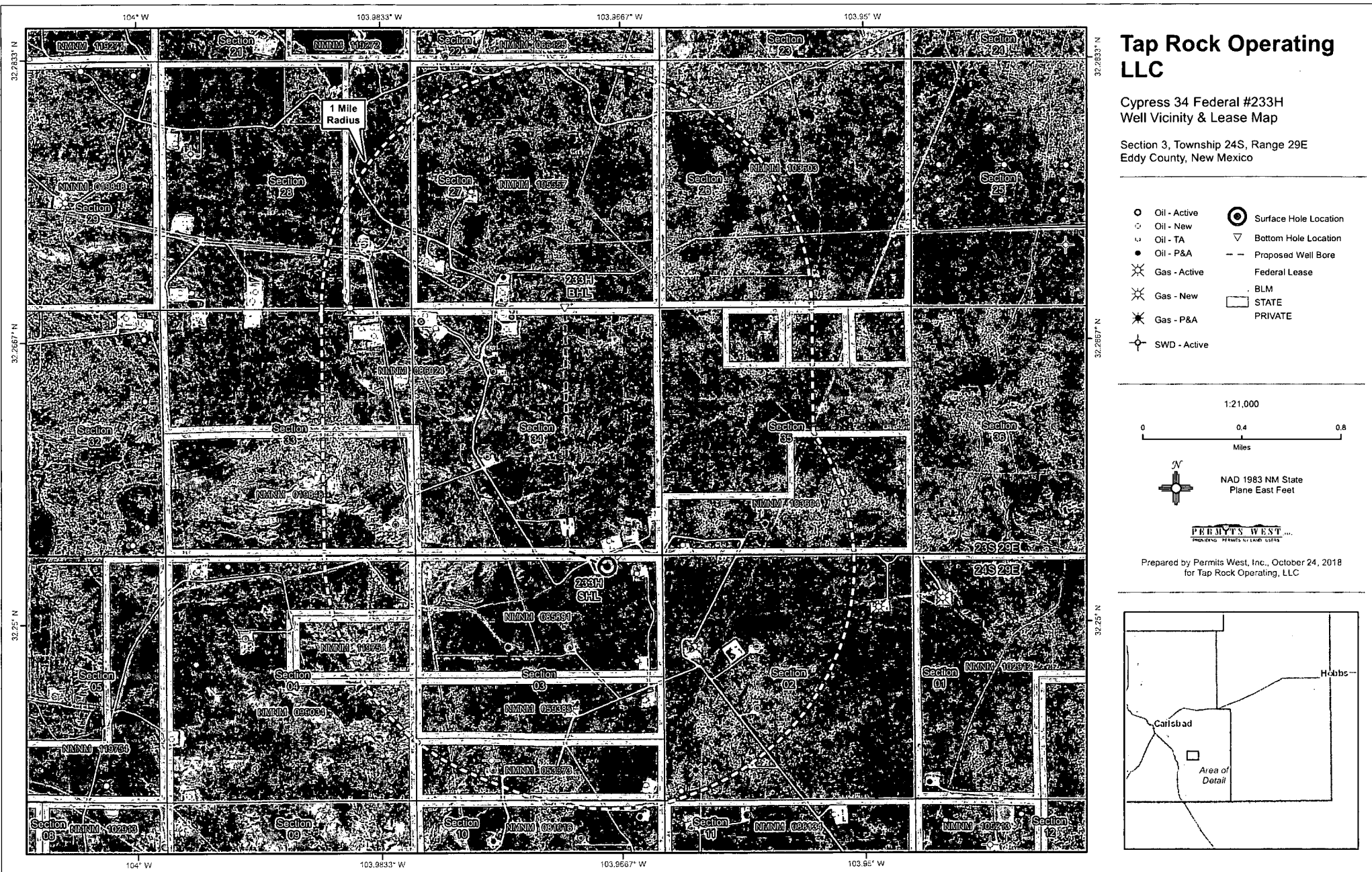
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140

TELEPHONE: (817) 744-7512 • FAX (817) 744-7554

2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705

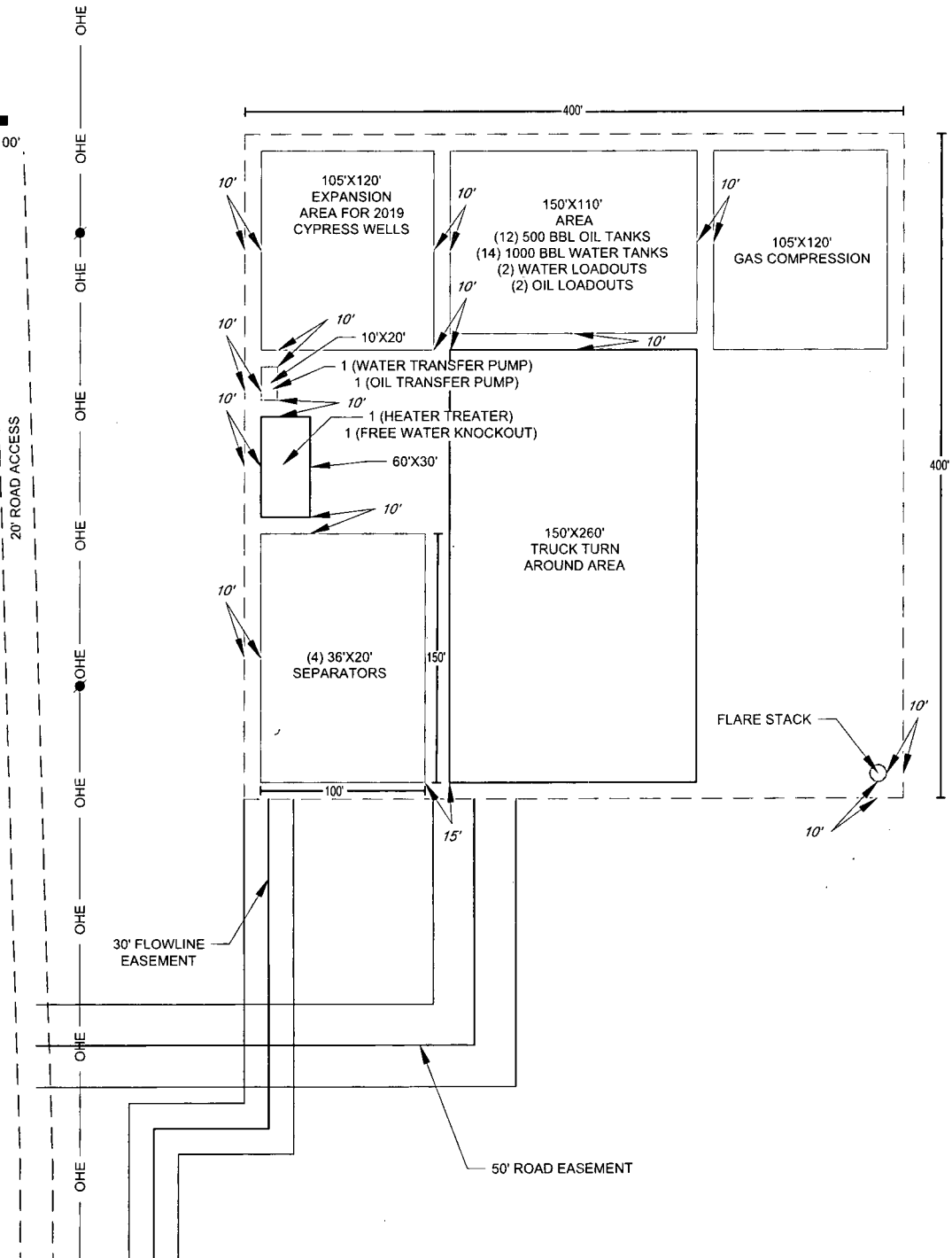
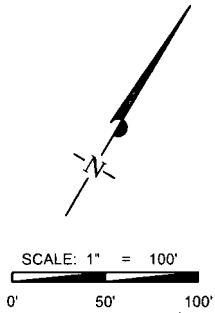
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743

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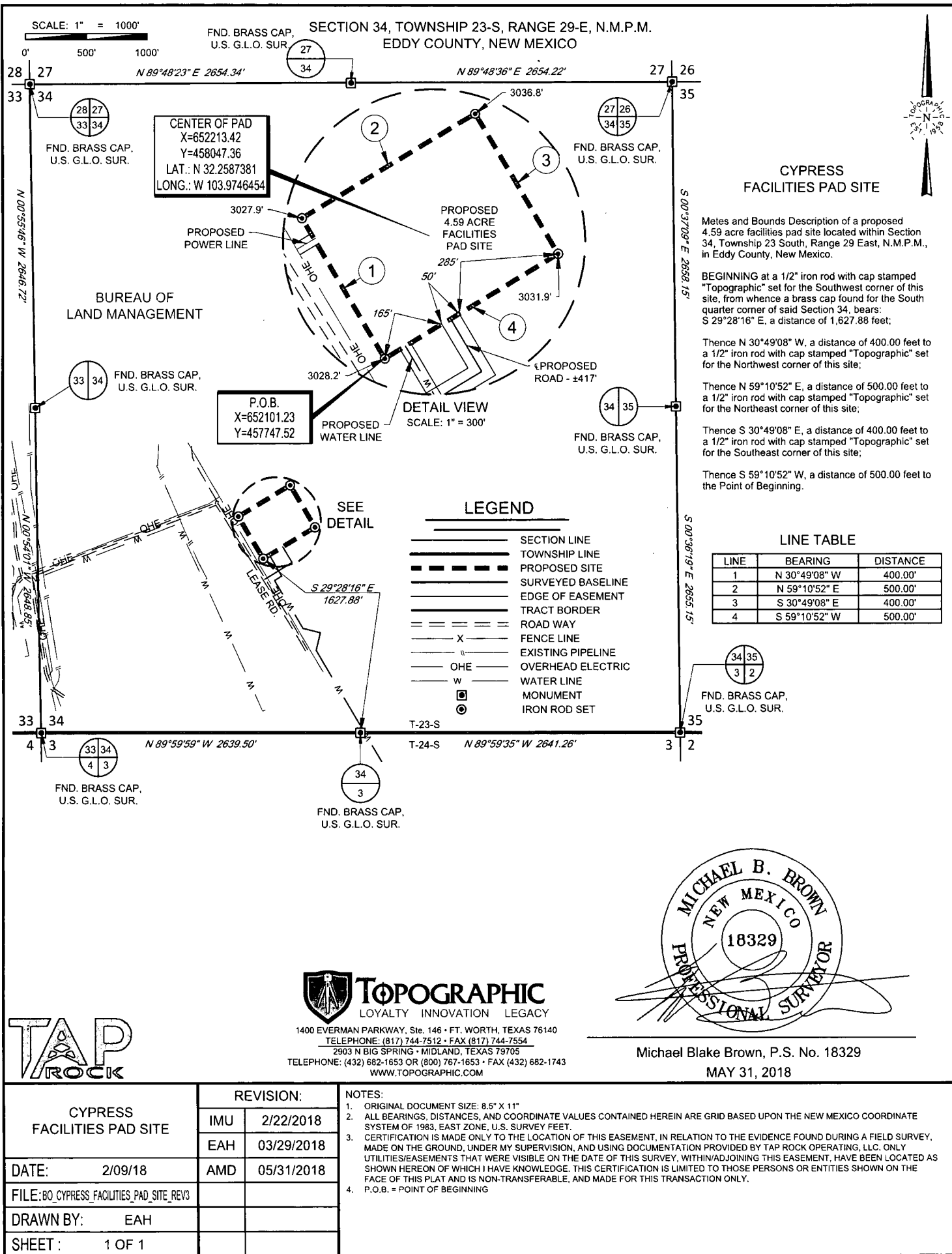


# SKETCH

SECTION 34, TOWNSHIP 23-S, RANGE 29-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO



| CYPRESS<br>FACILITIES PAD SITE<br>SKETCH | REVISION: |      |
|------------------------------------------|-----------|------|
|                                          | INT       | DATE |
| DATE: 04/02/18                           |           |      |
| FILE: SK_CYPRESS_34_23S29E3434_AREA_REV  |           |      |
| DRAWN BY: AMD                            |           |      |
| SHEET: 1 OF 1                            |           |      |



# Tap Rock Operating LLC

## Cypress 34 Federal Water & Caliche Source Map

Lea & Eddy County, New Mexico

- ◇ Caliche Source
- Water Source

1:162,000

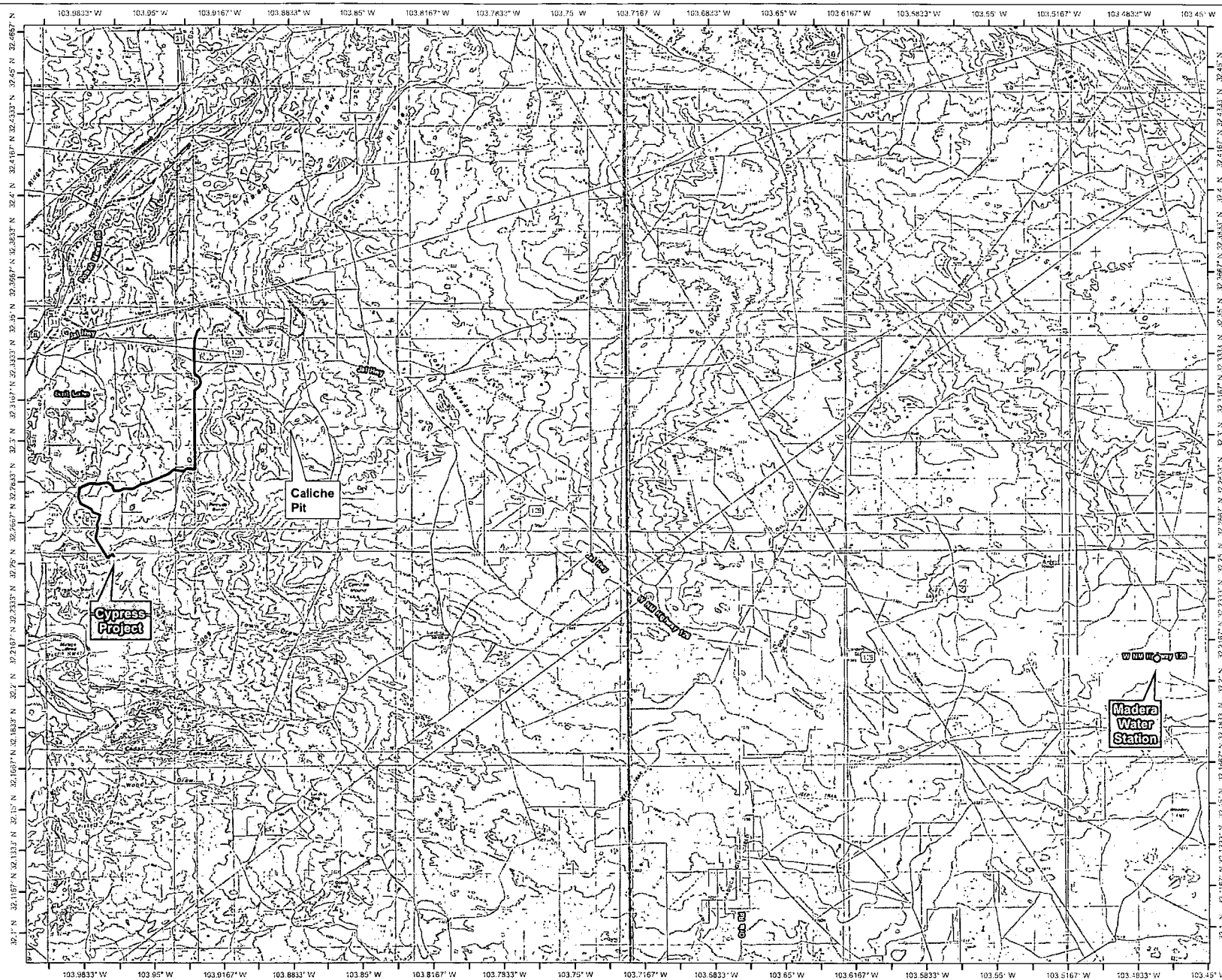
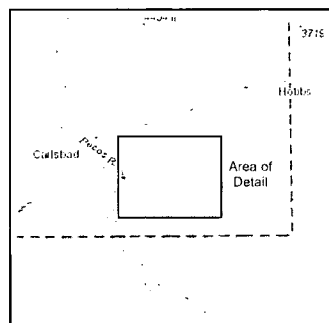
0 1.25 2.5 5  
Miles



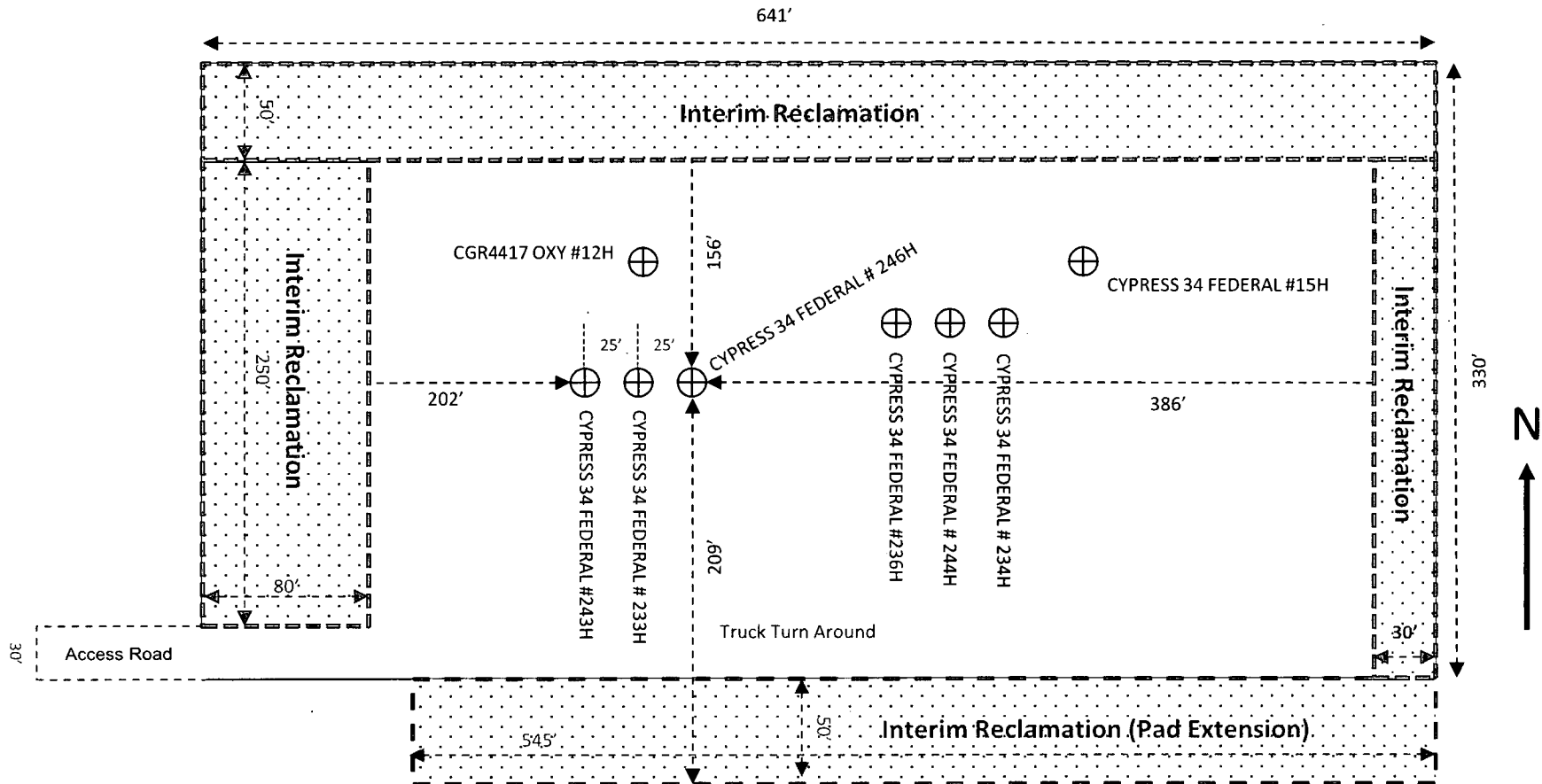
NAD 1983 New Mexico State Plane East  
FIPS 3001 Feet

PERMITS WEST  
PROVIDING PERMITS TO LAND USERS

Prepared by Permits West, Inc., May 31, 2018  
for Tap Rock Operating, LLC

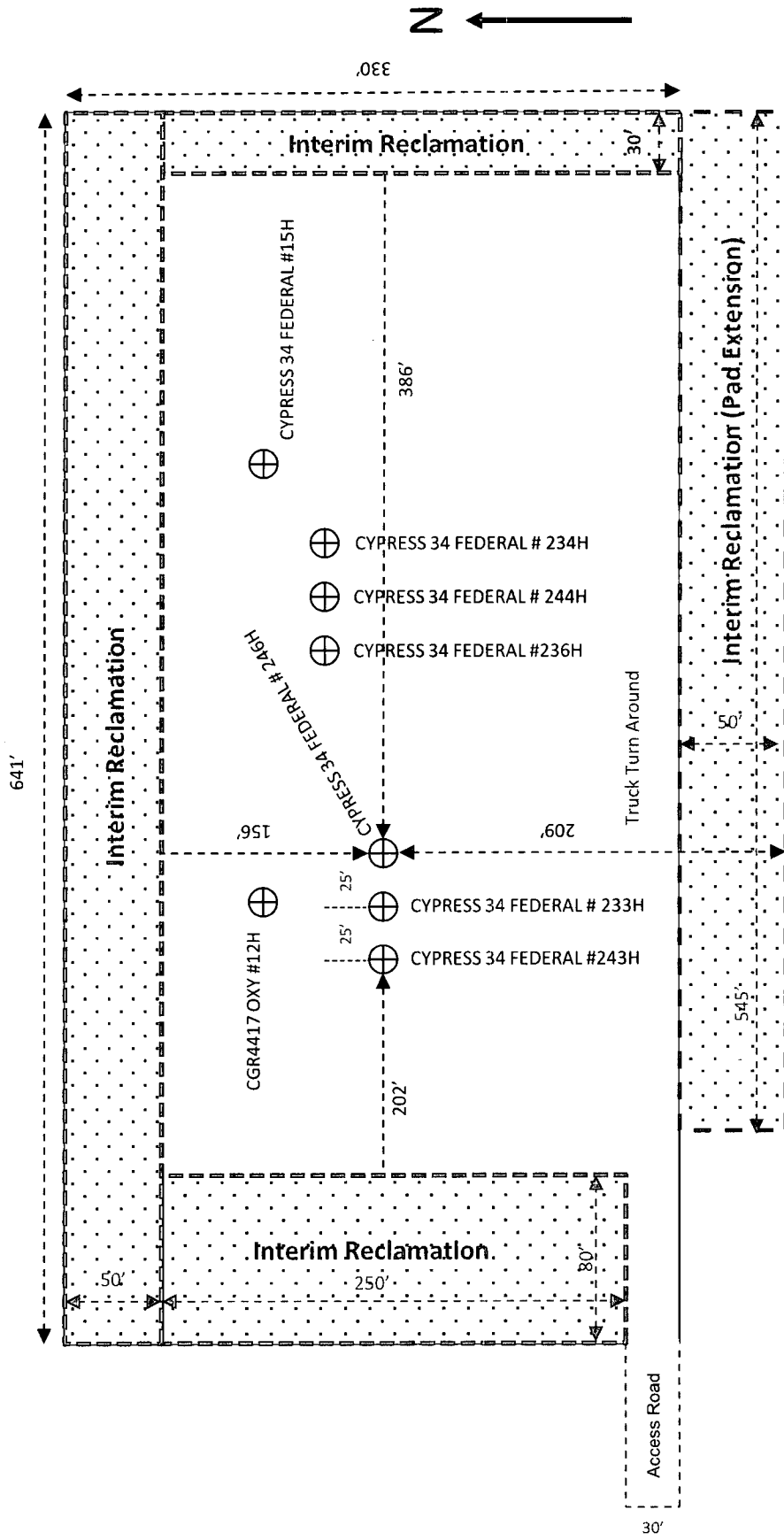


Tap Rock Operating LLC  
Cypress 34 Federal  
Well Pad Layout  
Sec. 3-24N-29W  
Eddy County, NM



Production Layout & Interim Reclamation Diagram

Tap Rock Operating LLC  
 Cypress 34 Federal  
 Well Pad Layout  
 Sec. 3-24N-29W  
 Eddy County, NM



Production Layout & Interim Reclamation Diagram

## Rig Layout Diagram

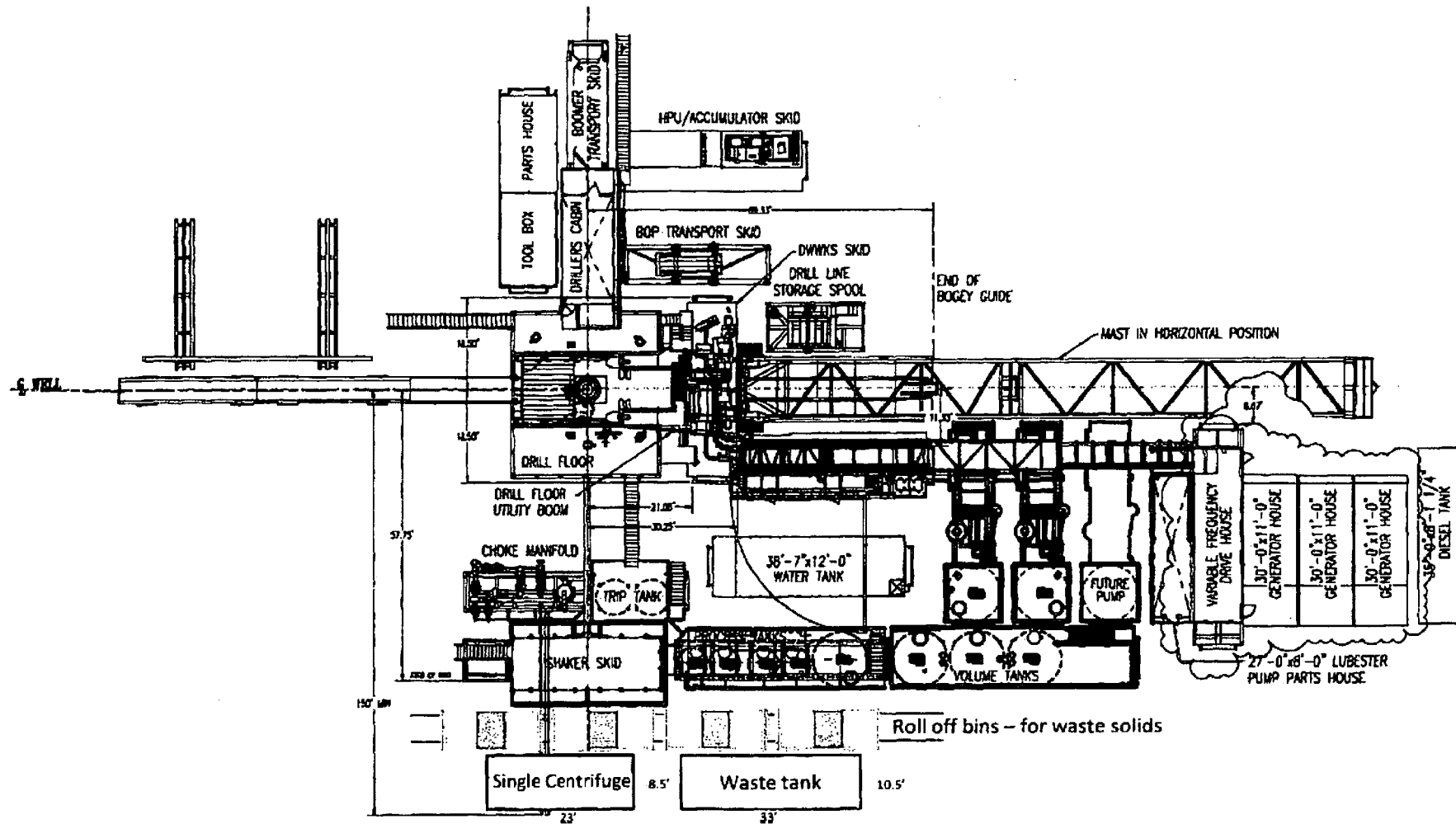
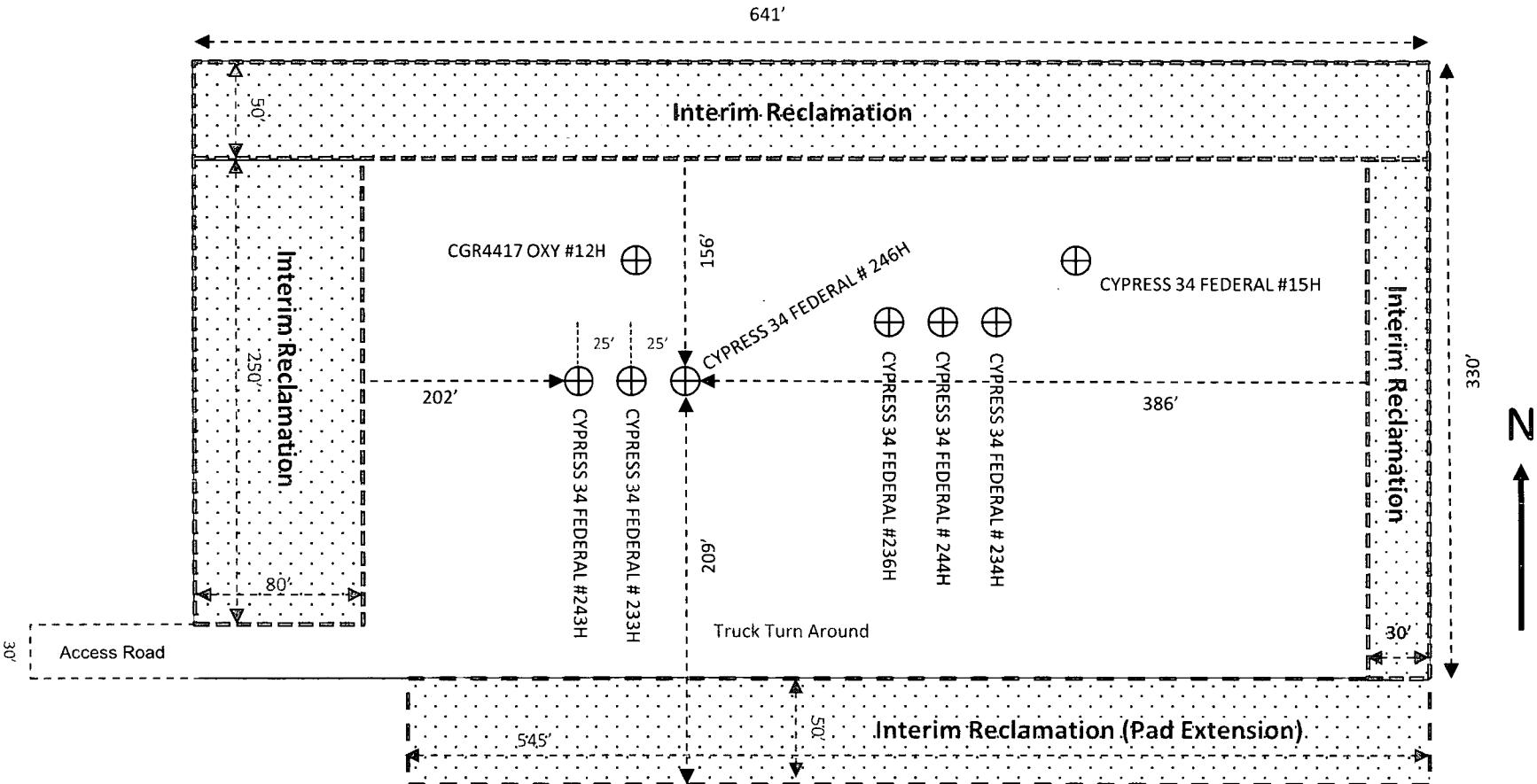


Figure 3

Tap Rock Operating LLC  
Cypress 34 Federal  
Well Pad Layout  
Sec. 3-24N-29W  
Eddy County, NM

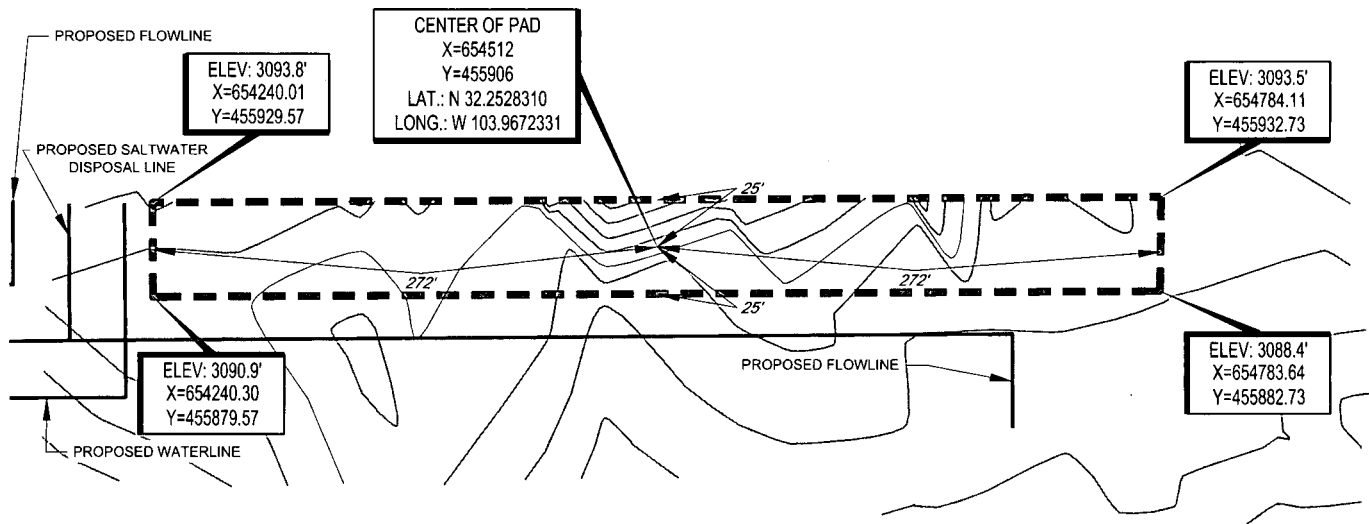


## Production Layout & Interim Reclamation Diagram

# CONSTRUCTION ESTIMATE

SECTION 3, TOWNSHIP 24-S, RANGE 29-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

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



NOTE: 1' CONTOUR INTERVALS



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2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705

TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743

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**TAP  
ROCK**

| CYPRESS 34<br>PAD EXTENSION      | REVISION: |  | NOTES:<br>1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"<br>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. |
|----------------------------------|-----------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  |           |  |                                                                                                                                                                                                                  |
| DATE: 08/14/2018                 |           |  |                                                                                                                                                                                                                  |
| FILE:CD_CYPRESS_34_PAD_EXTENSION |           |  |                                                                                                                                                                                                                  |
| DRAWN BY: IMU                    |           |  |                                                                                                                                                                                                                  |
| SHEET: 1 OF 3                    |           |  |                                                                                                                                                                                                                  |

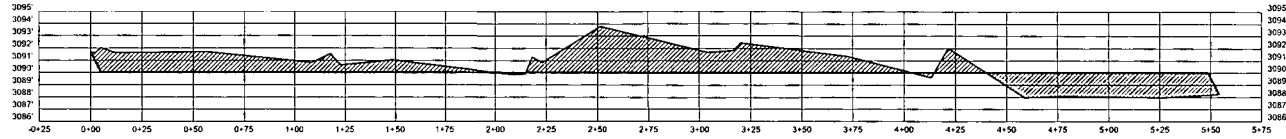
Top of pad elevation: 3090.0  
Cut Slope: 33.33% 3,000:1 18.43"  
Fill Slope: 33.33% 3,000:1 16.43"  
Balance Tolerance (C.Y.): 0.00  
Cut Swell Factor: 1.00  
Fill Shrink Factor: 1.00  
Pad Earthwork Volumes  
Cut: 17,319.8 C.Y., 641.47 C.Y.  
Fill: 17,319.8 C.Y., 641.47 C.Y.  
Area: 33187.1 Sq.Ft., 0.762 Acres

# CONSTRUCTION ESTIMATE

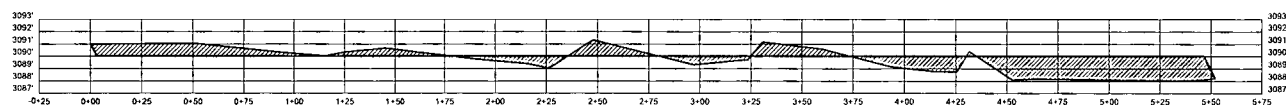
SECTION 3, TOWNSHIP 24-S, RANGE 29-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO



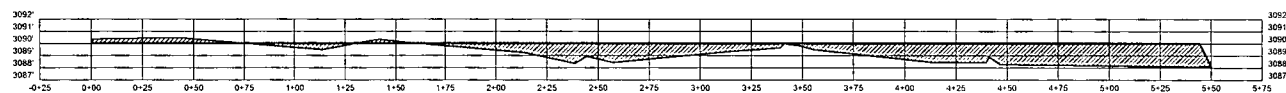
A-A'



B-B'



C-C'



Horizontal Scale = 1:50  
Vertical Scale = 1:10

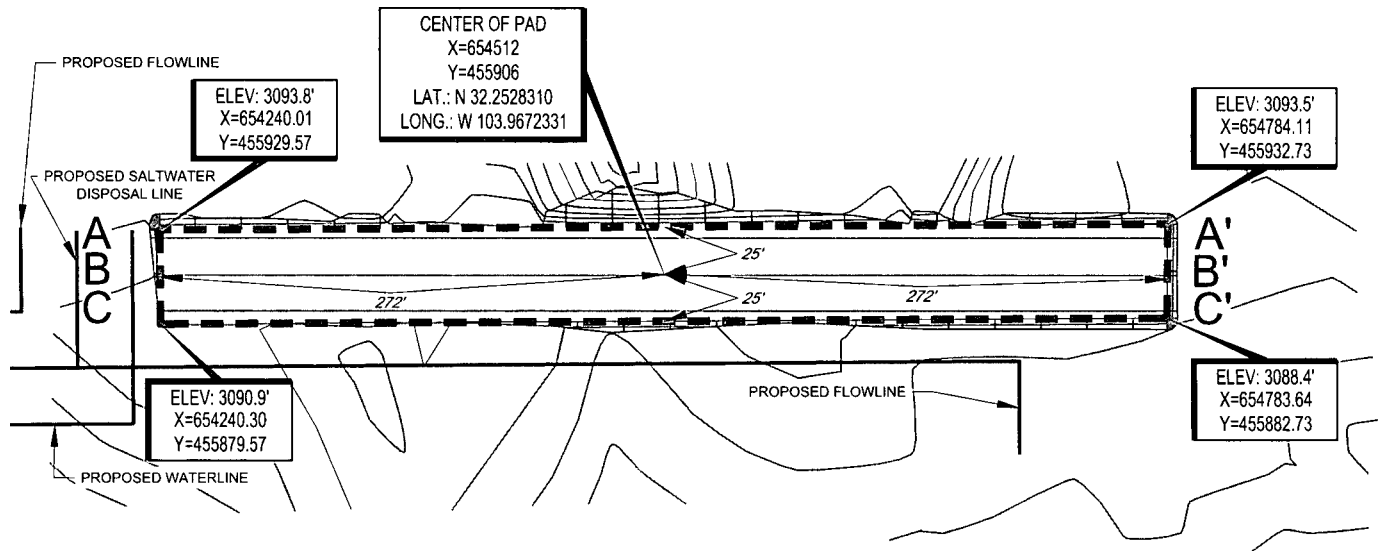
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TEXAS FIRM REGISTRATION NO. 10042504  
WWW.TOPOGRAPHIC.COM

| CYPRESS 34<br>PAD EXTENSION       | REVISION: |      | NOTES:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------|-----------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | INT       | DATE |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| DATE: 08/14/2018                  |           |      | 1. ORIGINAL DOCUMENT SIZE: 11" X 17"<br>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.<br>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/ADJACENT TO 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. |
| FILE: CD_CYPRESS_34_PAD_EXTENSION |           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| SHEET: 2 OF 3                     |           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# CONSTRUCTION ESTIMATE

SECTION 3, TOWNSHIP 24-S, RANGE 29-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

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



NOTE: 1' CONTOUR INTERVALS

**TAP**  
ROCK



**TOPOGRAPHIC**  
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| CYPRESS 34<br>PAD EXTENSION       | REVISION: |  | NOTES:<br>1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"<br>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. |
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| DATE: 08/14/2018                  |           |  |                                                                                                                                                                                                                  |
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| SHEET: 3 OF 3                     |           |  |                                                                                                                                                                                                                  |

Tap Rock Operating LLC  
Cypress 34 Federal #233H  
SHL 241' FNL & 1171' FEL, Sec. 3, 24S, 29E  
BHL 5' FNL & 2010' FEL, Sec. 3, 23S, 29E  
Eddy County, NM

## SURFACE PLAN PAGE 1

### SURFACE USE PLAN OF OPERATIONS

#### 1. ROAD DIRECTIONS & DESCRIPTIONS (See Maps 1 & 2)

From the intersection of SH 128 and SH 31, go east on SHW 128 for 4.5 miles. Turn south on CR 793 for 4.1 miles. Turn west on lease road for 3.5 miles. Turn south for 0.6 miles, turn southeast for 0.3 miles, turn south for 0.1 miles, turn southeast for 0.2 miles, turn south for 1.3 miles, and turn northeast for 0.2 miles. Turn right on proposed road and go southeast for 296.9', turn left and go east for 50' to location.

#### 2. ROAD TO BE BUILT OR UPGRADED (See Map 2)

No new roads will be required to access this well pad as all drilling, completion, and production will occur on an existing, producing well pad that was approved and built in 2016 under API# 30-15-44397.

#### 3. EXISTING WELLS (See Map 3)

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

#### 4. PROPOSED PRODUCTION FACILITIES (See Figures 1-2, 1-3, & 1-4)

Production facilities will be located off-pad, on a separate central tank battery (CTB) site. This facility currently serves the Cypress 34 Fed 15H, which has already been drilled and completed on the same pad, and will also be used for the recently accepted 234H, 236H, and 244H and the proposed 233H, 243H, and 246H wells once they have been drilled. The CTB and its associated infrastructure (road, power line, and flowlines) is located on the producing lease in Section 34, 23S 29E and was permitted with the previous group of Cypress 34 wells (234H, 236H, and 244H). An additional 3 flow lines will be constructed for the 3 additional wells (233H, 243H, and 246H) from the existing Cypress CTB to the existing well pad. These buried flowlines will be poly ~4" OD.

#### 5. WATER SUPPLY (See Map 4)

This well will be drilled using a combination of water mud systems. Water will be trucked from a private water well (C 03662) on private land in NWNE 23-24s-33e.

#### 6. CONSTRUCTION MATERIALS & METHODS (See Figures 1 & 2)

NM One Call (811) will be notified before construction starts. There will be no topsoil as fill will be brought in to extend the pad. No topsoil will be removed as it was previously removed and

Tap Rock Operating LLC  
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Eddy County, NM

## SURFACE PLAN PAGE 2

stockpiled to the side of the pad when the location was originally constructed by Oxy USA. If additional caliche is needed it will be obtained from an existing BLM/State/Fee approved pit or from prevailing deposits found on location.

### 7. WASTE DISPOSAL

A closed loop drilling system will be used. 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 Figures 1 & 3)

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

### 10. RECLAMATION (See Figures 1 & 2)

Areas of the pad site not required for operations will be reclaimed. The original topsoil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

Disturbance:

|                                     |              |
|-------------------------------------|--------------|
| + 50' x 545' well pad expansion     | = 0.63 acres |
| + 3782' x 30' additional flowlines  | = 2.60 acres |
| Short-term disturbance = 3.23 acres |              |
|                                     |              |
| – flowlines route                   | = 2.60 acres |
| – Interim pad expansion reclamation | = 0.63 acres |
| Long-term disturbance = 0.00 acres  |              |

### 11. SURFACE OWNER (See Map 3)

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

Tap Rock Operating LLC  
Cypress 34 Federal #233H  
SHL 241' FNL & 1171' FEL, Sec. 3, 24S, 29E  
BHL 5' FNL & 2010' FEL, Sec. 3, 23S, 29E  
Eddy County, NM

**SURFACE PLAN PAGE 3**

**12. OTHER INFORMATION**

- On-site inspection for the pad extension was held with Matt Wirth (BLM) on August 24<sup>th</sup>, 2018.
- The vegetation cover is generally sparse consisting of mesquite, yucca, shinnery oak, sandsage and perennial native range grass. The topsoil is sandy in nature. Wildlife in the area is also sparse consisting of deer, coyotes, rabbits, rodents, reptiles, dove and quail.
- There is no permanent or live water in the general proximity of the location.
- There are no dwellings within one mile of the proposed well site.
- Cultural Resources Examination - This well is located in the Permian Basin MOA - Fees were paid 2/11/16 Receipt 3490901, for the Cypress 34 Federal #15H.

**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 25th day of October, 2018.



---

Cory Walk, Consultant  
Permits West, Inc.  
37 Verano Loop, Santa Fe, NM 87508  
(505) 466-8120

*Field representative will be:*

Doug Sproul  
Tap Rock Operating, LLC  
602 Park Point Dr., Suite 200, Golden CO 80401  
Phone: (720) 772-5090



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

## PWD Data Report

06/17/2019

### 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:**

**Injection well name:**

**Assigned injection well API number?**

**Injection well API number:**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

### **Section 5 - Surface Discharge**

**Would you like to utilize Surface Discharge PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

### **Section 6 - Other**

**Would you like to utilize Other PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**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 Info Data Report

06/17/2019

### 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:

Tap Rock - Cypress 34 Federal 233H

243 H

246 H

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JUN 20 2019

DISTRICT II-ARTESIA O.C.D.

Eddy Cty

Approved APDs

Deliver to Artesia OCD



quik send &lt;labelandscan@gmail.com&gt;

**APD packs for printing (3 of 3)**

1 message

**Martha Jackson** <martha@permitswest.com>

Wed, Jun 19, 2019 at 12:19 PM

To: labelandscan@gmail.com

Hello Quik Send!

Attached are three packets for printing. Each should be printed B/W and double-sided, please.

Let me know when finished, I'll come get them. Thanks,  
Martha

|                                                                                                                                      |     |
|--------------------------------------------------------------------------------------------------------------------------------------|-----|
|  Cypress 34 Federal 246H APD Approval Pack-6-17-... | 175 |
|  Cypress 34 Federal 243H APD Approval Pack-6-17-... | 173 |
|  Cypress 34 Federal 233H APD Approval Pack-6-17-... | 176 |

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**Martha Jackson Deutsch**

Permits West

37 Verano Loop

Santa Fe, NM 87508

505-466-8120

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